

**UNDERSTANDING INFORMATION TECHNOLOGY INVESTMENT
DECISION-MAKING IN THE CONTEXT OF HOTEL GLOBAL
DISTRIBUTION SYSTEMS: A MULTIPLE-CASE STUDY**

by

Daniel J. Connolly

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APPROVED:

Michael D. Olsen, Ph.D.
Chair

Richard G. Moore

Robert T. Sumichrast, Ph.D.

Suzanne K. Murrmann, Ph.D.

Eliza C. Tse, Ph.D.

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Daniel J. Connolly

Dr. Michael D. Olsen, Chair

Department of Hospitality and Tourism Management

ABSTRACT

This study investigates what three large, multinational hospitality companies do in practice when evaluating and making IT investment decisions. This study was launched in an attempt to 1) learn more about how multinational hospitality companies evaluate, prioritize, and select IT investments in the context of hotel GDS; 2) call attention to an important and costly topic in hopes of improving current practices; and 3) fill a noticeable literary void so that future researchers on IT and hotel GDS would have a foundation and starting point.

The perennial question of any business is “How does an organization add value?” Value can be defined from many different perspectives and may result from tangible and intangible factors. Principal stakeholders include shareholders (investors), customers, and employees. Shareholders typically measure value in terms of economic return on their investment based upon some level of perceived risk. For customers, value is assessed in terms of a price-value relationship; that is, how much they received in terms of product and services for the price they paid. For employees, value is measured by salary and by the intrinsic rewards of the job. Yet, one of the most elusive questions with respect to information technology is “How can value be measured?”

Hospitality executives are being pressured daily to invest more in information technology (IT)—especially in the area of hotel global distribution systems (GDS), which have become the cornerstone of a hotel firm’s IT infrastructure and portfolio. There are a number of sweeping changes on the horizon impacting hotel GDSs and requiring the development of a well-crafted strategy for global distribution systems. These broad changes include bypass theories to remove airline GDSs and travel agents, the introduction of new and emerging player, and innovative approaches to pricing and promotion. Many of these developments offer promise to hoteliers, but they also threaten their control over their customer relationships and their inventory and add to the complexity and cost of distribution. Selecting the appropriate distribution channels is paramount to success and important if hotel firms are to grow top-line revenue and control overhead; yet the number of choices facing hotel executives is overwhelming. They are also at a loss for measuring value derived from IT.

One of the greatest issues plaguing the advancement of technology in the hospitality industry is the difficulty in calculating return on investment. Until recently, most technology investment decisions have been considered using a support or utility mentality that stems from a manufacturing paradigm. Under such thinking, business cases could be built around an application or technology's ability to reduce costs or create labor savings. However, management's attitudes towards technology have been shifting in recent years. The more technologically savvy hospitality companies are looking to IT to build strategic and competitive advantages. These types of investments yield results over time, and seldom in the short-run. This is problematic among owners and investors who demand more immediate results. Moreover, it is difficult to quantify and calculate the tangible benefits of technology when it is used for strategic purposes.

Today's financial models are inadequate for estimating the financial benefits for most of the technology projects under consideration today. While the hospitality industry has disciplined models and sufficient history to determine the financial gains or success of opening a new property in a given city, it lacks the same rigorous models and historical data for technology, especially since each technology project is unique. Although this problem is not specific to the hospitality industry, it is particularly problematic since the industry tends to be technologically conservative and unwilling to adopt new technology applications based on the promises of its long-term merits if it cannot quantify the results and calculate a defined payback period. When uncertainty surrounds the investment, when the timing of the cash flows is unpredictable, and when the investment is perceived as risky, owners and investors will most likely channel their investment capital to projects with more certain returns and minimal risk. Thus, under this thinking, technology will always take a back seat to other organizational priorities and initiatives. Efforts must be made to change this thinking and to develop financial models that can accurately predict and capture the financial benefits derived from technology.

Given the present predicament and difficulties surrounding the current tools, techniques, and measures, executives are faced with an important choice. They can 1) continue to use the present methods despite their shortcomings, 2) dispense with ROI, cost-benefit, and discounted cash flow analyses altogether for IT projects, or 3) develop new methods, tools, and measures that can accommodate the complexities of IT and quantify the intangibles. This study is a call to action in favor of the latter because the measures determine not only which projects will be accepted but also how their success will be evaluated. Having a rigid evaluation process forces executives to identify a project's potential contribution and align the project's objectives with the firm's strategic goals and objectives.

Using the co-alignment principle as its theoretical underpinning, this study employs a multiple-case design to investigate the resource allocation processes used with respect to information technology and global distribution systems. It looks at how three leading, multinational hospitality firms address IT project/investment evaluation and decision-making, the measures they use, and the frustrations they encounter. These frustrations include problems that arise from a hotel firm's fragmented ownership as well as from hotel executives' inability to measure the results of IT through definitive cause-and-effect relationships. The results of the study provide affirmation of the co-alignment principle and document linkages and co-alignment between strategy and IT. Clearly, decisions involving IT and hotel GDSs require multivariate measures, multidimensional perspectives, and multidisciplinary involvement. However, research from the

marketing discipline is noticeably absent in this area. This study concludes that because IT plays an important enabling role for marketing initiatives and is redefining the supply chain of a hotel firm, marketing researchers can no longer stand on the sidelines.

This study also identifies three important constructs, or classes of variables (context, process, and project), the variables comprising each, and their influences on the evaluation and decision-making processes. These findings add to the understanding of IT evaluation, measurement, and decision-making in the context of hotel GDS. This study clarifies the intangible aspects in hopes that useful measures can be developed in subsequent research to quantify and evaluate these costs and benefits. Finally, this study provides a series of prescriptions or recommendations gleaned from the three companies that were the focus of this study in hopes that they will lead to the development of best practices in the hospitality industry.

*Dedicated to my wife and best friend Sarah; to my parents
George and Natalie Connolly, the greatest teachers of all; and in
loving memory to Clara M. Stone, my grandmother and heroine, who
always inspired me, supported me, and believed in me. Because of
each of you, I am truly a “lucky, lucky boy”!*

May God bless you and protect you always.



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* * * * *

If we all did the things we are capable of doing, we would literally astound ourselves.

~ Thomas Edison

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CHAPTER ONE: INTRODUCTION

Introduction

Building a better path to the consumer is considered one way to gain a competitive edge in any marketplace. In a highly competitive, high-tech era with new methods and tools to reach out to more demanding consumers worldwide, global distribution channels grow increasingly important to a firm's ability to compete and build a better path to the consumer. This is especially true at a time when consumers want instantaneous or real-time access to information and services when and where it is convenient for them. The hotel industry is no different in this regard. Within the industry, distribution channels are being reshaped as the result of technological advancements, new and emerging players, and a shift in the balance of power between suppliers, buyers, and intermediaries. However, the corresponding costs associated with technological investment and transaction processing are rising due to the complex networks and technological infrastructure that must be in place to support seamless, single-image inventory in the spectrum of distribution channels that exist today and that will soon exist in the future. Complicating matters, executives have few tools and little guidance to help them determine when to invest, how much to invest, and how to assess or gage the business value to be gained from the investment (Weill, 1991).

The purpose of this research study is to investigate investment criteria, prioritization schemes, and decision-making by corporate-level hotel executives with respect to information technology (IT) and in the context of hotel global distribution systems (GDSs). The ensuing report seeks to shed light on the factors considered, the evaluation techniques employed, and the measures used to determine the level success of success achieved from the investment and resource allocation decisions made with respect to IT and a hotel firm's GDS.

Background and Overview

Tourism is considered to be one of the largest and fastest growing industries in the world. Its global scope, diversity, and interdependent activities require firms to make effective use of information systems and communications technologies. This trend will only continue as these technologies become more affordable, more capable, and ubiquitous in society.

Since the early days of farmers' markets, merchants have wrestled with determining the best approaches to delivering their products to the marketplace. Many generations later, this challenge still exists and is perhaps more difficult given the ever-changing, increasingly competitive, and global markets in which firms operate. The hospitality industry is no exception; the need to establish more and better distribution channels is just as pronounced as that for any other industry. Older philosophies like "location, location, location" or "if you

build it, they will come” are no longer sufficient in attracting today’s sophisticated and demanding consumers.

Hotel distribution systems and channels are far too complex to be treated with such simplicity. To paraphrase the words of Ohio State University's Professor Roger Blackwell, the thrust of today's GDS is about having the right product in the right place at the right time, the right price, and under the right set of conditions or circumstances as defined by the consumer (Stein and Sweat, 1998, p. 36). Applying this thinking in a hotel context, a company's GDS must support two primary objectives. First, it must provide distribution channels that allow customers the ability to easily and quickly search for products and services they are willing to purchase with full disclosure of rates and availability, and second, it must provide a means to complete the transaction on the spot and provide immediate confirmation (Castleberry, Hempell, and Kaufman, 1998).

To achieve these objectives, a hotel GDS requires a clear strategy, dedicated resources, and effective management if it is to provide competitive advantage—and it can. According to Stern and Weitz (1997), the design and management of effective and efficient distribution channels provide significant and frequently untapped opportunities for a firm to create long-lasting competitive advantage. The literature is rich with successful examples of companies like FedEx, McKesson Drug Company, American Hospital Supply, Wal-Mart, Dell Computer, Amazon.com, and American Airlines who have strategically deployed information technology and distribution channels to gain competitive advantage and alter industry structure as the result of knowledge asymmetry, economies of scale, enhanced buyer and supplier relationships, and superior channel performance.

Global distribution systems have the potential for creating better customer relationships, higher throughput, lower transactional costs, reduced fixed overhead, enhanced customer service, and fast, hassle-free transactions. The present environment in terms of technological change, new channel developments, and lack of attention given to the topic of hotel global distribution systems in the literature suggests that further study in this area is not only warranted but also welcomed by academicians and practitioners alike.

The Complexities of a Hotel GDS

Central reservation systems (CRSs) have dominated the travel distribution system since the late 1960s (Elliott, 1997). In their groundbreaking work, authors Emmer, Tauck, Wilkinson, and Moore (1993) detailed the importance of global distribution systems (GDSs) and electronic linkages in the hospitality industry. They traced the history and evolution of hotel GDSs and the rise of electronic bookings. They also illustrated the key components of a hotel GDS, namely the airline GDSs, universal switches (i.e., THISCO and WizCom) that pass information between hotel reservation systems and airline systems, and travel agents as one of the principal booking sources.

In a subsequent piece, Schulz (1994) builds on the work of Emmer et al. (1993). He highlights the critical role of travel agents in the booking process and their ability to help guests determine which accommodations best meet their needs. Thus, he stresses the hotel's need to build partnerships with this influential body. In his estimation, hotel central (or computerized) reservation systems (CRSs) are excellent booking tools but limited in terms of their ability to disseminate information.

Today, more than five years later, much has changed in terms of the tools, technologies, players, and more in the area of hotel distribution channels. The landscape is entirely different than when Emmer et al. (1993) first embarked on defining GDS, given the recent developments of Internet-based travel services and agencies, intelligent software agents, and more open access to hotel availability. As society becomes more networked and digital, the very notion of what constitutes global distribution channels and who the key players are changes drastically. No longer can one think of GDS in terms of a single entity or system, and no longer can one consider a hotel GDS solely in the context of an airline GDS or hotel CRS. Instead, a hotel GDS should be viewed as a medley of well-integrated systems, people, and management/marketing practices that encompasses the entire distribution process and network of components, systems, and players.

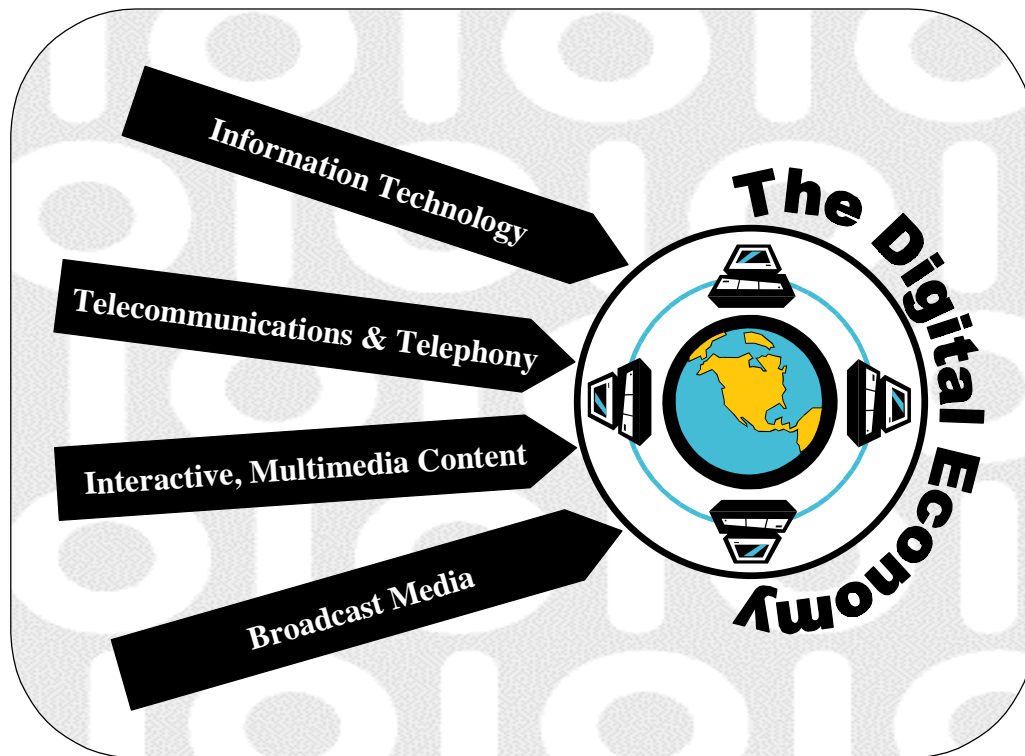
The complexities of a hotel GDS have grown exponentially as a result of the quantity, volatility, and dynamism of information, not to mention the number of distribution channels and intermediaries available and the lack of [interface] standards employed. With the number of room types, rate structures, negotiated rates, packages, and restrictions and rules of sale on the rise, the level of technological sophistication required to support a hotel GDS and distribute the information in a secure environment is changing. This technological sophistication adds to the cost of technology capital required to create and support the necessary GDS applications and infrastructure. It also adds to the level of difficulty in assessing IT investment decisions with respect to a hotel GDS.

Being able to successfully manage something and invest in it requires complete understanding of precisely what it is one is trying to manage and how best to allocate firm resources to it. Alternatively stated, one must fully comprehend the concept of global distribution channels in today's context and have the ability to forecast where they are headed in order to select the appropriate channels and technologies to build competitive methods. Effective management of, investment in, and resource allocations to global distribution systems and their ensuing channels will result in improvements to a hotel's profitability on two fronts: decreased costs and improved revenues. The fundamental principle at work here is that if a hotel can effectively exploit its distribution channels, it can gain market share through increased sales while simultaneously reducing overhead. Both go directly to the hotel's bottom line, thereby improving profitability and competitive advantage.

The Great Convergence and the Digital Economy

The convergence of information technology (i.e., computer hardware, software, databases, etc.), telecommunications and telephony (i.e., voice, data, cable, and wireless networks; telephones, facsimile, and telephone answering devices), interactive, multimedia content (i.e., text, voice, graphics, photos, sound, and video), and broadcast media (i.e., radio and television), as shown in Figure 1-1, is the single-most important event shaping the future (Tapscott, 1996; Negroponte, 1995). This digital convergence, supported by miniaturization, portability, declining costs, push technology, and more powerful applications, is part of a trend driving computers to ubiquity in every-day life—so much so that they are deemed essential or required to survival in today’s world and no longer mere luxury items for the business professional or the elite.

Figure 1-1: The Great Convergence Gives Rise to the Digital Economy



This movement is giving rise to the digital economy, where speed, agility, connectivity, and the ability to amass and subsequently employ knowledge are key competitive ingredients. The resulting impact on the hospitality industry is profound. The subsequent effects include lost capacity (i.e., room inventory) control, higher capital costs, more sophisticated and

demanding customers, and a more dynamic, competitive industry. The rules for survival are changing due to lower profit margins, smarter and more demanding customers, labor shortages, and new operating paradigms. The consequences of this convergence, however, are not all negative. This confluence of technologies opens new doors and opportunities to those who are willing to redefine the basis of competitive activity and the very premise behind the customer-service provider dyad.

In the hospitality industry, global distribution systems (GDSs) represent the quintessential example of the convergence of technology, communications, and content. This is especially true as the Internet is introduced into the equation, which provides real-time access to almost anything, at any time, from anywhere. New, innovative uses of technology will create unprecedented opportunities for hoteliers to interface with customers, customize products and services, enable or empower employees, and control operating overhead. Moving forward, information technology represents the most influential competitive method for the hospitality industry (Olsen, 1996) as it embraces and competes in the digital economy of tomorrow. How best to exploit this new economy and prepare for a new world order—one that is foreign to many—raises many questions and challenges for industry leaders and, hence, the need for further study in this area.

Bounded by Tradition

Conventional thinking suggests that services are less technologically advanced than their manufacturing counterparts (Quinn, 1988). Within the hotel industry, the traditional paradigm of information technology as a support mechanism has prevailed. This thinking has influenced IT spending, investment, and usage throughout the industry, placing the primary emphasis, more often than not, on tactical systems with calculable returns on investment. Seldom does strategic vision or a preemptive strategy drive the decision. Research by Cho (1996) of three prominent, multinational hospitality companies confirms this. In her study, Cho (1996) found that cost-benefit criteria consistently outweighed strategic preemptiveness when considering IT investment decisions. In essence, IT expenditures are viewed as discretionary spending and, therefore, subject to intense scrutiny (Antonucci and Tucker, 1998). Moreover, pressures from Wall Street and the investment community to focus on earnings result in a short-term orientation at the expense of long-term benefits and positioning. The result of this thinking has often hindered the deployment and effectiveness of IT within the industry. Shying away from preemptive strategies is further reinforced by the continuing trend towards decreasing costs for IT equipment, which encourages managers to wait or defer technology related decisions until the technology becomes more affordable (Post, Kagan, and Lau, 1995). IT capabilities have also been hampered by the lack of industry-specific applications and proven solutions. Since many applications were adapted from other industries (e.g., airlines), they are considered inadequate or “clumsy” because of their poor fit and their inability to address hotel-specific needs (Hensdill, 1998).

In 1985, Porter recognized the potential and value of IT for driving competitive positioning. Porter wrote that technological change was among the most prominent force driving competition (Porter, 1985). It took more than a decade for this same realization to become apparent in the hospitality industry as it competes in a knowledge-based economy (Olsen, 1996; Cline and Rach, 1996; Cline and Blatt, 1998; Hensdill, 1998). Evidence from Hensdill (1998) suggests that the focus is beginning to shift towards more strategic applications as IT spending throughout the industry rises. Hensdill (1998) writes that investing in technology simply to manage a hotel is no longer sufficient.

Enlightenment

In an information economy, knowledge about and access to customers are critical success factors (Cline and Blatt, 1998; Cline and Rach, 1996). However, these critical success factors can only be realized through information technology and competent, knowledgeable workers. Only recently has the industry begun to proactively apply information technology in the area of guest services, a necessity that has resulted from increased competition, consumer demands, and shareholder focus on asset optimization. Traditionally, hotel executives resisted the use of information technology for fear of alienating their guests. However, this trend is reversing as a result of the many technological advancements that have occurred since the personal computer was first introduced in the early 1980s.

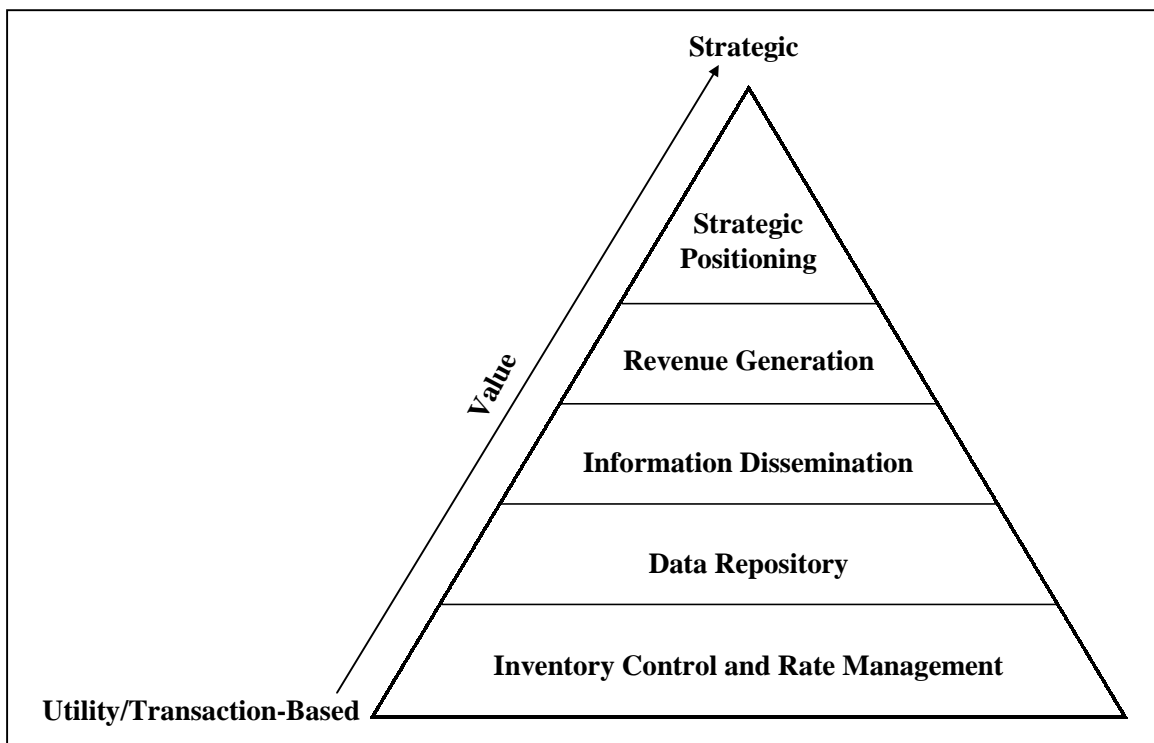
Spending on information technology by the industry is on the rise, with great emphasis being placed on global distribution systems. This area is, by far, the most complex of any hotel application because of the volume, complexity, and volatility of the data (including rate structures and room types); the sophisticated linkages to outside entities and the transaction pricing models used to pay these entities for booking services rendered; the level of integration required with other, heterogeneous core hotel systems like property management systems (PMS), revenue (yield) management systems, sales and marketing, and guest history; and the technological sophistication and redundancy required to support and manage the entire distribution process, around the world and across a virtual enterprise 24 hours a day. Further complicating this scenario are the need for ubiquity, the increased demands from guests to accommodate their unique needs, their tendency to conduct more thorough shopping, and the rise in popularity of the Internet. The fragmented ownership structure of the industry and a host of incompatible technologies also confound the situation.

The challenges are to provide a seamless, single-image inventory (i.e., the same information, rates, and availability displayed to property staff, reservation agents, travel agents, etc.), real-time access, and last-room availability to each distribution channel at any time and from anywhere in the world while maintaining control over hotel inventory and costs. To fulfill these challenges, hotels require powerful and sophisticated technologies and high-speed data networks. The role of global distribution systems becomes more vital as hotels look to building one-to-one relationships with their guests, implementing data warehousing and data mining technologies, and using revenue (yield) management systems to maximize REVPAR (revenue per available room).

Importance of GDS

In simplest terms, the objective of a GDS is to distribute a company's products (in this case, hotel room inventory) to as broad an audience as possible in the most effective and efficient means so that they can be purchased (Crichton and Edgar, 1995). More specifically, the roles played by a hotel GDS have evolved over time—from one of transaction-based emphasis to one of strategic value—but at any one point in time, a hotel GDS fulfills five important roles, as illustrated in Figure 1-2 below.

Figure 1-2: The Many Roles of a Hotel GDS



The first role of a hotel GDS is one of simple utility: transaction processing and maintaining, controlling, and reporting room inventory levels and hotel rates. Initially, a hotel GDS provided a simple accounting of rooms available versus rooms sold at predetermined rates, generally set by each hotel for some defined period of time (e.g., seasonal rates). Over time, this function has expanded in complexity and strategic importance as more emphasis has been placed on yield management to maximize a hotel's total revenue. Now, this function is responsible for the definition of room pools and rate categories, the allocation of rooms, and the rules and restrictions that govern the sale of these rooms. The system must support all decision-making regarding the setting of rates, the allocation of rooms, and the rules and

restrictions. The system must then communicate this information to all points of distribution in real-time, enforcing all the rules when a room is reserved or cancelled.

In its second role, a hotel GDS plays an important function as a data repository and a learning system for guest history, preference, profiles, and buying patterns. This system is one of the primary collection points of valuable guest-related information and preferences. The value of the stored data increases with each subsequent guest encounter¹ and from data mining used to help a company in developing, positioning, and marketing its products and services. Because of the data collected, this system becomes an important feed to other core systems, including a company's property management system and data warehouse which then enable a company to improve guest recognition, the customization of guest experiences, product positioning, and new service developments and product offerings.

Its third function is that of a communications vehicle. It disseminates vital information regarding inventory availability, rates (including rules and restrictions), and hotel information as well as guest profile data to various points of distribution and service delivery in real-time for access by all service associates to allow them to better perform their jobs, recognize their guests, and personalize the guest experience.

Fourth, a hotel GDS represents a source of revenue, not just in terms of room-nights generated and revenue maximization through yield management but also through fees charged for participation and for transactions processed. Finally, a hotel GDS is strategic weapon. It plays an important role in a company's positioning, provides access to markets, allows a company to implement unique functionality and selling strategies, builds strategic alliances through inter-organizational systems, and provides a product by which is used to sell to and attract franchisees and management contracts.

Without question, a hotel's GDS is a mission-critical application, and quite possibly the lifeline of the organization. Any disruptions in service can severely inconvenience, if not cripple, a hotel or entire lodging company. The firms impacted by the recent glitches that brought down Cendant's WizCom, a major travel reservation system, for a total of nine hours over a two-day period can attest to the indispensability of a GDS and the costliness of a system outage (Caldwell, 1998b; Keates and Goetz, 1998).

It can be said that a hotel's global distribution system is the cornerstone for the service delivery process in a hotel and for all hotel-based technology. Yet, one should not consider a global distribution system as a single system or entity. Rather, it is a collection of systems, technology, telecommunications, people, and strategies, that, when coupled, provide an effective means of marketing and selling a hotel's guestrooms and facilities. In most cases, it is the initial and principal data collection point that, in turn, feeds information to all other aspects of the organization and all subsequent processes in the guest life cycle. Without a well-integrated GDS, functions like marketing, relationship building, data mining, revenue (yield) management, and labor forecasting, to name a few, would be severely handicapped—if not impossible to do.

¹Kirsner (1999) terms this interactive, iterative learning process "progressive profiling."

The cost of doing business is on the rise, and the need to establish a presence in multiple distribution channels such as airline GDSs, the Internet, hotel CRS, etc. is driving these costs to a point where many hoteliers believe they are losing control of their own profit margins. It is not uncommon for hotels to spend upwards of 25 to 30 percent (or more) of their room revenues on the costs associated with the hotel reservations booking process. This profit margin erosion is real, and if hotels do not actively develop a strategy to manage their distribution channels, they will continue to experience the loss of control over their room inventory. Effectively using technology is one viable means by which hotel companies may regain control over their inventories.

Rise of the Internet

Wilder (1997b) writes that the Internet is creating a “webolution” in today’s society by changing the way people live, work, interact, and shop.² The impact of these changes is profound for all commerce, including that of the hospitality industry. Nothing is changing the face of hotel distribution and the economics of hotel bookings as much as the Internet and its sister technologies, intranets and extranets. The Internet provides a host of new distribution options and is spurring new developments and innovations by hospitality companies and vendors alike in attempts to capitalize on its many potential benefits, namely to extend market reach, reduce distribution costs, and enhance customer service.

Many hotel companies are aggressively pursuing use of the Internet to market their properties, disseminate information, correspond interactively and instantaneously with their customers, and extend their booking channels. They are frantically trying to figure out the critical success factors of the digital economy, what have become commonly and collectively known as the five C’s of the Internet world: *content*, *community*, *commerce*, *convenience*, and *context*. To these companies, the Internet represents an economically appealing opportunity for redefining their fundamental business model. The goals are to enhance the customer value proposition, to establish customer intimacy, and to build guest loyalty by taking advantage of one-to-one marketing opportunities and by creating enriched, personalized consumer shopping experiences through the use collaborative filtering tools and non-intrusive software agents that track users’ behavior to learn their interests and tastes. The benefits to the consumer are individually targeted promotions, suggestive selling, and tailored experiences when interacting with company personnel or when paying a visit to its web site.

Business-to-business commerce over the Internet also presents attractive business opportunities and is being spurred by the rise of intranets and extranets. These technologies offer hotels vast potential in reducing the dependency on travel intermediaries and airline GDSs. They also offer great promise in cutting distribution [channel] costs and overhead while building customer loyalty and switching costs.

²Please see Appendix A for examples of popular travel resources available via the Internet. The breadth of resources is quite vast.

To the consumer, the Internet is a powerful, convenient, and invaluable tool to explore destinations and shop for travel accommodations. To many, it is quickly becoming an indispensable resource. It provides a wealth of current information and resources (e.g., maps, currency conversion, travel advisories, weather forecasts, frequent travel account balances, calendar of local events, and more). With the click of a mouse button, consumers can easily compare hotel properties, rates, and travel destinations. Graphics and multimedia tools allow visual inspection of the accommodations, facilities, and surrounding area so guests know what to expect before they arrive. The Internet is widely used by consumers to hunt for travel bargains, and with push technology and smart agents, comparison-shopping and bargain hunting become almost effortless. Electronic monitors of rates and fares (sometimes called e-savers) notify consumers via electronic mail. There are even sites available where consumers can specify their price threshold or participate in an on-line auction and bid for travel accommodations.³ In other words, consumers dictate the prices they are willing to pay. What the Internet means is that consumers are more in control of the purchase process and are more informed—which may equate to more demanding. Increasingly, the trend points towards the potential for dynamic pricing or what Davis and Meyer (1998) call real-time pricing models, where price fluctuations occur constantly and instantaneously much like that of a stock market where prices are driven by the volume of trading. If successfully adopted in the hospitality industry, this could take revenue (yield) management concepts to a whole new level.

For hoteliers, these developments may provide attractive alternatives for selling distressed inventory, boosting occupancy levels during off-peak times, and providing consumers with inexpensive, low-risk trial usage opportunities, but if successful, they will likely change the dynamics of customer-supplier interaction and the way room inventory is managed, controlled, and sold. More sophisticated software applications will be required to monitor and allocate room inventory to these emerging distribution channels.

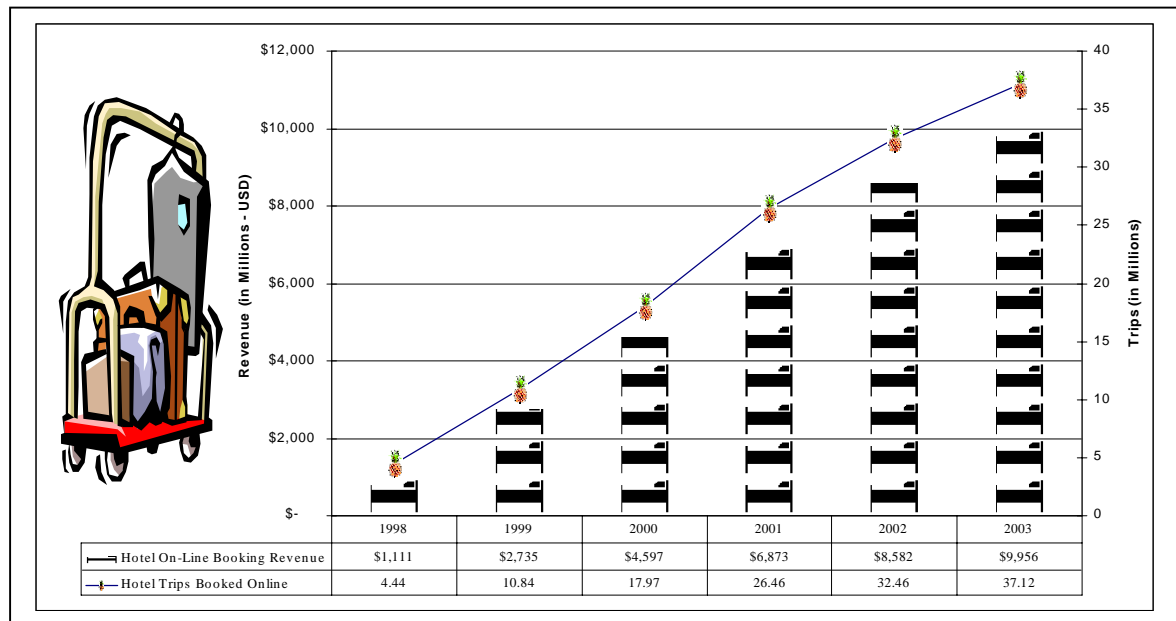
Today, the Internet provides access to over 100.5 million people worldwide, and the rate is growing rapidly. Estimates suggest that by the year 2000, the Internet will boast some 327 million users.⁴ To today's youth (the so-called Generation X-ers and the Dot-com Generation), the Internet is a normal part of society, just like the telephone, fax machine, or microwave oven. This phenomenon will only continue, as Internet access becomes ubiquitous in schools and public facilities. With over 11,000 web sites (Loftus, 1997) supporting the travel industry, this industry enjoys the fastest growth of electronic commerce on the Internet. The Internet accounts for hundreds of millions of dollars in travel accommodations and an immeasurable number of instances of advising travelers about some aspect of their travel (e.g., safety, rates, quality, activities, weather, dress) (Shapiro, 1997a). For lodging alone, Forrester Research estimates 1998 contributions for on-line hotel bookings

³For some examples of travel auctions and name-your-own-price services, the reader should consult Appendix A under the section entitled Travel Auctions and Bidding Services, refer to the links available via The Internet Auction List (<http://www.usaweb.com/travel.html>), or use an Internet search engine to locate many others.

⁴For the latest Internet population, demographic, and usage statistics, please refer to CyberAtlas at <http://www.cyberatlas.internet.com>.

to be \$1.1 billion (US), or 4.44 million trips, and expects the number to grow almost tenfold over the next five years to nearly \$10 billion (US), or 37.12 million trips, by the year 2003 (McQuivey et al., 1998). While the Internet today typically accounts for only one to three percent of all hotel bookings, the staggering growth projected by Forrester Research (see Figure 1-3) suggests that the Internet will provide much greater contributions in years to come. Therefore, the Internet should not be overlooked or dismissed as infeasible. In the years to come, the Internet promises to provide viable and significant opportunities to sell hotel accommodations.

Figure 1-3: Projected Growth of Hotel Bookings Online, 1998-2003



Source: Forrester Research – McQuivey et al. (1998, p. 8).

As the Internet technology becomes faster, more capable, and more widespread and as user fears regarding security and privacy issues diminish, electronic commerce will become mainstream. To paraphrase the words of Shapiro (1997a, p. 110), the Internet is quickly becoming society’s umbilical cord. Perhaps President Bill Clinton best summarizes the true impact of the Internet on society and business:

“As the Internet becomes our new town square, a computer in every home—a teacher of all subjects, a connection to all cultures—this will no longer be a dream but a necessity” (Stahlman, 1997, p. 88).

Information Technology Broadens Distribution Channels

Heretofore, the distribution channels for hotels have included travel agents, toll-free reservation numbers, convention bureaus, corporate meeting planners, the hotels themselves, and travel services like EasySABRE. Technological innovations, however, are providing new, easy-to-use, and information rich tools to enable travelers to book their own travel accommodations without having to rely on travel intermediaries.

Evidence of changing distribution channels and the growing trend for travelers booking their own reservations can be seen in many forms. First, there are the many developments taking place on the Internet, which is quickly moving towards interactive, simultaneous transmission of voice, data, and video. Perhaps the most visible Internet development in the hotel industry is Pegasus Systems Inc.'s TravelWeb, which allows travelers to shop for and subsequently book travel arrangements. Other popular Internet booking services—all of which now rank among the top 75 US travel agencies—include the GetThere.com (formerly known as Internet Travel Network or ITN), Microsoft's Expedia, Preview Travel, and Travelocity (a subsidiary of the SABRE Group). Additionally, many bureaus of tourism have developed home pages and the necessary links to describe attractions, accommodations, and amenities in their locales and, in some cases, provide access to booking services.

A second development is the recent alliance between America Online and American Express Travel Services. This alliance allows America Online subscribers to book travel services and hotel accommodations through American Express' Travel Services division. With the growing popularity of the Internet, a number of other strategic alliances are forming between content providers (e.g., search engines, destinations, etc.) and travel booking engine providers.

A third development is recent product introductions by airline companies such as United's United Connection that enables customers, using personal computers, to build travel profiles, check frequent travel account balances, and directly book reservations for airlines, rental cars, and hotels for any company listed in the Galileo GDS—without the need of a travel agent or other human intermediary.

A fourth development is the rise of intranet (i.e., business-to-business) commerce. One of the most notable product announcements thus far is American Express Interactive (AXI), a product developed jointly by American Express and Microsoft Corporation.

It is developments such as these that are making it easier than ever before for customers to shop for and book travel arrangements; in fact, the industry is moving more and more towards a one-stop, one-step shopping experience for a multitude of products and services. For travel agents, these developments will lead to a redefinition of their roles in serving as travel intermediaries. For hotels, the initial hope is to reduce travel agent commissions, reservations staff, and talk-time on toll-free numbers. Yet, as each of these methods become more popular, providers of these services are likely to, if not already, charge a transaction fee which will add to a hotel's operating overhead. This suggests that it will be in a lodging

company's best interest to begin yielding by profit as opposed to by revenue. This, too, represents a paradigm shift and requires more industrialized thinking. If hotels can channel reservations through services that allow them to yield greater contribution margins, they can improve their operating results and enjoy a competitive advantage over those unable to effectively manage their distribution channels.

Global distribution systems play a critical role in the sales process of any product or service. In the hospitality industry, significant advances in global distribution systems have raised the stakes of competition by providing access to more markets, creating new sources of revenue, and enhancing guest service (Connolly and Moore, 1995) while changing the overall economics of the booking process. More importantly, the method of booking hotel accommodations has shifted to alternative approaches that are cheaper to operate and require greater involvement from the customer, thereby freeing up traditional booking channels to process more complicated scenarios. As they continue to evolve, global distribution systems will reshape how travelers plan and arrange accommodations for personal vacations and business trips alike and how hotel companies interact with their customers.

The literature review conducted for this study suggests that there are a number of opportunities to implement IT in hotels. Both Collier (1983) and Roach (1988) posit that IT plays an important role in the production and delivery of services and has helped to redefine services and create new ones. Additionally, Roach's (1988) research indicates a growing trend in IT expenditures within the hotel industry. With IT spending on the rise, it is important to look at how hotels employ IT to create a better product (i.e., the technical core or guest stay). Essential to this question are several hypothesized relationships between the use of IT, the technical core, customer satisfaction, and firm performance. The co-alignment principle, considered to be the underpinning of successful firm performance in the field of strategy, and the service-profit (value) chain proposed by Heskett, Jones, Loveman, Sasser, and Schlesinger (1994) suggest that IT can be applied effectively to enhance service delivery of both peripheral and core services, contribute to customer satisfaction and loyalty, and ultimately lead the firm in gaining competitive advantage through increased profitability and/or market share.

Pressure and Influence from Outside Entities

Both Microsoft and American Express are leading the race to eliminate the hassles associated with travel. These two companies are demonstrated leaders in their fields and have the deep pockets necessary to reshape the ways in which consumers plan, book, and expense travel. Working together and separately, Microsoft and American Express are aggressively implementing travel technologies that cover the gamut of the industry's needs, using innovative technology applications such as the Internet, intranets, smart cards, interactive voice technologies, and more. The reach of these companies goes beyond planning and booking of travel to include filing and processing expense reports, managing travel policies, and reconciling centrally billed accounts. Their ultimate goal may very well be to own the

customer relationship, which presents a serious threat to hotel companies (Cline and Blatt, 1998). These companies are definitely ones to watch and track over the years to come.

Change is Imminent

A survey of 600 lodging executives identified reservation systems (51%) as the number one strategic opportunity for investment in information technology (Andersen Consulting and American Hotel and Motel Association, 1989). A close second was sales and marketing systems (48%). In a separate survey of 4,000 hospitality professionals conducted by Arthur Andersen and New York University, 88% of the respondents said that technology does improve the delivery of products and services in the industry ("Hotels: High-Tech," 1996). Hence, attention on hotel global distribution systems is warranted. This research is also timely.

As Coyne (1995) and Chervenak (1996) point out, there are many developments occurring that will reshape the face of global distribution systems throughout the travel industry, challenge the dominant role the airline GDSs have played in the sales and distribution of hotel accommodations, and change the overall cost structure of distribution. These include:

- 1) Increased efforts by airline companies to reduce (or eliminate altogether) the role of travel agents (both on- and off-line) in the booking process, thereby reducing or eliminating travel agent commissions.
- 2) A movement by travel agents and others to bypass airline GDSs in favor of more direct access to hotel CRSs.
- 3) New developments by the hotel industry to exploit the Internet's booking capabilities and bypass both airline GDSs and travel agents to avoid paying both airline transaction fees, typically about \$4.00 (US) per reservation, and travel agent commissions (usually 10% of the total room rate).
- 4) The rise in number of new entrants in the marketplace changing the way hotel rooms are bought and sold (e.g., priceline.com and auctions), the overall economics of distribution, and management of the supply chain. These new channels are also putting at risk a hotel firm's control over its customer relationships and inventory.

Given the foregoing events, the future of global distribution systems promises to be exciting! Technology defines the path to the customer (Burrus, 1993). As SABRE and Microsoft battle for dominance and continue to rise in power and as American Express and others continue to innovate their travel automation products, it is clear that the industry is poised for a shakeout. The key questions presented by these events are "Can the hotel industry win back control of its distribution channels without losing market share or access to its client base?" and "Who will win the battle for distribution share?" The good news is that the fight promises to improve distribution channels and reduce costs. At a minimum, the competition

will keep transaction fees in check and provide more capable, user-friendly tools for both agents and consumers.

A key issue, however, is moving the industry beyond its “legacy” systems.⁵ The travel industry has built an entire distribution network around airline GDSs, which use inflexible technologies (measured by current standards) at their core (Elliott, 1997), and because of the economic recession in the early 1990s, hotels curtailed their spending on information technology. The results are being felt today. Hotels with outdated technology are experiencing competitive disadvantages in the marketplace, with their technology hindering many of their strategic business objectives. Modifications to system functionality are generally costly and require extensive effort. For independent hotels, the problems are often more pronounced since they lack much of the expertise, resources, and technology used by their larger competitors who enjoy greater access to financial capital and other resources. For example, independent hotels are underrepresented in the global distribution systems accessed by travel agents. Here, the chains dominate at the expense of the independents (Coyne, 1995).

A Giant Leap of Faith?

It seems that there are six prevailing philosophies regarding IT investment within the hospitality industry. All projects tend to fall in one of the following six categories: 1) essentialness to survival, 2) an act of faith (or gut feeling) that an investment will prove beneficial to the firm over the long term, 3) projects with an intuitive appeal and seemingly obvious outcomes, 4) projects that are required or mandated (either by law, by regulation, or by top management), 5) a response to moves by competitors to achieve parity or protect market share, and 6) paralysis by analysis in situations involving high degrees of risk and uncertainty, perceived or actual.

More often than not, decisions related to IT tend to be made on an ad hoc basis because of the difficulties in evaluating IT investment decisions and judging their strategic benefits in advance of implementation (Antonucci and Tucker, 1998; Farbey et al., 1992; Clemons and Weber, 1990; Diebold, 1987). In many firms, formal justification procedures simply do not exist, and where they do exist, they are not always followed or enforced; instead, a project champion is left to determine the approach(es) deemed appropriate and sufficient to gain project approval and funding (Farbey et al., 1992). With respect to overall IT budgeting, firms tend to use simple approaches to establishing IT budgets such as developing guidelines based on existing budgets (some percentage of the current year’s budget, which is often

⁵Legacy systems can be defined as computer systems that were originally designed and developed using programming languages and business models that have since become outdated. These systems were initially designed with one set of business needs in mind but, over time, have been stretched to capacity in trying to meet the needs of the business as they have evolved. Because of their structure and the technologies used, it is often difficult, if not impossible, to integrate these systems with others in the company technology portfolio. It is also extremely difficult to modify the functionality of these systems further to meet the challenges of today’s (and tomorrow’s) competitive business environment and to take advantage of the latest advances in computers and information technology.

determined through a series of negotiations by senior executives and IT management) or benchmarking IT expenditures with those of competitors so as to maintain competitive parity. Needless to say, these approaches demonstrate little rigor and may lead to inappropriate or ineffective investment decisions, especially when resources must be allocated to multiple, contending projects and involve large sums of capital.

Investment in global distribution systems is expensive and risky and requires significant up-front capital. For example, when developing SABRE, AMR Corporation (parent to American Airlines) spent \$1.3 billion (US) over an eight-year period and assumed enormous business risks before it realized any return on its investment (Chervenak, 1992). Fortunately for AMR, this investment decision proved successful and beneficial to the strategic positioning of the company. As this example illustrates, commitment to an opportunity horizon does not rest solely on return on investment (ROI) calculations (Hamel and Prahalad, 1991).

Hotels, too, are spending large sums of money—in the millions—on GDS upgrades and new developments. In most chain hotel companies, GDS represents the largest technology investment in the company's entire technology portfolio. Yet, the benefits of IT are not always obvious or certain, take years to realize, and are sometimes elusive as suggested by the great productivity paradox of hotel industry technology (David, Grabski, and Kasavana, 1996) and the hidden costs of e-commerce (Radosevich, 1996). Because technology pervades a firm's value chain (Porter, 1985), it is difficult—if not impossible—to measure benefits derived from the technology, attribute benefits directly to the technology, or establish causal relationships. Moreover, the study of IT on firm performance is a difficult and complicated task due to the many confounding variables involved (e.g., organizational structure and organizational processes) and the many sources of extraneous variance (Hildebrand, 1997; Loveman, 1991; Bakos, 1987; Chakravarthy, 1986; King, 1983). Since there is a great deal of ambiguity surrounding performance (Anderson, 1984), it is difficult to establish a causal link between IT and firm performance.

In the hotel industry, absence of this link and concrete evidence makes it more challenging to sell hotel executives on the merits, capabilities, and benefits of IT—especially when greater emphasis is placed on IT as a support role or utility function rather than a strategic weapon (Cho, 1996). This lack of clarity begs the question: What factors should hotel executives consider when making IT-related investment decisions? There is often skepticism surrounding IT investment decisions due to the intangible returns and benefits derived from the technology itself, and when competing for resources and capital, IT often loses out to more tangible and visible projects that seemingly offer greater certainty and less risk. For example, one hotel IT executive of a leading, international hotel chain reported at an industry workshop how he competed for and lost funding for an IT project to a physical facility upgrade. Instead of funding an IT initiative, senior executives favored marble in guest bathrooms because the latter was viewed to have an immediate and direct impact on the hotel chain's guests. While one cannot defy this logic, it is representative of the emphasis placed on tangibility and the short-term mentality of industry leaders. It is this short-term thinking that fails to capture the long-term strategic potential of IT applications and plagues the development and advancement of IT throughout the industry.

Information technology holds great promise and potential for any business, but it is important to recognize that significant changes are required throughout an organization if it is to realize the full value of the new technology. These changes include structural, procedural (i.e., task), and personnel changes (i.e., new job descriptions, new skill sets, etc). Additionally, the IT strategy must be in alignment with the firm's business strategy and vice versa, for they are inseparable (Tapscott and Caston, 1993; Mahmood and Mann, 1993; Bacon, 1992; Kantrow, 1980; Benjamin et al., 1984).

The traditional approaches to assessing value are derived from accounting and finance practices that focus on physical assets supported by financial capital, but in an information-driven economy, these factors are no longer sufficient; one must also include employees and customer relationships in the equation (Cline and Blatt, 1998). This holistic view will provide a more complete picture of value and allow companies to estimate the lifetime value of a customer—what Cline and Blatt (1998) refer to as customer equity—versus the transactional value that is often recorded today.

Despite the growing importance of GDS in the hospitality industry and the rising popularity of the Internet and e-commerce, investment in these technologies is not a given. An industry-wide technology survey by Hensdill (1998) suggests that not all hotel firms see the merit in implementing some of the latest advances in GDS technology: seamless connectivity with airline GDSs and on-line Internet bookings. For example, based on the results presented by Hensdill (1998), only 57% of the 565 hotels surveyed worldwide have airline GDS connectivity with their central reservation systems. This observation then begs the question: “What about the remaining 43%; why have they opted not to invest in this level of connectivity?” In looking at on-line Internet booking, the numbers are just as astounding. Less than half of the hotels surveyed (46%) currently offer on-line booking capability. While an additional 35% of the hotels plan to add this capability in the next year, there is still a large number (19%) of hotels that are not moving in this direction. Why? These results suggest that investment in GDS-related technologies is not an easy sell or “slam-dunk” decision. There is hesitation that must be overcome.

This is not to say that IT investment decisions can or should be taken lightly. They must be carefully weighed in terms of economic and strategic significance to a hotel company. Every attempt should be made to quantify the impact of IT and the financial benefits, and procedures should be established and used to ensure objective evaluation, screening, benefit tracking, and rigor for all relevant variables, quantitative and qualitative (Bacon, 1992). So, just what factors must be considered, and how (i.e., by what methods) should hotel executives decide on what technologies to invest? These questions are the subject of this study.

Difficult to Measure

The strategic importance of IT to the firm and the resultant value are growing. Companies are increasingly relying on IT to run their organizations and to transact business. IT can no longer be treated as organizational overhead but instead must be viewed as a strategic resource capable of altering competition and industry structure (Segars and Grover, 1995; Clemons and Row, 1991a; Porter, 1980, 1985; Porter and Millar, 1985). In many companies, IT has moved from a back-office support function to a visible, strategic, and structural role in the organization. This transformation requires chief executives to become “IT-enlightened” (Bresnahan, 1998; Caldwell, 1998a).

The literature is rich in examples of successful IT applications and their contributory role in a firm’s success. For example, the work by Hiebeler, Kelly, and Kettelman (1998) highlight best practices in 40 well-known and leading firms, including several from the hospitality industry. In almost all cases, these authors recognize IT, either explicitly or implicitly, as a critical success factor and contributor to what makes companies stand out among others in their industries. What the literature is less clear about, however, is the direct contributions provided by IT and a formula for success in how executives decide to invest in IT, the methods they employ, and the criteria they use to evaluate and select the appropriate investments, particularly in the hotel industry. Strategic IT planning and investments have a long history of beleaguering industry professionals (Caldwell, 1998a; Post et al., 1995; Applegate, McFarlan, and McKenney, 1996; Dreyfuss, 1995; Liao, 1994; Laberis, 1994; Diebold, 1987; Sprague and McNurlin, 1986; Parsons, 1983). It is believed that these problems result from the lack of suitable measurement tools, techniques, and criteria, not from any theoretical shortcomings (Saunders and Jones, 1992).

Applying a Farming Metaphor

When Covey (1997) talks about developing corporate culture, he uses a farming metaphor. This same metaphor is appropriate when referring to the application of information technology in organizations and the benefits that result. The introduction, development, and adoption of information technology are often part of a long-term process, and seldom are the rewards experienced immediately. Generally, there is some gestation period. Just as in farming, it takes time to reap the harvest of successful crops. These crops require attention, care, and cultivating before they yield bountiful harvests. For this reason, Covey (1997) asserts that organizations must be viewed as organic, not mechanical.

This poses great challenges to hospitality and business executives trying to create investment strategies in information technology. Industry executives must make strategic decisions long before any benefits are to be realized. Therefore, they must have an uncanny ability to forecast the future, recognize opportunities, and allocate company resources with sufficient lead-time to capitalize on these opportunities. Predicting the future is always a difficult feat, especially in today’s complex, ever-changing world. Unanticipated opportunities and threats can result in catastrophic failures (Vitale, 1986). The problem is exacerbated by the rapid

pace of change with respect to technology, the risks associated with technology investments, and the uncertainties that the selected investments will pay-off and serve the firm's long-term needs. The industry's institutional memory is still fresh with the failure of the Confirm project, a joint venture between AMR (parent company of American Airlines), Marriott, Hilton, and Budget Rent A Car. Combined, this illustrious group of industry leaders spent 3.5 years and \$125 million (US) on a project that ended in a widely publicized miscarriage (Halper, 1992, 1993; Neelakantan, 1996). The impact of this failure is still felt in many organizations today. It casts a dark cloud of doubt that overshadows IT projects and investment decisions, with many executives asking the question: "How do I know this project will not become the next Confirm?"

In the earlier years of IT, it was relatively simple to quantify and value the contributions resulting from IT applications because a transaction-oriented paradigm was used, which focused almost exclusively on internal efficiencies and productivity gains (Tapscott and Caston, 1993; Post et al., 1995). The analyses conducted were based on simple cost-benefit economics with the emphasis on cost reductions and labor savings. If the savings exceeded the costs, the decision was a go. While it is true that GDSs are highly transactional in nature, their scope is much more strategic than simply processing large volumes of reservation transactions. Today, the transaction-oriented approach is no longer suited because it fails to account for the strategic implications of IT, particularly in the case of a hotel GDS. In a contemporary context, it is difficult to ascertain the true costs and savings of IT, since the impact extends across multiple departments and departmental budgets, and IT efforts are not always coordinated across the firm. A hotel GDS, for example, spans the domains of marketing, operations, and IT. Decentralized budgets also make it difficult to ascertain the true costs of IT in a firm. Moreover, declining IT costs for hardware and software make it possible for managers to use discretionary spending to fund IT-related projects and purchases. In such cases, these expenditures are rarely, if ever, captured and categorized as IT expenses. Consolidated financial reporting further obscures the numbers.

Since IT investments and expenditures no longer rest solely in the domain of IT, not all IT-related expenditures (and the corresponding benefits) are reported as such, making it difficult to ascertain a firm's total IT expenditures and, in some cases, expenditures related to a specific IT project. The result is the inability to fully assess the benefits or effects of the firm's IT. Since firms often lack a well coordinated IT effort, firm wide, researchers and practitioners alike must look for new methods to evaluate their role and contribution to firm performance and competitiveness. This realization was a significant conclusion of three *Technology Think Tank* workshops (Singapore, 1997; Nice, France, 1998; and Vienna, Austria, 1999) sponsored by the International Hotel and Restaurant Association (IH&RA).

Popular Frameworks

Setting priorities and investment strategies in IT are difficult processes. Since few formal methodologies exist, these processes are as much an art as a science, causing many firms to struggle and fail (Williamson, 1997). The lack of methodologies for determining the value of

IT further complicates the process. Financial theory suggests measuring financial returns on a risk and time-adjusted basis (Hamel and Prahalad, 1991), and in most cases, firms rely on financial measures such as return on investment (ROI), net present value (NPV), and internal rate of return (IRR). However, more often than not, the financial rationalization fails to capture the complete picture in terms of customer satisfaction, service, quality, employee satisfaction, productivity, or strategic positioning (Williamson, 1997; Bharadwaj and Konsynski, 1997).

The most popular thinking and prolific theories regarding the use and value of IT come from the Harvard Business School, which is dominated by the works of Michael Porter (Porter, 1980, 1985; Porter and Millar, 1985). Porter's works are frequently cited in the IT literature as the theoretical underpinnings for studying IT. Applying this school of thought, the frameworks used to measure the strategic significance of IT are value chain analysis, Porter's industry and competitive analysis (ICA) framework or *Five Forces* model (e.g., create economies of scale, barriers to entry, switching costs, links to customers and suppliers, etc.), and Porter's generic strategies (i.e., low-cost producer, product differentiation, or market niche focus).

McFarlan (1984) proposed a strategic grid to evaluate a company's use of IT. Based on the strategic impact of existing systems and those under development, firms could be ranked in one of four categories: support, factory, turnaround, or strategic. Investment decisions can then be made based on consideration of a firm's current standing in the grid with respect to where it wants to be positioned. McFarlan (1984) also suggested five criteria useful when deciding resource allocations with respect to IT applications:

- 1) System rehabilitation and maintenance
- 2) Experiments with new technology
- 3) Competitive advantage
- 4) Maintenance or regaining of competitive parity
- 5) Return on investment (ROI)

A firm's IT should be treated as any financial investment portfolio; that is, as a collection of assets that, when managed well, will generate suitable returns on investment (Weill and Broadbent, 1998; Weill, 1991; Weill and Olson, 1989). Just like with any financial portfolio, one must balance both short- and long-term needs of all stakeholders as well as risk and return while maintaining appropriate levels of investment to achieve a firm's objectives. McFarlan (1981), Applegate et al. (1996), and Thorp et al. (1998) also use a portfolio metaphor, proposing that, as in finance, firms create a technology portfolio to help diffuse risk, particularly with respect to new projects. When embarking on new IT initiatives, firms should consider other projects currently underway and factor in the risks of the new project in terms of three dimensions: project size (in terms of budget, staff, scope, complexity, and development time), experience with technology, and project structure. Clemons and Weber (1990) elaborate on the topic of risk and suggest that there are six types that should be considered with respect to IT: technical risk, project risk, functionality risk, internal political

risk, external environmental risk, and systemic risk. Hence, a sixth category, risk, should be appended to McFarlan's list.

There is growing recognition that intangible benefits and aspects of IT increasingly contribute to the IT's overall value and importance in today's knowledge-based economy. This is why Bharadwaj and Konsynski (1997) suggest that intangible factors such as strategic flexibility, risk avoidance, and growth potential receive greater consideration when evaluating IT investment decisions. Williamson (1997) offers the following as suggested criteria for IT investment decisions:

- Alignment with the Business Strategy – Consideration for how well the proposed IT project fits with the company's overall business strategy.
- Return on Investment (ROI) – The anticipated return on the IT investment.
- Risk – The ability to deliver the proposed project, fulfilling the requirements within a timely fashion. Assessments should be made to determine both technical and organizational risks.
- Business Readiness – The overall preparedness of the firm to adopt the new technology and make the necessary changes required to implement it.
- Regulatory or Mandated Changes – Changes that are required due to necessary changes in the business environment.
- Business Values – The anticipated changes brought on by the new IT application are consistent with the firm's corporate value system.
- Cost Assessment – The best estimate for the project's total cost.
- Sponsorship – The project has support from the user community and an overall product champion.
- Common Sense – Intuitively, the project makes sense.

Emphasis on Anecdotal Evidence

McLaughlin et al. (1983), as cited by Ives and Learmonth (1984), suggest that firms go beyond cost measures and consider the value-adding capabilities of IT when evaluating investment opportunities, but currently, no methods exist to capture the value-adding potential for capital investments in a hotel GDS. Since common performance measures are aggregated, they cannot completely reflect the impacts of a single IT application (Crowston and Treacy, 1986).

The quest for determining the economic life and payoff from an IT project may very well be an exercise in futility in the minds of some (Hibbard, 1998). Could this be the equivalent of the search for the Holy Grail? Hildebrand (1997) writes of the difficulties in measuring the value of IT because of the many intangible variables. She suggests that IT value is best

measured not by hard numbers but by anecdotal evidence based on the following criteria: alignment with business strategy, affordability, flexibility, scalability, cost-effective solutions (i.e., price/performance), dependability, reliability, the ability to accommodate new technologies, service levels, responsiveness to changes in the environment, the ability to deliver projects on time and within budget, support, organizational credibility, innovation and organizational learning, and financial performance (increased revenue, decreased costs, and ROI).

Apostolopoulos and Pramataris (1997), Bharadwaj and Konsynski (1997), Grover, Fiedler, and Teng (1997), Brynjolfsson and Hitt (1996), Semich (1994), Saunders and Jones (1992), Brady et al. (1992), and Diebold (1987) among others, also support greater emphasis on the “soft” benefits of IT, including factors like strategic advantage, service, quality, timeliness, improved decision-making, added flexibility, employee satisfaction, etc. in the overall benefits analysis. Indeed, evidence that this shift in focus is surfacing. For example, research by Thyfault, Johnston, and Sweat (1998) suggest that in many companies today, customer loyalty is driving IT investment decisions, not ROI.

A Change in Accounting Rules

Until recently, accounting practices provided companies with a choice as to how they recorded IT project costs. One approach was to record project costs as expenses when they occurred, with immediate impact to profitability. The other approach was to capitalize the costs as an asset and then depreciate the asset over the system’s useful life. By applying the latter approach, companies reported project expenses over time (i.e., over the assets useful life). Regardless of the accounting method used, the company paid the same amount for the asset and made the payments at the same time. Applying depreciation simply afforded a company the opportunity to delay any negative impact on earnings (Hibbard, 1998).

In practice, most companies have been employing a combination of both methods. The lack of a standard reporting procedure and the rise in software spending has prompted the attention of the Securities and Exchange Commission, the American Institute of Certified Public Accountants, and the Financial Accounting Standards Board. At the direction of these oversight bodies, a recently enacted change in accounting rules (effective as of December 15, 1998) requires companies to treat all software (either purchased or developed internally) as an asset which must be appropriately valued and accounted for on their balance sheets (Hibbard, 1998; Violino, 1998). All costs associated with the software must be factored in when considering overall value.

This new accounting practice gives IT assets the same recognition and treatment afforded to buildings, real estate, and other company-owned assets. According to Hibbard (1998), this change in accounting methods will offer businesses numerous benefits. First, IT expenditures can be spread over a number of years, making it easier to win project approval. Second, firms are likely to focus more on developing long-term solutions versus projects that can only show immediate returns. Third, there will likely be more discipline imposed on the

IT budgeting process, with more thorough analysis done during the estimating phases and better accountability to prevent scope creep. Fourth, the ruling could alter how investors value a company. Investment in IT could then be directly linked to earnings and stockholders' equity.

It seems only logical that since the benefits derived from IT are realized over a period of time, the costs should also be spread over this same period. However, there are several disadvantages to this approach to accounting and the potential for increased confusion when attempting ROI analyses. The negative implications, as outlined by Hibbard (1998), are that it is often more difficult to obtain funds for capital budgets than it is for expense budgets, that all IT projects will compete for funds with other capital projects, that this ruling could result in inflated value, and that this will result in an effort of futility because of the intangibility of many of the contributing variables. The challenge becomes, how do companies evaluate these assets and predict their useful lives, especially with the dynamic technology environment that exists today? For hotels, there are no current standards for valuing a GDS, the most important IT application when considering its full scope and reach. In hotels, IT already takes a backseat to other capital projects. Will this increased competition for capital further reduce its priority status?

About This Research Study

Organization of This Report

This report consists of five chapters. Chapter One, the current chapter, presents an introduction to the study on hotel global distribution systems. It provides the background and sets the stage for what follows. Specifically, it addresses the research questions, theoretical underpinnings, units of analysis, and the methodology used to investigate the research questions raised. Chapter Two presents a thorough review and synthesis of the literature pertinent to this study. It provides a more detailed and complete discussion regarding the theoretical underpinnings, their application to this study, and their limitations. Included in Chapter Two is a discussion regarding the present state of knowledge with respect to IT and hotel global distribution systems, the works that have preceded this study, and their influence in shaping this research effort. Chapter Two also presents the constructs and variables of interest and the research models that framed this study. Chapter Three illustrates the methodology used in studying hotel global distribution systems and the investment in IT related to GDS. In this chapter, the methodological choice is presented, as are the research design and any limitations that may have resulted from the methods employed. Chapter Four discusses and analyzes the results of this study, and finally, Chapter Five presents the study's conclusions, applicability to industry practitioners and academic scholars, limitations, and implications for further research.

Problem Identification and Justification

As the diversity of information technology in hotel firms grows, hotel executives must allot an increasing proportion of their time and attention to IT-related issues. While the reasons for applying IT in a firm tend to remain relatively stable over time (e.g., drive revenues, cut costs, gain/retain customers, enhance service, create competitive advantage, achieve efficiencies, improve productivity, build a company's technological infrastructure, establish architectural standards, maximize shareholder returns, compete globally, etc.), the technologies themselves and the capabilities they provide are constantly changing, opening new competitive opportunities and altering the overall economics of conducting business (Grover, Fiedler, and Teng, 1997).

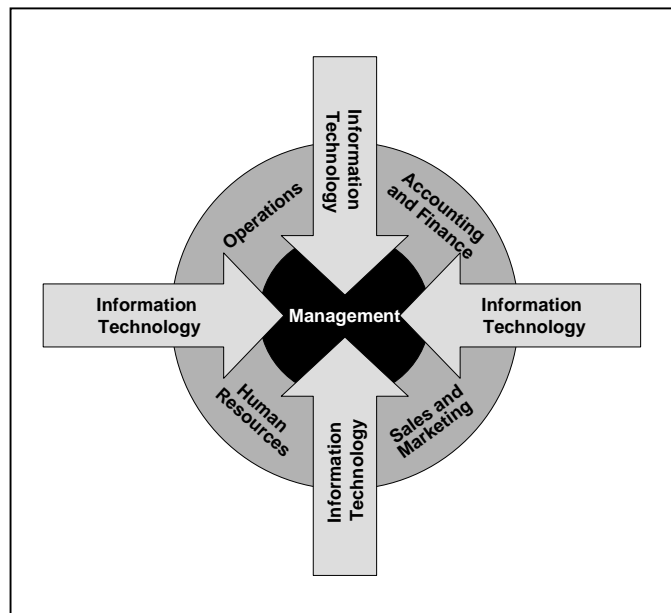
In recent years, the hotel industry has witnessed the emergence of a number of new distribution channels and options, and many more are on the horizon. Some examples include WORLDRES.com, an Internet-based reservations service for leisure travel; priceline.com, an Internet-based bidding service where travelers name their own prices in the form of a Dutch auction; USTAR's (United States Travel Agent Registry) Genesis Project; World Tourism Foundation's (WTF) destination marketing system (DMS) for destination market organizations (DMOs) and convention and visitors bureaus (CVBs); and a host of new Internet services for researching, shopping, and booking meeting and convention venues (e.g., Newmarket International's MeetingBroker.com and Paskey.com).

Without question, the number of technological developments, the array of choices, and the pace of change are overwhelming hotel executives. Since not all distribution channels are of equal value or importance, lodging companies must carefully weigh their investment decisions in light of their organizational goals and performance standards (Crichton and Edgar, 1995). Which channels to choose and the process of selection are called to attention. All too often, decisions such as these are made without a clear frame of reference (Kettinger et al., 1994). Because their ramifications are organization-wide, these decisions no longer rest solely in the hands of a single department or department head. Instead, they must take into account multiple perspectives, goals, and organizational requirements. For example, each new channel choice adds intermediaries to the distribution process who expect compensation for the services they render (e.g., transaction fees and commissions). Furthermore, the technological complexities involved must be considered so as not to compromise customer service, rate integrity, and data accuracy. Therefore, evaluation of these decisions must come from both business (including operational and marketing) and technological perspectives—especially in an environment where owners and investors expect greater accountability and returns on their investments.

Given these complexities, it is nearly impossible to evaluate each new distribution option and determine its appropriateness and potential for a firm in a timely fashion. Decisions such as these usually require extensive analysis and significant investment long before their success is known. Furthermore, because IT-related expenses and savings span budgets for multiple departments and are not always recorded as IT-related, the true costs of IT are rarely known.

IT transcends today's organizations, crossing and blurring all traditional departmental and geographic boundaries. The illustration in Figure 1-4 helps bring this reality to life. IT-related decisions require input from multiple perspectives within the organization since IT is pervasive throughout the firm's value chain. Consequently, if the organization is to exploit IT for competitive advantage, business leaders, regardless of the discipline they represent, must be 1) focused on enterprise-wide solutions and 2) technologically savvy.

Figure 1-4: IT Transcends the Organization



With so many new options entering the marketplace and no tools available to effectively analyze these investment decisions, the industry can benefit from research focusing on the decision-making process related to hotel GDSs, distribution channels, and the IT used to support them. For large, multinational firms, these decisions cannot be made in haste out of fear of alienating traditional distribution partners such as travel agents—a move that could prove catastrophic throughout an entire chain—and without first understanding the cost and technological implications, chain-wide. As hotel firms expand the number of distribution channels used, they add to the complexity of their GDSs, raising the cost of overhead and the management and technological infrastructure required. With the capital investment for each distribution channel on the rise, just how should hotel executives determine in which distribution channels to participate or in what IT projects to invest, and how can they measure the success of these decisions? Seeking answers to these questions is the primary objective of this study.

Stern and Weitz (1997) write of the importance of global distribution systems to a firm's competitive positioning but cite the lack of attention and research devoted to this topic. With

greater focus by firms on cost containment, outsourcing and strategic alliances, the power of downstream channel intermediaries, the rise of the Internet, and economic value, a plethora of opportunities exist to study global distribution channels and make valuable literary contributions (Stern and Weitz, 1997). Their assertion that "...one of the major problems and/or opportunities facing almost every organization, industry, or society has to do with some aspect of marketing channel design or management" (Stern and Weitz, 1997, p. 828) underscores the importance of devoting attention to the topic of global distribution systems.

Within the hotel industry itself, there is an absence of scholarly work focused on hotel GDS. The five events shaping the future unveiled by Olsen (1996) have profound impact on a hotel GDS and suggest that further research is needed with respect to these five events: technology, capacity control, capital investment, management skills, and safety and security. The rapid change of technology and the number of new distribution options emerging make managing in this environment difficult and confusing, especially to those who are struggling to keep current with all the activities taking place and new players that are surfacing. The Internet, today's Information Superhighway, is popularizing the direct-to-consumer approach and threatening obsolescence of many traditional channels and players. Moreover, the technological requirements are on the rise to meet consumer demand and provide seamless, single-image access to hotel rates and availability information. The hotel GDS arena is clearly in a state of transition as a result of new technologies, distribution paths, and attempts to restructure the existing channels of distribution. How it will end up is not certain, but without further study in this area, the industry will continue to lack a forward-thinking perspective that will allow it to take a more active role in shaping this destiny.

Capacity control is an issue as a result of a shifting balance of power between hotel suppliers, travel intermediaries, and technology providers. Increasingly, players outside of the industry are making the technological decisions for the industry. Hotel rooms are being sold from underneath a hotelier's control, often incurring fees that lead to substantial profit loss or at prices dictated by someone else. There are many reasons contributing to the actual and perceived lack of capacity control which are presented elsewhere in this report. Proper understanding and planning will help resolve this issue, but these can only be done with better research on this topic.

Greater technological commitment is required to create and support a state-of-the-art hotel GDS. This raises the capital requirements for competing in the lodging industry. Greater emphasis must be placed on defining what capital is required, how it can be used to gain competitive advantage, and what returns it can provide. Due to capital rationing, competition within firms is intense when seeking project funding, IT or otherwise. Therefore, to win support and funding, careful, correct, and rigorous IT investment analysis and decision-making are essential. Presently, however, the industry lacks a good model for evaluating capital investment in technology. At each of three *Technology Think Tank* sessions sponsored by the IH&RA and involving over 125 industry professionals, there was a resounding call for better models to help industry executives plan for, invest in, and analyze returns from information systems and technology. In the trade press, Cline & Blatt (1998) echo this theme.

The increased usage of technology is reshaping not only the distribution channels but also the industry itself through new alliances, partnerships, and intermediaries. Increasingly, work is being off-loaded to outside entities and even the customers themselves. Managing in this new environment requires new skills, especially in the area of technology and marketing. The new technologically advanced distribution channels will certainly require fresh approaches to marketing and management of customer relationships, not to mention more knowledge regarding the technology itself and its capabilities and limitations. The specific knowledge requirements can only be identified through further research.

Finally, the new applications of information technology, especially the Internet, give rise to new concerns regarding safety, security, and privacy. In particular, guests are concerned regarding the security of their credit card information, the safekeeping of their personal data, and their rights to privacy. An emerging question in the information era is “Who owns the data?” Issues such as these can also benefit from further research.

The aforementioned discussion raises an ambitious research agenda, one that cannot possibly be conquered in a single effort. The intent of this research project is not to tackle all of these issues. They merely are presented here to underscore the need for and importance of research in the area of hotel global distribution systems. The present study is an attempt to answer the calls from researchers and industry practitioners regarding the topics of global distribution systems and the application of information technology with the intent to help fill the literary voids that presently exist. The specific foci are the investment criteria and prioritization methods employed in the hotel industry by executives faced with strategic choices and resource allocation decisions regarding global distribution systems, channels, and the information technology enabling and supporting them.

Purpose

Academic research is often criticized for its lack of practical application and its inability to bridge the gap between theory and practice. For example, Daft and Lewin (1990, p. 1), as cited by Jacques (1992, p. 582), state:

“The popular and professional press is filled with discussions of major changes on the organizational landscape...yet, [these changes] seem far removed from academic research and they do not typically utilize the academic body of knowledge....It seems to us that organization studies have been a recurrent source of disappointment for practitioners and academics alike....Is the field of organization studies irrelevant? Organizations have become the dominant institution on the social landscape. Yet the body of knowledge published in academic journals has practically no audience in business or government.”

Following the recommendation put forth by Benbasat and Zmud (1999), this research study attempts to close this relevance gap by focusing on a contemporary problem raised by

industry professionals for which there has been little study to date. The principal goals of this research are threefold:

- 1) To seek understanding as to what criteria are important and how hotel executives evaluate and prioritize information technology investment options for global distribution systems and the channels that comprise them.
- 2) To heighten both industry and researcher awareness and thinking regarding the importance and impact of information technology, hotel global distribution systems, and a strategy that combines the two.
- 3) To build a foundation on which subsequent research can be based and a beacon which can guide future researchers in this line of inquiry.

The latter is necessary due to the void in the current bodies of knowledge. The content of this study should close this gap and increase the industry's understanding of global distribution systems, how they work, their strategic value, and the role information technology plays in supporting and extending their capabilities and market reach. The end product and findings of this research effort should be useful and valuable to both industry practitioners and scholarly researchers.

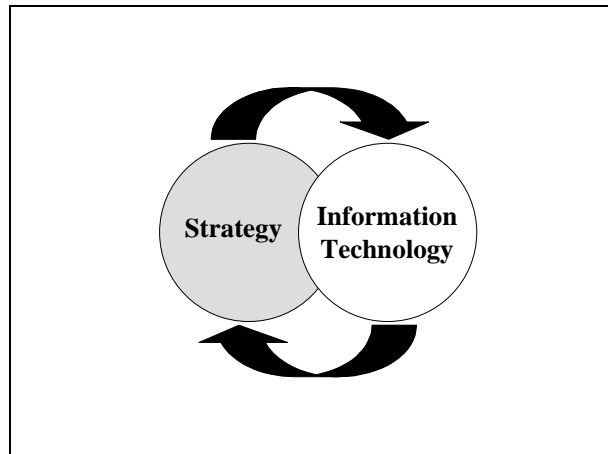
Problem Context

IT and business strategy are inseparable and must be well aligned to be effective (Gordon, 1999; Reich and Benbasat, 1996; Tapscott and Caston, 1993; Mahmood and Mann, 1993; Bacon, 1992; Kantrow, 1980; Benjamin et al., 1984). As Neo (1988, p. 191) opined, strategy begets IT and vice versa. This relationship is depicted in Figure 1-5. While this may seem to challenge conventional logic, the normative, unidirectional model no longer provides sufficient explanatory power. The process of achieving this strategic alignment is neither simple nor straightforward due to the lead-time and technical expertise typically required to develop and implement IT solutions (Weill and Broadbent, 1998). Moreover, the decisions regarding where and when to allocate resources to IT can be risky (Clemons and Weber, 1990). Consequently, Weill and Broadbent (1998) posit that this alignment can never fully be achieved. It is more of an ideal state that can only be expressed in terms of degrees of alignment.

While most executives today commonly recognize the advantages and strategic necessity of IT, it is generally believed that many hotel executives neither understand nor feel comfortable with IT (Boynton, Zmud, and Jacobs, 1994; Weill, 1991). Because they cannot comprehend the capabilities, potential, and organizational impact of IT and because there is little concrete evidence regarding the benefits of IT, executives tend to shy away from IT-related issues and opportunities when making policy decisions. In today's competitive and technologically oriented environment, no firm or high-ranking individual within a firm can or should choose to assume a passive role when it comes to IT. Also, because of the magnitude and scope of IT, it is unwise for top managers to delegate all decision-making authority related to IT to the

lower ranks or those with the technical expertise. The consequences of a hands-off approach could be cataclysmic. In such cases, important IT decisions may be inappropriately guided by technical elegance and not key business drivers (Weill and Broadbent, 1998).

Figure 1-5: IT-Strategy Alignment



With escalating costs and investment capital required to support today's complex hotel GDS infrastructure and with the number of distribution channels on the rise, hotel executives must employ sound logic when allocating corporate resources to ensure their decisions will bring value to their firm. No longer can hotel executives simply assume that channel presence is sufficient. Instead, they must take a more discriminating approach and understand the merits, booking potential, opportunities, and costs associated with participation in each channel. Only those demonstrating added value to the firm should be selected. In today's context, adding value implies that each decision made will result in a return for the firm and its stakeholders that is in excess of the cost of capital used to invest in that decision, the opportunity costs, and inflation and is commensurate with the level of risk that must be assumed for the given investment.

An effective hotel GDS and skilled channel management will be key success factors, provide competitive advantage, and influence firm profitability. Since the cost of hotel distribution can easily reach 25% to 30% of a room's daily rate, effective management is essential to containing overhead. Mismanagement of hotel distribution channels will only accelerate the profit margin erosion that results from agent commissions and transaction fees.

Despite years of impressive technological developments and significant investment in these advancements, quantitative, empirical evidence regarding their financial contributions to a firm's bottom line is sparse. The Standish Group International, a reputable market research firm, reports that there is a high degree of waste related to IT investment since the dollars spent on IT often yield no appreciable business return (Neelakantan, 1996). In even more discouraging news, O'Brien (1997) cites findings from a recent study by the

Computer Economics Report which reveal that three-quarters of all technology investments have no calculable business value. Although this estimate may seem high, there is sufficient evidence in the literature questioning the feasibility of calculating return on investment when it comes to IT, thereby adding credence to this claim. If this statement is remotely accurate, one must then ask the question “How do hotel executives analyze and evaluate various IT investment decisions?” Are the current practices, which are rooted in traditional financial procedures, without merit, and do they produce misleading cues?

Without question, absence of demonstrated financial returns is problematic for the hotel industry and should raise concerns regarding the methods hotel executives use when evaluating IT and resource allocation decisions related to the firm’s hotel GDS or its distribution channels. There is a rich literature base discussing the application of IT for competitive advantage, but what is lacking is attention given to the evaluation and prioritization processes. Apostolopoulos and Pramataris (1997) cite research by Hochstrasser and Griffiths (1991) that revealed that only 16% of the companies surveyed used specific methods of measuring benefits as criteria for evaluating IT investment decisions. In this same survey, an almost equal number of respondents (15%) indicated that their investment decisions were aimed at maintaining investment-level parity with their rivals based upon an assumption that the safest strategic posture was to follow the majority, not play a pioneering role. Results such as these underscore the void that exists in terms of suitable evaluation tools and in the understanding of any inherent differences that may exist in the approaches used for evaluating IT investments versus other types of investments which are subject to rigorous analysis (Apostolopoulos and Pramataris, 1997).

Loveman (1991) suggests that because business executives are unable to effectively measure IT costs and benefits, they cannot make informed decisions regarding information technology resources and investments—which, in turn, leads to misallocated resources and ineffective or unrealized benefits. Companies must have a clear view of how IT can fit in an organization, allocate resources, and invest according to this view. In his words:

“The inability to value information technology ‘products’ or to assess their associated costs has consistently led to poor investment decisions, unproductive use of people’s time, and in some cases, activities that actually erode rather than create value” (Loveman, 1991, p. 69).

Thus, there is a call for better tools and methods to evaluate IT investments, both before and after selection and implementation. These can contribute to the decision-making process and ultimately lead to better decisions and selection among alternative solutions.

A distribution strategy does not require participation in all channels but should be able to articulate rationale for participating in those that are chosen and for electing not to participate in others (Dombey, 1997). The rising costs make participation in all channels prohibitive. One of the best illustrations in the travel industry of strategic choices and resource allocations related to GDS is Southwest Airlines. In the airline industry, it is not uncommon for airlines to list their flights and availability in competitor systems. Just as in the hotel industry, these airlines pay a booking fee for each reservation booked in addition to on-going fees for

participation and flight listings. To reduce overhead, Southwest Airlines has consciously decided not to participate in all airline GDSs. Instead, the company participates only in SABRE and its own reservation system (Fairlie, 1994). Southwest is able to make this decision because it understands its customer base and knows how best to reach its targeted audience. Perhaps this is why Southwest Airlines remains one of the most profitable airlines in the industry. This is precisely the same kind of decision hotels and lodging companies must make—but only after customer booking habits, market share, and other variables are better understood.

Olsen, West, and Tse (1998) define overarching concept of strategy as the *consistent* allocation of resources to create a well-defined set of competitive methods to achieve a firm's goals and establish a competitive position. Technology strategy refers to a firm's plans, intentions, and policies regarding current and future use of IT, information, and "softer" IT-related issues such as integration with the firm and its employees (Brady, Cameron, Targett, and Beaumont, 1992). Porter (1985) defines technology strategy as a firm's approach to the development and use of technology. Because of the pervasive impact of technology on a firm's value chain, this strategy must be broad and far-reaching.

Porter (1985) suggests that technology strategy must include choices regarding the technologies in which a firm should invest, the firm's position with respect to the technologies selected (e.g., leader or follower), and decisions regarding when and how to acquire or license the technologies. A firm's IT strategy guides decisions related to its technological architecture, infrastructure, applications, and services in accordance with that firm's business strategy and objectives. Yet, in today's context of rapid change and in a marketplace that is inundated with new technology products and offerings (hardware, software, and services), hospitality leaders find it difficult and even daunting to effectively evaluate these technological advancements and assimilate them into their organization's strategy. As a result, they typically maintain short planning horizons. While it is clear they must be judicious as to their investments and select only those that will provide value to the firm, selecting and implementing those technologies are often difficult and risky tasks, since not all of the benefits will be tangible. Porter (1985) recommends concentrating on those technologies that will lead to the greatest sustainable impact on cost or product/service differentiation, and, subsequently bestow the greatest competitive advantage. Thus, when choosing among technologies in which to invest, hotel executives must base their decisions on a thorough understanding of each technological choice and its impact to the firm's value chain (Porter, 1985).

Units of Analysis

The units of analysis, the subjects of this research study, are the investment in technology within a hotel's global distribution system and the process used to evaluate IT investment decisions related to a firm's GDS. The context of this study is the hotel GDS in large, multinational hotel organizations, as viewed from a corporate perspective. Specifically, this study addresses the resource allocation process and choices made by corporate-level hotel

executives in the quest to ascertain (through the hotel GDS) the highest possible returns in their firm's cash flow per share, a profitability measure.

Research Questions

As the aforementioned discussion illustrates, the current bodies of knowledge contain many shortcomings with respect to hotel global distribution systems and the selection, development, and application of technology to them. This research represents a continuation of a stream of research devoted to establishing a literature base and better understanding regarding hotel global distribution channels. Connolly and Moore (1995) and Connolly, Olsen, and Moore (1997) set out to create a working knowledge and definition of hotel global distribution systems and the potential strategic value they hold. This study attempts to build on these works by addressing the strategic choices and investment decisions leading up to the development and implementation of information technology to support hotel global distribution systems and the distribution channels that comprise them.

As Loveman (1991) points out, one cannot meaningfully measure the value created by information technology. Models for appraising information technology simply do not exist. If this is the case, what are the criteria used by corporate-level hotel executives when they consider investing in information technology used to support global distribution systems? Conventional wisdom suggests that strategic decisions are based on rationality (Thompson, 1967). If this is true, there must be some defined criteria and evaluation methods used to select among alternatives. It is in these areas that this research effort makes its contribution.

The specific inquiry for this study is driven by four primary research questions, all of which contain embedded questions:

- 1) How do corporate-level hotel executives make investment decisions and establish IT priorities within the context of a hotel GDS? Answering the calls by Cline and Blatt (1998), Weill (1991), and industry practitioners, how do corporate-level hotel executives define capital allocation strategies that address information-based and knowledge-based investments, in this case a hotel GDS? How do executives evaluate and make IT investment decisions, strategic choices, and resource allocation decisions in support of their companies' competitive methods regarding hotel GDS and their distribution channels? How do firms define IT (i.e., what is included) for the purposes of investment decision-making? Is there a litmus test or set of well-defined conditions that must be met in order to accept or reject an IT investment or project? What evaluation techniques and methods do they employ? How is risk assessed? What is the planning horizon? How do they prioritize their options? What are the influencing factors and stimuli for the investments? What criteria are used, what conditions must be met before reaching a go/no-

go decision, and who within the organization maintains the ultimate decision authority?

- 2) What is the future outlook of hotel GDSs? How do corporate-level hotel executives forecast IT developments and technological change in the areas of GDS and distribution channels? What are the forces driving change, and what will the future look like in the hotel GDS arena? What will be the communications and information technology infrastructure of the future? What entity or entities will control the channels of distribution? How will hotels distribute their products and communicate with their guests while applying new technologies? What will be the most effective way for buying and selling one's way onto the information superhighway?
- 3) How is the success of IT investments in a hotel's GDS measured? How is the success of the investment decisions and strategic choices with respect to the company's GDS and distribution channels measured? How are IT investments managed and tracked? How are the IT investment decisions, resource allocations, and strategic alliances valued? What is the expected payback period? What techniques and criteria are employed, both before and after the decisions have been made?
- 4) How is the net worth of a hotel GDS calculated or determined? In light of the recent change in accounting rules and procedures requiring all IT investments to be capitalized, how will hotels value or appraise their GDSs to determine the net worth of these corporate assets? What methods will be used, and what criteria will be considered?

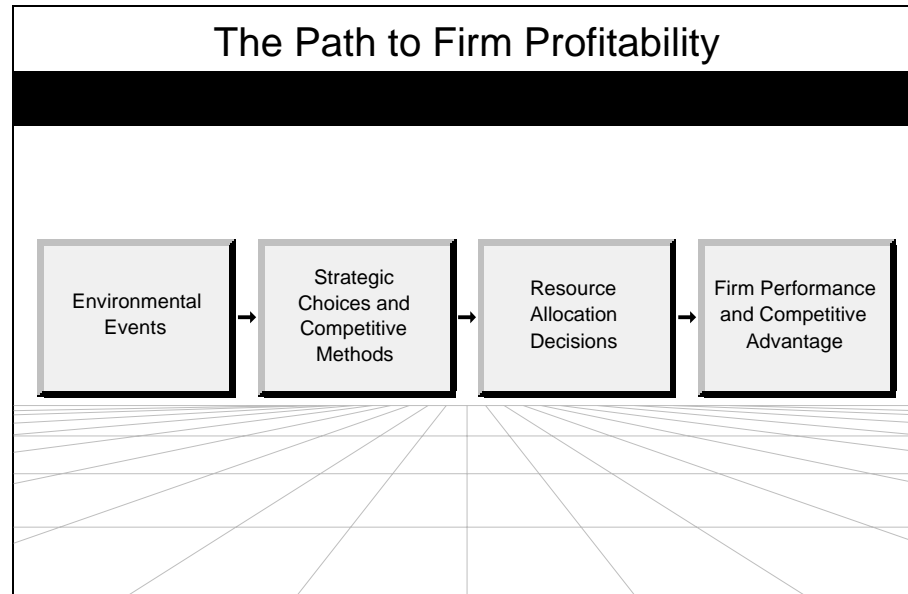
Theoretical Underpinnings

The theoretical underpinnings and empirical research on IT span multiple disciplines (Currie, 1995). Therefore, the study of IT or any related problem thereof requires the study of several bodies of literature. The present study is no different. It draws upon the many works, including those found in strategy, finance, organizational economics, organizational theory, service management, marketing, hospitality, and information technology. Its principal focus is on four bodies of literature: strategy, service management, hospitality, and IT, which underlies each of the other three. The supporting works will be discussed in more detail in Chapter Two.

The overarching theme and theoretical underpinning of this study is the co-alignment principle, which is depicted in Figure 1-6. Simply stated, the co-alignment principle suggests that if a firm understands the environmental events affecting its business and shaping the future of its industry, plans and develops its strategies so as to exploit these environmental opportunities and minimize any threats, and appropriately allocates and aligns its resources (e.g., people, capital, technology, etc.) through consistent investment to create product and service offerings (i.e., competitive methods), it will outperform industry players and receive

competitive advantage (Chandler, 1962; Thompson, 1967; Bourgeois, 1980; Venkatraman and Prescott, 1990; Venkatraman, Henderson, and Oldach, 1993; Murthy, 1994; Olsen et al., 1998). The ultimate measure of competitive advantage is firm profitability, which is often described in terms of cash flow per share.

Figure 1-6: The Co-Alignment Principle



Since technological change plays such an influential role in competition, being able to forecast technological developments, select those most appropriate for a firm, and implement them in such a way that cannot be easily imitated by competitors become important skills and critical success factors for all firms (Porter, 1985).

Research Design and Methodology

The research methodology is determined first by the research questions and second by the current state of knowledge reported in the literature (Field and Morse, 1991; Morse, 1994; Janesick, 1994). Despite the growing importance of information technology and global distribution systems in the hospitality industry, the literature covering these topics is relatively limited. Due to the contemporary nature of this study, there is little by way of precedence and tools to study the phenomenon in question using empirical, quantitative methods.

Myers (1997, p. 241) writes: “As the focus of information systems shifts from technological to managerial and organizational issues, qualitative research methods become increasingly useful.” Yin (1994) suggests that when research questions emphasize exploratory issues like how, when, or explanatory questions and when the research focus is on a contemporary problem as opposed to one of historical nature, application of the case study method is appropriate.

The case study method is a widely used and accepted research method in the field of IT, as demonstrated by Cho (1996) in the lodging industry; Clemons and Weber (1991) in the banking industry; Banker; Kauffman, and Morey (1990) in the fast food industry; Palmer (1988) in the tour operator arena; Copeland and McKenney (1988) in the airline industry; Clemons and Row (1988a, 1988b, 1991b) in financial management, drug manufacturing, and travel agencies; Neo (1988) in service firms; and Bourgeois and Eisenhardt (1988) in the microcomputer industry. Case studies spanning multiple industries to address firm investment in IT are presented by King and McAulay (1997), Nixon (1995), Brady et al. (1992), Farbey et al. (1992), and Weill and Olson (1989).

An exploratory study is a necessary first step in understanding any complex phenomenon. This study is no different in this regard. Moreover, the study of strategy and the application of IT require the evaluation of data and qualitative criteria that are usually not available in the literature. The aforementioned discussion illustrates the literary vacuity on this topic. Therefore, this study employs exploratory techniques associated with qualitative research aimed at quality and depth of evidence, rather than coverage, to unveil the factors surrounding IT and its strategic use in hotel global distribution channels. The research design and methodology will be discussed in more detail in Chapter Three.

Driving this study is the desire not simply to understand the current state but, more importantly, to forecast the future role and state of global distribution systems in the hospitality industry and to determine how best to invest in information technology to support them. For, in the words of Hamel and Prahalad (1994c, p. 64):

“The vital first step in competing for the future is the quest for industry foresight. This is the race to gain an understanding deeper than competitors, of the trends and discontinuities—technological, demographic, regulatory, or lifestyle—that can be used to transform industry boundaries and create new competitive space.

Industry foresight gives a company the potential to get to the future first and stake out a leadership position. It informs corporate direction and lets a company control the evolution of its industry and, thereby its own destiny. The trick is to see the future before it arrives.”

As Hamel and Prahalad (1994c) so eloquently articulate, many of today’s failures are a direct result of an organization’s failure or inability to forecast the future. They believe it is impossible for any company to succeed without a clear view of the opportunities and challenges lurking on the horizon that will shape the future.

In light of the aforementioned discussion, a qualitative approach was selected as the appropriate means of inquiry. The research employed a multiple case study design similar to that of Cho (1996), where three multinational lodging chains were the subjects of inquiry. Data collection techniques consisted of semi-structured interviews with senior executives from each company; analysis of company documents, web sites, and archival data; observations made during company site visits; and a comprehensive literature review. For data reduction and analysis, several techniques were used, including content and thematic analysis, matrix analysis, concept mapping, and summary tables. Use of three companies and multiple research methods (i.e., data collection and analysis techniques) allowed for a better, more complete understanding of hotel global distribution systems and the phenomenon in question as well as provided opportunities for triangulation, validation of results, and research validity (Denzin, 1978; Kerlinger, 1986; Patton, 1987; Eisenhardt, 1989; Janesick, 1994; Stake; 1994; Yin, 1994).

Contribution to the Literature

With the growing developments of the Internet, portable computing, cellular communications, and smart agent technology (sometimes called “knowbots” or just simply “bots”), the technology infrastructure supporting global distribution channels is clearly in a state of flux. During this transitional period, it is difficult for hotel executives to set strategy of any kind (e.g., corporate, business, IT, or investment) because they lack a clear vision of the future.

This study clarifies the future outlook on hotel GDS, models the current distribution channels for hotels, and identifies the underlying costs so that hoteliers can begin developing appropriate strategies for each channel (i.e., to establish a strong presence in those channels that are profitable and provide competitive advantage and exit those that are not profitable). This research also unveils the potential of new and emerging distribution channels such as the Internet so that hotels can begin adapting to new paradigms and subsequently position themselves for conducting business in the new millennium. Finally, this research dispels many of the myths that information technology cannot be used in hotels because of any adverse effect on personalized service.

Given the magnitude and scope of IT investments in general and GDS in particular, it is unclear why such an important topic has been overlooked. Hopefully, this research will serve as a catalyst for change and bring these issues into the fore. The contributions of this research study will provide corporate-level hotel executives with the relevant criteria for evaluating, prioritizing, and selecting IT investments related to their firms' GDS. It will provide important parameters for monitoring and evaluating capital investment to improve cash flow. Finally, it will provide an analytical framework and IT investment decision matrix hotel executives can use when considering between various alternatives related to their firm's GDS technology, strategy, and the distribution channels in which they participate.

Summary

The convergence of powerful computers, intelligent software, and high-speed, global telecommunications networks is creating a new climate for conducting business throughout the world. It is this same convergence that is redefining global distribution channels and consumer marketing. They are no longer limited to the simple constructs Emmer et al. (1993) and Schulz (1994) suggested earlier. Booking hotel accommodations can be a time-consuming and frustrating process for the consumer due, in part, to the many options available and the inherent weaknesses and inefficiencies in a hotel reservation system. With recent technological developments like the Internet, this is all changing. A GDS is becoming a complex web of networked systems that provide consumers with direct, convenient, seamless, and ubiquitous access to a hotel's room inventory, rates, and facility information.

The new source of competitive advantage will be based on intellect rather than assets and capital. While the latter two resources are necessary, they are no longer sufficient in a dynamic, high-tech world where the customer is king (i.e., more demanding, more informed, and value conscious). To survive and thrive in the long run, the hotel of the future will be a learning organization, one that must always reinvent itself to create value and provide the ultimate in individualized service. Knowledge will be the basis of competition in the future. The dichotomy between the "haves" and the "have-nots" will be exacerbated by the bipolarization between those who know and those who know not, in what could be categorized as the great digital divide. In other words, it is not sufficient to have the latest in tools and technology. In order to prosper, one must know how to effectively use these tools and technologies and exploit their capabilities in such a way that competitors cannot easily duplicate.

How a hotel company rises to these new challenges and how it reshapes its business model will be the topics of future discussion and research. Ultimately, the challenge will be to creatively implement new technologies to effectively and efficiently treat each consumer as an individual segment (i.e., providing a highly customized, unique experience) while simultaneously creating shareholder value. Information and communications technologies will drive these opportunities—but only if the "right" infrastructure is first established. What is right, of course, will be organization-dependent, but it is clear that the technology architecture in any organization must be flexible and capable of being upgraded to meet changing business needs and take advantage of newer technology innovations. To reach this state, a well-thought strategy must be developed; this can only be done if the events shaping the future are identified and understood. Hence, the need to focus on information technology and the resulting convergence is not only timely but also essential to the industry's future. The timing is now to begin this planning effort if the industry is to proactively manage the changes that will inevitably occur.

The future suggests that these technological developments will go beyond the traditional definition of global distribution systems that link hotel central reservation systems to airline reservation systems and travel agents. The new system will provide the seamless integration

of hotel information, room availability, rates and restrictions (yield management), guest profiles, and frequent traveler programs with information from other travel providers, local city attractions, credit card companies, etc. This connectivity is driving the GDS to become the cornerstone of a hotel's current and future information technology strategy.

The primary user interface will be through non-human, personal software agents interacting with one another to provide the guest with the best possible travel experience and the most advantageous price/value relationship, given his/her needs and preferences. These agents, representing both the purchaser of travel services/accommodations and the provider itself, will communicate through the Internet or its successor. Only after shopping the global inventory and scanning the information highway for a quality check, will a guest's software agent negotiate an acceptable price with that of the provider, such as a luxury or upscale hotel, and complete the purchase (i.e., reserve the accommodations). The guest will only have to be concerned with packing, traveling, and informing his/her software agent how he/she felt about the accommodations provided. The agent will subsequently update the traveler's profile with information useful for future travel and provide feedback on the information superhighway to benefit other travelers considering similar arrangements.

Hotel companies have unprecedented opportunities to reach out to current and potential customers around the world, but at the same time, these technological advances are removing control of the global inventory of hotel rooms, airline seats, rental cars, etc. from the owners of these assets and putting it in the hands of travelers and third-party service organizations who provide booking access to these accommodations. The risks facing hoteliers include the following:

- 1) Rising costs of distribution that will shrink contribution margins.
- 2) A greater number of rooms being sold by intermediaries or intermediary services.
- 3) More requests for significant room discounts by these third-party service providers who will become aggregators or travel wholesalers.

It is apparent that the rules of the game are changing. Current marketing practices will require revamping in order to deal with more informed travelers equipped with powerful tools to quickly shop all of their available options and prices. At issue will be how to sell to non-human entities. In preparing for the future, hotels must upgrade their information technology infrastructures to enable such integration with the external environment while allowing them to maintain rate integrity and set selling strategies.

Without question, GDSs are reshaping how travel arrangements are made, the control (perceived and actual) that travel providers have over their inventory, and the role of intermediaries in the selling process. The pace of change is accelerating, and the model for creating value in the next millennium will be drastically different from the traditional paradigm. Without critically rethinking core competencies, service delivery methods, and guest (customer) interactions, the industry will most certainly be overcome by these new technologies and the guests' calls to be treated as an individual versus part of a larger

segment. The implications of the preceding events for the hotel industry are many. The questions are “Have you studied your organization and prepared it for the changes that are about to occur? Are you ready yet?”

CHAPTER TWO: LITERATURE REVIEW

Introduction

The purpose of a literature review is to create awareness, understanding, and appreciation for the work that has preceded the current study. It expresses the present state of knowledge as it pertains to a given topic, in this case, investment in global distribution systems and their ensuing channels. The existing bodies of knowledge help to shed light on the problem at hand, giving valuable insight on how best to study it and what some of the limitations might be. They serve as the theoretical and practical foundation and pivot point for learning, growing, and developing a deeper understanding and knowledge base.

The theoretical underpinnings and empirical research on IT span multiple disciplines (Currie, 1995). Therefore, the study of IT or any related problem thereof requires the study of several bodies of literature. The present study is no different. It draws upon many works, including those found in strategy, finance, organizational economics, organizational theory, service management, marketing, hospitality, and information technology. Its principal focus is on four bodies of literature: strategy, service management, hospitality, and IT, which underlies each of the other three.

This study is to determine investment criteria and the ensuing decision-making process for hotel global distribution systems. The literature review presents three areas of emphasis. The first draws upon the field of strategic management. The overarching theme and theoretical underpinning of this study is the co-alignment principle. Simply stated, the co-alignment principle suggests that if a firm understands the environmental events affecting its business and shaping the future of its industry, plans and develops its strategies so as to exploit these environmental opportunities and minimize any threats, and appropriately allocates and aligns its resources (e.g., people, capital, technology, etc.) through consistent investment to create product and service offerings (i.e., competitive methods), it will outperform industry players and receive competitive advantage. The ultimate measure of competitive advantage is firm profitability, which is often described in terms of cash flow per share. This section also discusses various financial techniques (e.g., discounted cash flow analysis) which are often used when evaluated investment decisions in information technology projects and the limitations of these tools in the present-day context.

The next section presents an analysis of the service literature. In particular, the discussion centers on the dyadic relationship between the customer and the service provider. This section also analyzes the search proposition and the hotel booking process. The hotel GDS is the initial data entry point for all service transactions. Applying a systems theory perspective, the GDS becomes the cornerstone of hotel automation. It is the foremost data source on which all other transactions come to rely. In the present study, the service provider is a hotel organization or an agent acting on its behalf. When considered in full, this section

illustrates the possibilities of resegmenting customers based upon their service needs (i.e., level of information needed to be exchanged), comfort levels, experience, etc. so that the appropriate automation, tools, and channels of distribution can be created to service each of these distinct consumer groups. It is this type of segmentation that will lead to better value propositions for the customer (i.e., guest) and help build the appropriate databases so as to establish relationship management necessary when creating a segment of one.

The third area of study presents the present-day understanding of global distribution systems (GDSs) and the various entities and channels that comprise them. As business commerce becomes more digital and society becomes more networked, hotel organizations must increasingly rely on outside entities to assist in delivering one or more components of the service proposition. The new paradigm that results from this is a shift to transactional economics. Organizational economics, governance between networked entities, and transactional costs become increasingly significant to the competitiveness and long-term viability of a firm. This section defines the GDS construct, models the various paths and possibilities for the hotel booking transaction, and presents a model for creating value in the hotel of the future.

The synthesis of these bodies of literature is presented on the following pages. The reader will quickly grow to realize and appreciate the complexities of the hotel GDS phenomenon. It is perhaps one of the most complex business environments of any—given the volume of transactions, the speed in which they must be processed, the quantity and volatility of the data, the dynamics of the information exchange and the customer-service provider dyad, the uniqueness of every transaction, the number of entities involved, the sophisticated logic and algorithms used, and the tracking and billing of fees and costs.

The Co-Alignment Principle

A common underpinning in the field of strategic management is the co-alignment principle. This theory simply states that in order for a firm to be successful, it must be well-aligned with the forces driving change in its business environment; it must subsequently develop and invest in a portfolio of products and services that will capture and exploit these environmental opportunities, and it must *consistently* allocate resources to these products and services over time (Chandler, 1962; Thompson, 1967; Bourgeois, 1980; Venkatraman and Prescott, 1990; Venkatraman et al., 1993; Murthy, 1994; Olsen et al., 1998). In other words, if a firm can effectively identify opportunities and threats, develop the appropriate competitive methods, and apply firm resources (which include people, capital, and IT), financial performance will improve. This study addresses the allocation of firm resources related to IT.

There are multiple measures of performance that can be considered when determining the health of a company, its competitiveness, and its overall success in applying the co-alignment principle. Olsen et al. (1998) suggest that the best measure is cash flow per share, a measure of firm profitability. Their arguments supporting this metric state that while seeking a

balance between long-term and short-term earnings requirements, cash flow per share can 1) reflect the cash flows generated by investments in a complex and dynamic environment; 2) illustrate management's effectiveness with environmental scanning, choice of competitive methods, and resource allocations, and, therefore, its overall ability to compete; and 3) demonstrates how a business utilizes its assets to add value to the firm. Antonucci and Tucker (1998) also favor the use of cash flow over other accounting measures of profitability derived from the income statement because accounting practices sometimes mask cash flows with non-cash expenses (e.g., depreciation, amortization, and write-offs) to create gains or losses reported on a firm's income statement. While all of these authors favor the use of cash flow over other profitability measures, they do concede, however, that not all cash flows translate directly into earnings per share.

The co-alignment principle has been tested and upheld in the hospitality industry (Murthy, 1994). It is also supported by the IT literature (Clemons, 1986; Weill and Olson, 1989, Venkatraman and Prescott, 1990; Venkatraman et al., 1993; Kettinger et al., 1994). However, it is difficult to prove the causality between IT investment and firm performance since the costs and benefits generally occur in different time periods (Mahmood and Mann, 1993; Weill, 1991; Weill and Olson, 1989). The research on this topic is clearly mixed. Some studies suggest a positive relationship exists between IT and firm performance; others suggest a negative relationship, and still others are inconclusive (Weill, 1991).

For example, research by Brynjolfsson and Hitt (1996) and Hitt and Brynjolfsson (1996) provides only partial support for IT and the co-alignment principle.⁶ While this research, encompassing 370 *Fortune* 500 firms, substantiates positive correlation between technology investments, increased productivity, and consumer value, the authors were unable to correlate these benefits to supranormal business profitability due to high standard errors of the measures used. Mahmood and Mann (1993) observed similar findings in their study of the 100 firms included in the *ComputerWorld* Premier 100 list. Some explanations include incidents of unproductive investments, confounding factors, hidden costs, unreliable data, measurement error, long lag times between project implementation and realization of benefits, lack of a common definition of what constitutes or is included in an IT investment, lack of standards in how IT investments are treated from an accounting perspective, and what the authors termed "blunt" instruments. The effects are also masked by cross-sectional data and inconsistent terminology (Weill, 1991).

From these studies, it is clear that multivariate techniques with a multidimensional and a multidisciplinary lens are necessary to measure the true impact of IT on a firm in what Weill (1991, p. 7) terms "a circular and complex relationship." Still it may very well be impossible to determine causal links, requiring researchers and practitioners to settle for and rely on correlation instead. It is also important to note that while Hitt and Brynjolfsson's findings suggest that companies with larger IT budgets and more computer capital will demonstrate higher productivity levels than others in the same industry with less computer capital, IT spending alone is not a sufficient determinant of firm success. These authors

⁶See Mahmood and Mann (1993) for a more complete review of the literature investigating the relationship between IT investment and firm performance.

advise managers seeking to gain higher profits through IT to look beyond productivity and consider how IT impacts other strategic aspects such as customer service, product position, and quality. They also conclude that sound technology strategy and a customer-focused orientation are determinants of value derived from IT. The positive findings from Brynjolfsson and Hitt's work outweigh the limitations and provide support to uphold the theory encapsulated in the co-alignment principle. Hence, with no research able to disprove the relationships depicted by the co-alignment principle, the theory still holds.

Rising customer and employee expectations, increased capital investment required to support the information technologies necessary to market and operate today's hotel, and growing pressure from hotel owners and investors to achieve adequate returns on invested resources make the hospitality industry a difficult, challenging, and often hostile environment for conducting business. The importance of using the co-alignment principle as the underpinning of this research is supported by the present-day state of the industry's body of knowledge, which generally concentrates on reporting short-term results and one-time successes versus practices that require significant up-front investment that will only yield long-term, not immediate, payoffs. Leading contemporary management theorists Hamel and Prahalad (1994a) posit that tomorrow's leading firms will be those that can best predict the future—that is anticipate customer needs before they are vocalized, develop products and services to meet these new needs, and alter industry structure before their competitors. This suggests that the basis of competition will be based primarily on a future orientation, not one based upon the past, and, therefore, will focus more on innovation rather than duplication.

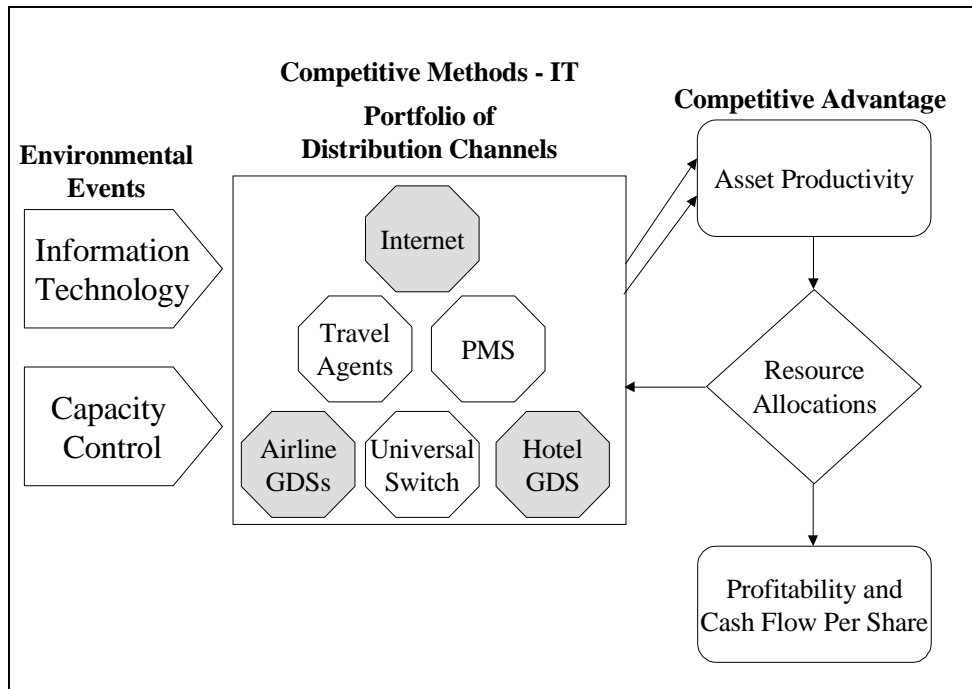
The co-alignment principle is depicted in Figure 2-1. The primary environmental events driving hotel global distribution systems are information technology and capacity control (Olsen, 1996). These factors are influencing the portfolio of distribution channels to which a hotel organization subscribes. Channels include but are not limited to airline GDSs, universal switches, hotel GDSs (including reservation call centers), travel agents, property management systems, and the Internet.

The principal competitive method proposed here is the application of information technology. It is important to note that IT itself is seldom the source of competitive advantage since it can be easily acquired and copied. Rather, it is how IT is implemented and used within a firm that leads to competitive advantage. The specific competitive advantages derived will be based on how a firm chooses to allocate its resources to implement information technology, its overall effectiveness in doing so (e.g., its ability to cost-effectively harness the capabilities provided by the information technology tools and applications), and, of course, the portfolio of distribution channels itself. Hence, information technology, coupled with how a company implements and manages these channels will serve as competitive methods leading to advantages or disadvantages in the marketplace. Based on the productivity and potential of each asset or distribution channel, hotels will determine how best to allocate resources in efforts to drive firm profitability and market share, the ultimate measures of competitive advantage.

From an accounting perspective, there are two strategies for enhancing bottom-line performance: 1) drive revenue or 2) reduce overhead. When considering global distribution

channels, the potential exists to attack this problem on both fronts simultaneously. The goal is to drive revenue by expanding market share while simultaneously cutting costs through better channel management, lower transaction costs, and reduced fixed overhead. Companies that deliver superior services and more services without increasing their operational overhead or transaction processing costs can achieve competitive advantage (Quinn, 1988). Services, as defined by Mathe and Dagi (1996, p. 450), produce value through information, saved time, desired psychological states or experiences, and/or changes in the physical attributes or property. According to Collier (1983) automation in the hospitality industry offers the potential to improve service quality, expedite service delivery, minimize operating costs, increase capacity utilization, and reduce labor requirements. Studies have demonstrated the value of automation, particularly when the IT initiatives are driven by customer-centric needs and a well-defined strategy (Brynjolfsson and Hitt, 1996; Hitt and Brynjolfsson, 1996). Only recently has the hotel industry begun to realize many of these benefits and consider the potential impact of information technology in the area of guest services.

Figure 2-1: Applying the Co-Alignment Principle



The service-profit chain (Heskett et al., 1994) is a theoretical model suggesting that service excellence can be achieved by providing the proper tools and developing procedures to ensure internal service quality. IT is one important method for providing employees with the tools necessary to perform their job responsibilities and for systematizing organizational policies and procedures. This, in turn, leads to employee satisfaction, employee loyalty, and service value within the organization. Finally, high service value leads to customer

satisfaction and customer loyalty which, in turn, drive market share and firm profitability (Bhote, 1995; Rust, Zahorik, and Keiningham, 1995).

Assuming that the linkages between customer satisfaction, loyalty, market share and profitability are correct, one can focus on the linkage between IT and the technical core (Thompson, 1967). Various methods can be used to test the implications of IT to better understand improvements and repercussions within the service delivery process in terms of reliability (accuracy) of the core service, assurance, etc. and the resulting impact on customer satisfaction. Such techniques include SERVQUAL (Zeithaml et al., 1990), SERVPERF (Cronin and Taylor, 1992; Teas, 1993), and/or the critical incident technique (Bitner et al., 1990; Keaveney, 1995).

Technology Inroads in the Hotel Industry

Increased attention on information technology has stemmed largely as a result of market demands (Baumann, 1997). Previously, hotel executives resisted the applications of technology for fear of alienating their guests. The general belief was that one cannot automate a service without jeopardizing the personalization of that service (Geller, 1984). Further hampering the implementation of information technology were management's lack of understanding of technology (i.e., its applications and capabilities) and the uncertainty surrounding the effectiveness of an organization's investment in information technology (Andersen Consulting and American Hotel & Motel Association, 1989). Today, however, as the industry prepares to embrace the new millennium, these concerns are no longer valid. Information technology clearly represents the most significant competitive method in the hospitality industry throughout the 1990s and beyond (Olsen, 1996; Hensdill, 1998; Cline and Blatt, 1998), and it is the dominant force driving global competition. As Porter (1985), Quinn (1988), Burrus (1993), D'Aveni (1994), and others have astutely observed, information technology undermines traditional forms of competition, strategic management, organizational structure, and economic policy-making. The resulting environment is one of hypercompetition, where shorter transaction times, non-traditional competitors, volatility, surprise, and new alliances are the norm.

The foremost forces driving technology applications in the hospitality industry are the need to enhance the quality of service related to the guest stay and the desire to improve operating efficiency (Andersen Consulting and American Hotel and Motel Association, 1989). According to a poll conducted by *The Wall Street Journal* and Red Lion Hotels, frequent travelers are demanding that hotels make better use of technology to lessen the problems they experience related to travel (Watkins, 1990). As Hansen and Owen (1995, p. 1) note:

“The debate over high-tech or ‘high-touch’ is largely a thing of the past in the hospitality industry as emerging technologies drive unprecedented change in the way hotels operate and serve customers. It is clear that investments in technologies can generate greatly improved operating efficiencies, higher hotel revenues and enhanced guest services.”

Joseph Giacomponello, President and CEO of The Leading Hotels of the World, sums it up best when he refers to one of his organization's most significant challenges as the "timely and necessary capital investment" in the company's central reservations and communications system called ResSTAR ("Five Minutes With," 1997). Driving this investment are the need for increased capacity to handle growing volumes of reservations and the need for seamless integration between each hotel's property management system and the company's central reservation system ResSTAR ("Five Minutes With," 1997).

The hotel industry is getting the message that it needs to upgrade its information technology and is finding that automation can enhance the overall guest experience (Jesitus, 1996). The focus today is on integrating versus simply interfacing hotel applications that were designed to operate on different hardware platforms and operating systems (Sullivan, 1997).

Hoteliers are recognizing the value of information technology because of its essentialness in growing market share and in responding to customer needs in a timely fashion. Spending on information technology by the industry is on the rise and becoming competitive with other industries. Each year, *InformationWeek* sponsors a study of the top 500 organizations with respect to information technology usage and spending. The 1996 study (Needle, 1996) represented the first time that the hotel industry's spending levels were significant enough to see inclusion in the study. In fact, that year's study included three hotel companies: Carlson Companies (ranked 185 with IT expenditures accounting for 4.1% of revenues), Marriott International (ranked 198 with IT expenditures accounting for 1.6% of revenues), and Hilton Hotels (ranked 222 with IT expenditures accounting for 1.2% of revenues). On average, each company spends in excess of \$88.3 million (US) on information technology.

Competitive Advantage from IT

The literature presents great debate on the topics of competitive advantage and the relationship between technology and sustainable competitive advantage. Porter (1985) writes that in order for a technology to influence competition, it must significantly affect a firm's competitive advantage or industry structure. The contemporary press frequently cites global distribution channels as one of the most significant sources of competitive advantage because of their ability to affect a firm's positioning and alter industry structure (e.g., Davis, 1987; D'Aveni, 1994; Hamel and Prahalad, 1994a; Tapscott, 1996; Morrison, 1996). Distribution is changing as a result of new consumers, technology, and a global orientation, with power shifting to those who own the customer (Morrison, 1996; Cline and Blatt, 1998). Traditional sources of competitive advantage come from gaining leadership positions in one or more of four arenas: price and quality, timing and know-how, stronghold creation/invasion, and deep pockets (D'Aveni, 1994), but in today's competitive and dynamic marketplace, advantages will come to those who manage the cost/revenue relationship (Davis, 1987). Mathe and Dagi (1996) suggest competitive advantage will come to those who wisely choose and effectively implement information technologies to leverage time and resources (human and capital).

In the hotel industry, competitive advantage from global distribution systems has come from a number of factors. Traditional views of competitive advantage are based on Porter's (1980, 1985) work: his *Five Forces* model, value chain analysis, and generic strategies. IT provides competitive advantage if it enables a firm to either reduce its cost structure or differentiate its products and services. Competitive advantage results when a firm gains an advantage (typically in the form of economic rents, increased market share, or information asymmetries) over its competitors by exploiting its strengths relative to those of its competitors (Ohmae, 1992). In this context, competitive advantage from technology results when the technology itself helps a firm in achieving economies of scale, reducing costs, differentiating its products/services, creating barriers to entry, building switching costs (binding the consumer), changing the basis of competition, adding customer value, altering the balance of power with suppliers, providing first-mover effects, or generating new products (see also Applegate et al., 1996; Hitt and Brynjolfsson, 1996; D'Aveni, 1994; Bakos and Treacy, 1986; Clemons and Kimbrough, 1986; Porter and Millar, 1985; Cash and Konsynski, 1985; McFarlan, 1984; Ives and Learmonth, 1984; Parsons, 1983).

Porter (1985, p. 171-172) suggests four tests of desirable technological change:

- 1) The technological change lowers costs or enhances differentiation and provides a sustainable (i.e., inimitable) technological advantage.
- 2) The technological change shifts cost or uniqueness drivers in favor of a firm.
- 3) Pioneering the technological change translates into first-mover advantages besides those inherent in the technology itself.
- 4) The technological change improves overall industry structure.

Hopper (1990) suggests, however, that these philosophies for gaining sustainable competitive advantage through information technology are becoming less valid over time, and once the competitive advantage is lost, the industry's sophistication regarding IT becomes greater. This, in turn, raises the costs of doing business and the stakes of competition for the entire industry (Weill, 1991). Alternatively, Hopper (1990) recommends that the focus shift to *how* the information technology is used, rather than on the tools themselves. More specifically, competitive advantage will be derived from the information collected and shared throughout the organization. Technology can always be purchased, yet this is not ordinarily the case when referring to knowledge (Copeland and McKenney, 1988). Therefore, competitive advantage will be a function of the ability of a firm's workforce to creatively exploit the capabilities of information technology to create new products and services that sell well; it will not be derived from the technologies themselves, since corporations today essentially have the same information technology, applications, and networking capabilities (Zuboff, 1988). In essence, IT must create structural differences if it is to provide sustainable competitive advantage (Porter, 1985). These structural differences come in the form of 1) innovations that result from a firm's ability to effectively leverage its unique resources, 2) competitive asymmetry or differences between firms as a result of their unique resources, and 3) the ability to preempt competitive responses and thereby maintain technological

superiority (Cho, 1996; Segars and Grover, 1995; Clemons and Row, 1991a; and Feeny and Ives, 1990).

Without question, the information technology requirements of today's marketplace are raising the level of investment required to compete successfully. In many cases, the implementation of information technology becomes one of strategic necessity (or survival) rather than one of competitive advantage (Clemons, 1991; Clemons and Weber, 1990). Nevertheless, this shift in no way lessens the importance of actively pursuing investments in information technology to gain market or cost advantages, to introduce new products or services, or to differentiate product/service offerings from others in the marketplace (Adcock, Helms, and Jih, 1993). The focus must be proactive rather than reactive, strategic versus support-oriented. Consequently, the basis of competition will shift from an asset base to an intellectual base. Increasingly, competitive advantage derived from information technology will occur only when the information technology improves an organization's primary business functions, creates value-adding experiences that enhance customer service, and focuses on changing demand patterns and use (Adcock et al., 1993).

As Copeland and McKenney (1988) opined, economies of scale and experience (i.e., the learning curve phenomenon) are important but insufficient in establishing long-term success and competitive advantage; management foresight and attitudes also play vital roles and are necessary to building lasting advantages. Hamel and Prahalad (1994b) suggest that gaining competitive advantage is the direct result of being able to see opportunities that go unnoticed by others or to exploit opportunities unavailable to others as the result of distinctive capabilities and competencies.

Resource-Based View of the Firm

Because of the commodity-like nature of information technology, Cho (1996) presents an alternative view of competitive advantage grounded in theory pertaining to the resource-based view of the firm as studied by Clemons and Row (1991a) and Mata, Fuerst, and Barney (1995). Using this framework, a company achieves competitive advantage through the culmination and convergence of a series of events, resources, experiences, and underlying management processes. Alternatively stated, competitive advantage is the result of not only how a firm competes (or plays the game) but also the assets it has in which to play or compete. There is no one contributing factor but a series of ingredients or idiosyncratic resources, that when coupled, provide a competitive edge in the marketplace. Plimpton (1990) terms this hidden competitive edge as the "X Factor." For many organizations, the integration of software applications and information technology with the organizational structure provides the source of competitive advantage (Adcock et al., 1993). Because of its tacit nature, the competitive advantage and its contributing factors are difficult to identify and, therefore, hard to duplicate. The resulting competitive advantage can then be sustained for as long as it remains inimitable and not obsolete, a period that is becoming shorter all the time in today's hypercompetitive marketplace.

Deriving Competitive Advantage from the GDS

In the hospitality industry, a GDS can raise the complexity of the environment as a result of expensive systems, negotiated volume rates for reservation transactions, and alliances with other travel providers/systems (Crichton and Edgar, 1995). This complexity, in turn, can deter or discourage new entrants from joining the marketplace because they lack the technical savvy, resources, or ability to compete at the same level as existing players. Ironically, while a GDS complicates the supplier environment, it simplifies the buyer environment by providing easier access to more and better information (Crichton and Edgar, 1995). Thus, one can surmise that success derived from a GDS comes as a result of its functionality, connectivity, speed, reliability, flexibility, and cost of operation in addition to a hotel's (or chain's) knowledge and ability to effectively implement and use its GDS. As Palmer (1988, p. 26) writes:

“Pricing strategies will always be a major determining factor, but below the surface the battles in the travel business are being fought with a more subtle weapon, information technology.”

The following paragraphs present examples of just how information technology is becoming the competitive weapon that Palmer suggests within the hospitality industry.

Economies-of-scale has been among the most significant sources of competitive advantage derived from global distribution systems. Building global distribution systems is a costly, time-consuming, and difficult venture. It requires great expertise, both technical and operational. Not all companies have the resources, expertise, and wherewithal to develop a global distribution system. Traditionally, the costs have exceeded the reach of many organizations. In chains and affiliate organizations that provide reservation systems technology and services to their member hotels, the incremental cost to add new hotels is disproportional to the core investment. As such, the initial investment and fixed costs can be allocated over a wider base, thereby providing greater economic efficiencies. This efficiency appeals to franchisees that seek access to global distribution channels but lack the capital and expertise to develop their own. Efficiencies and economies of scale lead to lower operating costs and transaction fees. Hence, a GDS is a primary selection criterion for companies interested in affiliating with a franchisor or a management firm. As the franchise network and number of hotels under a single umbrella grow, so do market penetration and market share. Size then becomes an important factor that can be leveraged to gain additional economies and clout with external entities.

Another source of competitive advantage comes from the functionality of the global distribution system, its links to external systems, and its flexibility to adapt to an ever-changing business environment. For the hospitality industry in particular, this means having the ability to control inventory and rates (including booking rules, restrictions, and selling strategies), distribute this information seamlessly and in real-time to a multitude of access points (e.g., travel agents, airline GDSs, reservation call centers, sister properties or products, other member hotels, etc.), and generate instant confirmations continues to separate the

capabilities of competing hotels. Access and links to external systems extends the reach of the hotel global distribution system, thereby attracting a broader audience from all over the world.

Functional advantages also include ease of use and the GDSs role in supporting the selling process (i.e., the conversion of inquiries to bookings at the best possible rates). These advantages are typically measured in terms of the number of room-nights or revenue generated by the GDS, occupancy, REVPAR (revenue per available room), and REVPOR (revenue per occupied room). For an example of a temporary competitive advantage resulting from GDS functionality, one can turn to Marriott. In the early part of this decade when the industry was in recession, Marriott turned to deep discounting as a means to increase occupancy. Borrowing pricing strategies from the airline industry, Marriott created a 21-day advance purchase promotion. In order to receive these low rates, a guest was required to meet certain conditions and comply with certain rules or restrictions (also called “fences”) (Hanks, Noland, and Cross, 1992). In order to enforce these fences, Marriott’s reservation system (MARSHA) needed to contain sophisticated functionality to manage room inventory and monitor customer purchase patterns. Since many competing chains lacked similar functionality at the time, they had difficulty in copying Marriott’s promotion. Thus, Marriott enjoyed a competitive advantage until such time that other chains could modify their reservations systems to accommodate the same type of practice.

The final consideration with respect to functionality is flexibility. GDSs must be able to effectively adapt to changing market needs at a moment’s notice. Cycle times are too short to tolerate long lead times. Because of the systemic nature of a GDS environment, a change in one area (which could be either functional or technical) will most likely constitute a domino affect. For example, some luxury hotels are contemplating the elimination of defined check-in and check-out times in favor of greater flexibility to offer greater convenience to their guests. This enables them to accommodate guests with atypical schedules and early morning arrivals stemming from an increase in overnight travel. These hotels are experimenting with a 24-hour rental, with no extra fees for an early registration or a late departure (“Luxury Hotels,” 1997). This will undoubtedly require major enhancements to the central reservation system, the yield management system, and the property management system as well as to the interfaces between these systems and each of the distribution channels. If implemented on a wider scale, these systems will require modification to account for the redefinition of the concept of time or room rental period and to allow for advanced room blocking so as to ensure room availability (of the room type requested) upon a guest’s arrival. Because offering an early morning check-in may preclude a hotel from selling a room the night before, the appropriate checks and balances will need to be developed and incorporated in each of the major systems comprising the hotel’s GDS. This will necessitate greater inventory management capability and more sophisticated yield algorithms to ensure that not only the guest’s needs and preferences are met but also that the hotel can optimize its revenue potential. This example is just one of many that could be used to illustrate the need for flexibility in design and programmability of the information systems and interfaces comprising the GDS network. In a hypercompetitive environment, changes like these will become more common and more frequent. Like in the Marriott example

previously cited, company's that can capitalize on these functional advantages can gain competitive advantage so long as other firms cannot easily copy or acquire the functionality.

A third source of competitive advantage is less tangible. It relates to the accuracy of the information and the hotel's ability to track the guest. From a guest's perspective, a hotel's ability to meet his/her expectations and provide the correct room type, features, amenities, and services requested at the time of reservation distinguishes it from its competitors. Regardless of what channels are used to book a reservation, each guest should find convenience, hassle-free service, and reliable information, and the distribution channel should convey a sense of confidence to the guest that the information being shared is indeed accurate and current and that all of his/her requests for services (i.e., location, room type, features, amenities, etc.) will be honored upon arrival. This confidence and convenience, in turn, builds guest loyalty. From the hotel's perspective, tracking the guest plays an important role in guest recognition and delivering customized services. Being able to mine the reservations database will be a new source of value and advantage.

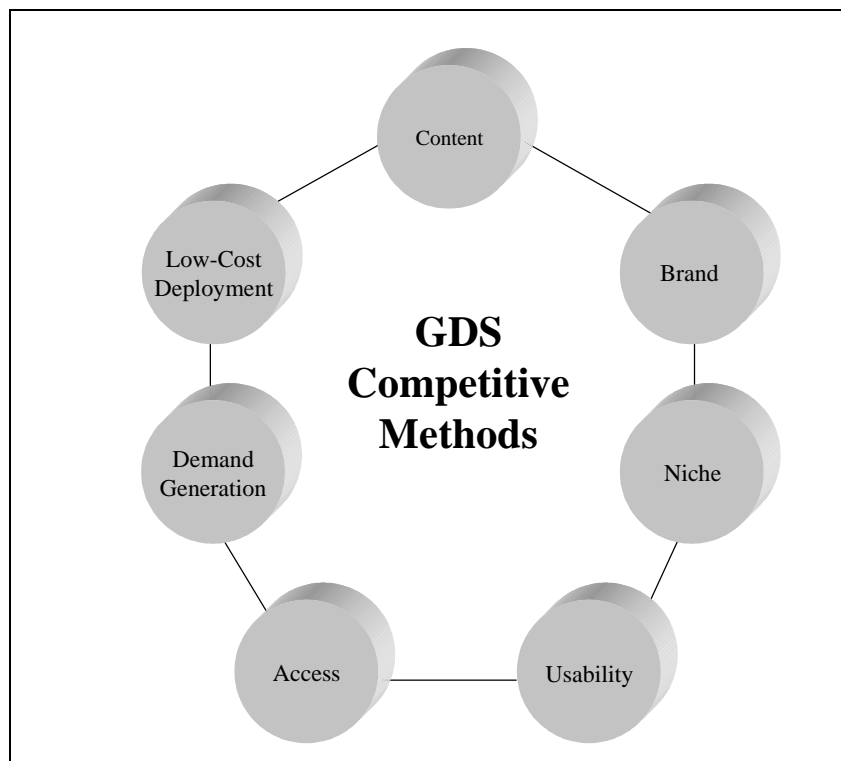
Another form of competitive advantage comes as the result of proprietary technologies or patents, which create barriers to entry or duplicate capabilities. Patents are common throughout the software industry, although they present challenges since they represent intellectual capital. Their presence in hotel global distribution systems is less common. Hyatt Hotels and Radisson Hotels are two companies that currently enjoy patents for functional features contained in their global distribution systems. Hyatt (U.S. Patent 5,404,291) patented an inventory control process and revenue maximization routine used by its SPIRIT CRS. Radisson's patent (U.S. Patent 5,483,444) protects the company's innovative "Look to Book" program and "World of Winners" sweepstakes program, which provide incentives to travel agents and others who provide electronic bookings at Radisson hotels. Under the "Look to Book" program, agents are awarded points or credits, which can later be redeemed for prizes, for each reservation booked. The "World of Winners" sweepstakes program randomly provides prizes or rewards to booking agents. The technology implemented by Radisson administers this program over a diverse network, where multiple computer systems and travel agencies are involved.

While these sources of competitive advantage continue to remain viable, they are not sufficient in today's hypercompetitive world, especially since hotel products are becoming more commodity-like. In the future, as the concept of branding erodes, hotels will need to find new sources of competitive advantage. Competitive advantage from technology may be short-lived when measured by the traditional means since technology has become more affordable, more standardized, and more easily copied. What once only the big chains could afford is now accessible by small chains and independents, albeit at slightly higher costs. Deep pockets, know-how, etc. are not enough to ensure lasting competitive advantage. That is why D'Aveni (1994) suggests companies must destroy their own advantages (i.e., creative destruction) before their competitors do and attack the competition from multiple fronts (i.e., sequential thrusts).

Competitive Methods

Tapscott (1996) discusses the convergence of content, computing, and communications and how these three entities will drive the new economy based on speed, connectivity, and knowledge creation. Interactive, multimedia is at the heart of this convergence. Combining these factors with other business drivers, one can predict that competitive advantage (i.e., building and maintaining a loyal customer following) through distribution systems will come in the following forms, as depicted in Figure 2-2.

Figure 2-2: Sources of Competitive Advantage—Becoming the Supplier of Choice



- Low-cost deployment, management, and operation of distribution channels. Since the technology required to support the infrastructure of a comprehensive global distribution system is generally available, all hotels essentially have access to the same tools and channels. What will set them apart from one another is the cost to implement and subsequently manage the requisite technologies. Davis (1987) cites distribution costs for service businesses falling in the range of 45% to 80% of operating costs. Anything that companies can do to reduce and control these costs can lead to an economic advantage. Alternatively stated, those hotels that can control and reduce their overhead can gain a cost leadership position over their competitors, which, in turn, can either lead to savings passed on to their customers or to higher premiums and profit margins.

- Access. Access must be available 24 hours per day, seven days a week and offer the ultimate in user convenience. Access provides advantages in several forms. First, there is access to existing and potential markets. By gaining access to a broader audience, a hotel or hotel company can improve its market penetration and hence its market share. The second form of access relates to access to information and existing systems. Because the information regarding rates and availability is time-sensitive, dynamic, and perishable, a hotel or hotel company must ensure that the information it disseminates through each channel to its customers is current, accurate, and reliable. Most importantly, the customer and the channel operator (e.g., travel agent) must trust the information provided. Finally, access relates to having a presence in whatever channels customers use to book hotel accommodations. Failure to have a product displayed in a given system or on a given channel results in lost bookings. The caveat, though, is to select those channels that are cost-effective and yield a sizeable market. Having a presence in a given system or channel may not be effective if it only generates a small volume of inquiries or bookings. Each hotel or hotel chain must evaluate these decisions for themselves.
- Brand. The branding of distribution channels will increase recognition, loyalty, consumer confidence, and trust. For example, options like Travelocity and Expedia have a high degree of consumer respect because of the support and backing provided by American Airlines and Microsoft, respectively. In other cases, brand will refer directly to the hotel supplier of choice (i.e., a guest already has a particular hotel or hotel chain in mind and will seek out the company's home page). While some participants of *Visioning Workshop* sessions sponsored by the International Hotel and Restaurant Association foresee the demise of branding as products and services become more commodity-like, branding will, nevertheless, provide consumers with a sense of confidence and security, particularly as new technologies and booking techniques take shape.
- Content. The availability of current, comprehensive information to help consumers in conducting their research on one or more destinations and in booking their accommodations will play an important role in attracting consumers. More importantly will be the ability for a consumer to satisfy all of his/her needs in one location at a single sitting (i.e., the one-stop shopping model). Finally, combining informational content with transaction selling will increase a company's chances of success. It is not enough to have a customer bookmark a web site. The content needs to be compelling enough to warrant and entice multiple return visits. This is one reason why so many web sites are offering news, articles, discussion groups, and community. They all help build loyal followings.
- Niche. Serving niche markets has long been recognized as a source of differentiation and, therefore, competitive advantage (Porter, 1980, 1985). This strategy will also hold true with respect to competing on the Internet, especially as emphasis grows on building, marketing, and maintaining a "segment of one." This involves customizing home pages based on individual needs, interests, nationality, passed transactions, etc. Segmenting the marketplace to service particular needs will help differentiate many of the players, especially those that are not household names like Microsoft's

Expedia, and SABRE Interactive's Travelocity. Example niches could be discount-only fares (for the low cost provider) or specialized markets (e.g., ecotourism, senior citizens, gay/lesbian travel, Asia-Pacific, South America, etc.).

- Usability. Usability refers not only to getting the desired information and answers to questions or completing the booking transaction but also to several characteristics that affect a user's overall impression of a particular channel. If done correctly and effectively, these factors can contribute to consumer loyalty. These characteristics include overall accessibility, service, ease of use, convenience, speed, completeness of information, personalization, accuracy, and reliability. The latter two factors will build consumer confidence and trust. Consumers who can easily navigate a system, book accommodations, and receive immediate confirmation while getting some personalized attention based on a travel profile will have a greater degree of confidence that his/her requirements will be met than if the system is unstable, sluggish, and unable to provide immediate confirmation. Graphics, photographs, and movies are important for visual appeal. However, they can slow down the process of accessing the information and services that provide the channel's core utility. Therefore, discretion must be used in balancing the number of graphics and images with the content and utility of the channel.
- Demand Generation. The true test of competitiveness of a global distribution system or a particular distribution channel will be its ability to generate *new* room-nights, increased room revenue, and market premiums. Conversion rates and yield will play a vital role in determining the potential of a global distribution system or a particular distribution channel.

Establishing IT Investment Priorities

With the role of IT changing from one of support or utility to one of strategic importance, the evaluation and decision-making process regarding which projects to accept and which ones to reject become more perplexing. There is no uniform definition of what constitutes an IT investment and whether or not a project is of a capital nature (Weill and Olson, 1989; Weill, 1991; Bacon, 1992). Lack of a common definition has contributed to the difficulties in prior research addressing IT investment and its impact on firm performance.

Weill (1991) and Weill and Olson (1989) suggest that the definition be as broad as possible to encompass all IT-related expenditures, including people, training, documentation, consulting, external services, equipment, software, networks, and communications. For the purposes of this research, an investment in IT can be defined as any resources (including people, training, and equipment) employed in the acquisition and deployment of hardware, software, network facilities, and services or the undertaking of a systems development project, all of which can expand the possibilities and capabilities of an organization's information systems and create long-term benefits (Bacon, 1992; Apostolopoulos and Pramataris, 1997).

Most of the literature presented thus far focuses on outcomes related to IT. In terms of process, there is a significant body of knowledge related to IT planning⁷ but comparatively little that addresses IT investment evaluation and decision-making in a strategic context for the type of acquisitions described by Bacon (1992) and Apostolopoulos and Pramataris (1997). The hospitality literature is almost completely silent on these issues, with the exception of Moore and Selling (1977). What follows is a summary of what little is known and the works that contribute to the current understanding of the IT investment process.

On the surface, IT investment decisions seem straightforward. All projects should be accepted that add value to the firm. In reality, however, the process is much more complex due to the difficulties in defining and measuring value and the expected and actual contributions provided by IT. It does not help that in many firms, spending on IT is viewed as discretionary and, therefore, among the first to be reduced during times of capital rationing (Antonucci and Tucker, 1998). The decision-making process is further complicated by subsequent issues such as build versus buy (or hybrid) decisions for software and lease versus buy decisions for hardware, which add to the dimensions of the analysis. Investment in IT is important to nearly every aspect of an organization since it impacts customer service, transaction processing capabilities, employee performance, etc. Surprisingly, however, many executives are ill prepared to make sound decisions regarding IT investment and strategy (Weill and Broadbent, 1998; Weill, 1991).

The most common approach to IT investment is the capital budgeting process, which relies on traditional financial measures and the evaluation of cash flows based on the time value of money using discounted cash flow techniques (Bacon, 1992). General limitations to capital budgeting theory as it applies to investments in IT include: 1) a false assumption that all cash flows are known (i.e., that they can be predicted and quantified), 2) an invalid pretense that all contributions from IT (both good and bad) can be quantified, expressed in monetary terms, and measured by financial criteria, and 3) failure to account for organizational and behavioral factors (Bacon, 1992; Hubbard, 1999). Shortcomings of discounted cash flow techniques in particular include: 1) benefits not easily quantifiable tend to be ignored; 2) financial analysis focuses mostly on cost displacement (i.e., labor and material savings) and tends to omit strategic implications such as new products and services or enhancements to existing ones; 3) in situations involving high perceived risk, unjustly high hurdle rates (rates of return) are set to compensate; 4) opportunity costs for forgoing an investment or IT project tend not to be considered, 5) analysis tends to be biased towards short-term returns, and 6) IT investments tend pervade an organization and rely on interactions among different IT investments and different departments within the organization (Clemons and Weber, 1990; Weill, 1991).

To mitigate the limitations of financial methods when evaluating IT investment decisions, a more comprehensive or holistic approach is needed. Parker and Benson (1988) identify six classes of value derived from IT: return on investment, strategic match, competitive advantage, management information support, competitive response, and strategic IS architecture. Bacon (1992) uses this framework of value to identify a set of 15 criteria

⁷See Connolly and Olsen (1997) for a review of the IT planning literature.

classified in three categories (see Table 2-1) and then develops a survey to ascertain what criteria are considered when making IT investment decisions.

Table 2-1: IT Project Selection (Investment Decision) Criteria

Category	Measure
Financial Criteria Discounted Cash Flow Other Financial	1. Net Present Value 2. Internal Rate of Return 3. Profitability Index 4. Average/Accounting Rate of Return 5. Payback Method 6. Budgetary Constraint
Management Criteria	7. Support Explicit Business Objectives 8. Support Implicit Business Objectives 9. Response to Competitive Systems 10. Support Management Decision-Making 11. Probability of Achieving Benefits 12. Legal/Government Requirements
Development Criteria	13. Technical/System Requirements 14. Introduce/Learn New Technology 15. Probability of Project Completion

Source: Bacon (1992, p. 338).

Bacon (1992) approaches IT investment decisions from the standpoint of the criteria used, not the processes followed. In a similar vein, Semich (1994), Shein (1998), and Madden (1998) suggests a multiple-criteria approach, building upon the balanced scorecard technique first popularized by Kaplan and Norton (1992, 1996). Using this approach, most of the analysis can be done using a simple spreadsheet to group and rank organizational priorities among each of four categories: financial, internal business processes, customer service, and organizational learning and innovation.

Rockart (1979), on the other hand, addresses the process rather than the specific criteria. He introduces the term critical success factors, the defining elements of a firm's competitiveness and organizational performance. He suggests that critical success factors should determine a firm's priorities and needs because these, when done "right," are what make firms flourish. In his work, Rockart presents the process of interviewing top-level executives to identify a firm's critical success factors. Boynton and Zmud (1984), Geller (1984), and Shank, Boynton, and Zmud (1985) later employed this technique.

The critical success factors technique is a strategic approach involving high-level executives of the firm. Davenport, Hammer, and Metsisto (1989) propose a somewhat similar methodology called the principles approach, or what Weill and Broadbent (1998) refer to as management by maxim. With this technique, senior executives articulate the firm's basic philosophies regarding the firm's business and its usage of IT through a set of management principles (maxims) that capture how IT should be used to achieve organizational goals and objectives. These principles then guide IT-related decisions and investments. The objective of the methodology is to force strategy to drive technology initiatives and to bridge the communications gap between senior management and technical experts.

Williamson (1997) proposes a more tactical, team-based methodology called customer integrated decision-making (CIDM) for the identification of system needs and priorities. Using this approach, an organization assembles a cross-functional team to interview internal customers to determine their needs and wants from an IT perspective. In her work, Williamson (1997) provides practical guidelines for involving internal customers, interviewing them, and creating a steering committee to oversee the process.

Farbey et al. (1992) propose a benefits-oriented perspective to evaluating IT projects and investments. Under this approach, benefits derived from an IT application are expected to fall within one or more of the following categories (listed by the authors in order of increasing impact):

- 1) Efficiency: Creates savings (or avoidance) of time, manpower, money, or firm other resources.
- 2) Functionality: Provides the ability to process or complete new tasks or activities or improves upon the quality in which existing ones are done.
- 3) Communications: Connects different systems and enables the exchange of information.
- 4) Management: Improves the quality and capabilities of management and enhances decision-making.
- 5) Strategy: Supports corporate objectives and creates opportunities for competitive advantage.

In another approach, Benjamin et al. (1984) provide a simple framework for considering IT investments based on the strategic opportunities they pose. The criteria of this framework are based on the competitive marketplace and a firm's internal operations. They are:

- 1) IT's ability to significantly alter the way a firm does business to create competitive advantage
- 2) IT's role in providing internal improvements and efficiencies.

It is important to note, however, that not all IT investment decisions are made with the intention of providing competitive advantage. For example, research by Neo (1988) in

several service industries suggests that internal efficiency is the most important criterion driving IT usage. Nevertheless, the assessment of competitive advantage is an important step in the IT investment decision-making process, and internal efficiency can be a significant source of competitive advantage (Sethi and King, 1994). According to Sethi and King (1994), the two prevailing approaches to assessing competitive advantage are the following:

- 1) Outcome Approach – Places great emphasis on competitive efficiency, business value, and management productivity and uses such measures as revenue growth rate, return on investment, return on assets, profits, and net worth. This approach takes a macro-level perspective by focusing on aggregate measures that address performance of the firm.
- 2) Trait Approach – Identifies substantive attributes of an IT application known to contribute to competitive advantage. These are reflected in concepts like competitive forces, strategic thrusts, value activities, and the customer resource life cycle. This approach takes on a more micro-level view since the focus is an individual IT application and the role it plays in enhancing the firm's competitive advantage.

To assess competitive advantage derived from a single IT application, Sethi and King (1994) define a construct they call Competitive Advantage Provided by an Information Technology Application (CAPITA). CAPITA is defined by five dimensions: efficiency (the extent to which an IT application allows a firm to produce products/services at prices lower than its competitors), functionality (the extent to which an IT application provides the functions and capabilities required by users), threat (the impact of an IT application on the balance of power between suppliers and buyers), preemptiveness (early adoption of an IT application to usurp the market), and synergy (the degree of integration between an IT application and the firm's goals, strategies, and environment). These five dimensions and the literature supporting their inclusion are identified in Table 2-2. This work produced by Sethi and King (1994) provides a comprehensive summary of the many measures used to assess the contributions of IT in a firm.

Table 2-2: The Basis of CAPITA: Concepts Described in the Literature

CAPITA Dimension	Concepts Described in the Literature	Relevance to CAPITA
Efficiency	Use of IT to reduce cost in functional areas (McFarlan, 1984)	Competitive advantage, change the basis of competition
	Internal and interorganizational efficiency (Bakos and Treacy, 1986)	Support competitive position
	Comparative efficiency (Bakos, 1987)	Efficiency gains relative to competitors
	Productivity (Synnott, 1987)	Lowest prices, increased market share
Functionality	Differentiation (Porter, 1980)	
	Customer service (Ives and Learmonth, 1984)	Build and maintain customer loyalty
	Add value for customers (Clemons and Kimbrough, 1986)	Increase innovator's market share
	New products and services (Parsons, 1983; McFarlan, 1984)	Change the nature of the industry
	Unique product features (Bakos and Treacy, 1986; Bakos, 1987)	Increase monopoly power
Threat	Buyer and supplier power (Parsons, 1983)	Improve position in competitive environment
	Switching costs and search-related costs (Bakos and Treacy, 1986)	Increase monopsony power
	Customer and supplier costs (Bakos, 1987)	Resolve conflictual situations against customers/suppliers to own advantage
Preemptiveness	Preemptive strikes (MacMillan, 1983; Clemons, 1986)	Harvest strategic benefits
	First mover effects (Clemons and Knez, 1987)	Barriers to competitors
	Positional advantages and timing (Bakos, 1987)	Sustain superior economic returns
Synergy	Integration with company strategy (King et al., 1986; <i>InformationWeek</i> , 1987)	Sustained comparative advantage
	Leverage a firm's intrinsic strength (Clemons, 1989)	Gain and defend competitive advantage

Source: Sethi and King (1994, p. 1605).

Based on a series of studies across multiple industries, Weill and Olson (1989), Weill (1991), and Weill and Broadbent (1998) suggest that not all IT investment decisions are alike but rather can be defined by five basic categories: strategic, informational, transactional, infrastructural, and threshold. These authors then suggest that firms apply a contingency theory approach to decision-making, where the type of investment and the context of the investment determines the criteria to be used in evaluating that investment. They posit that there is generally one prevailing measure for each category (see Table 2-3). However, other authors show that reliance on a single measure can be misleading since it cannot possibly capture all of the complexities of IT.

Most authors concur that there is seldom one best measure and that the selection of any single measure tends to be arbitrary. Additionally, IT investments may span multiple categories. For example, a hotel GDS is both strategic and transactional, a point illustrated earlier in Figure 1-2 on page 7. It is also a key ingredient in a firm's technical infrastructure, and to

some extent, it can be considered a threshold investment (i.e., competitive necessity) for any chain wishing to survive in the industry. For a major chain, a GDS is not optional. As a result, a single-method or single-metric approach has little value in the evaluation process and should, therefore, be avoided.

Table 2-3: A Simplified Approach to IT Investment Analysis

Investment Category	Description	Prevailing Measure(s)
Strategic IT	IT decisions designed to alter a firm's products and services or change the way a firm competes in its industry to create competitive advantage and build market share; the overall objective is to drive sales.	Revenue and market share growth rates to capture long-term goals related to competitive advantage.
Informational IT	IT geared towards the development of a firm's information and communications infrastructure to provide better information in the hands of a firm's decision-makers for managing and controlling the business.	Return on assets to measure medium-term goals for improved decision-making and firm performance.
Transactional IT	IT that supports the firm's operations and typically involves repetitive transactions; the primary foci are cost reduction, productivity, efficiencies, and labor savings.	Indirect labor to capture reductions in labor resulting from the use of IT; productivity and efficiency metrics.
Infrastructural IT	IT that provides the foundation and support infrastructure necessary for shared information technology services and capabilities. The evaluation criteria are typically based on the investment's utilitarian attributes.	Focus tends to emphasize the IT infrastructure's utility, cost savings, and/or [strategic] enabling capabilities. Traditional accounting measures (e.g., NPV, IRR, and payback) are used and often coupled with subjective evaluations.
Threshold IT	IT investment required to compete in a given industry, without which, a firm cannot survive; the investment is mandatory or a competitive necessity.	No measure is suggested since the investment is required for a firm to enter, compete, or remain in a marketplace; the investment should be treated as a sunk cost.

Sources: Weill and Olson (1989, pp. 13-15), Weill (1991, pp. 4-5), and Weill and Broadbent (1998, pp. 212-220).

Another approach to IT investment comes from Grover et al. (1997, 1998), who studied corporate investment priorities in the financial and manufacturing sectors based on six distinct categories. The authors' objectives were to observe how IT investments were prioritized and what factors influenced these priorities. The six categories used were selected because they loosely resemble the various phases of the evolution of computing since the 1960s. They are:

- 1) Strategic Systems: Systems that support and influence current strategy.

- 2) Traditional Development: Applications that support transaction processing and reporting.
- 3) Decision Support Systems: Systems that support managerial or group decision-making.
- 4) Infrastructure Investment: Corporate-wide technology such as data networks.
- 5) Business Process Redesign: Applications that radically change business processes.
- 6) Maintenance and Enhancement: Developments required to existing systems.

The authors then looked at IT investment priorities in each of the six categories across the following five dimensions related to the firm's environment and strategic orientation to see how these characteristics influenced investment priorities:

- 1) Competitive Intensity – Measured by the respondent's view of the severity of price competition, the intensity of competition, and perceived spending by firms in the industry on marketing to cope with competition.
- 2) Strategy Proactiveness – Measured by the respondent's perspective of his/her firm in seeking new opportunities, being the first to introduce new products, searching for acquisition candidates, expanding capacity ahead of the competition, eliminating mature operations, and adopting a risky view when making major decisions.
- 3) Cost Strategy – Measured by efficient operations, competitive pricing, procurement of resources, and production and service procedures.
- 4) Differentiation Strategy – Measured by new product/service development, brand recognition, advertising, and innovative marketing.
- 5) Focus (Niche) Strategy – Measured by servicing special geographical markets and tailoring products/services to special customer needs.

Other dimensions considered include IS versus user influence, integration with top management's agenda, IT sophistication based on adoption of various hardware and software technologies, and existence of a policy or steering committee.

Overall, their findings indicate that a firm's top IT investment priority is in systems that offer strategic or competitive advantage as a result of the growing importance of inter-organizational relationships. Leveraging IT for competitive advantage was a continuous theme for all companies, regardless of environment or strategy orientation. This finding contradicts what Neo (1988) and Cho (1996) found in their studies of service and hospitality firms, respectively. Both of these studies found internal efficiency, which ranked second in the aforementioned study, to be the most important driving force behind IT application.

The findings from Grover et al. (1997, 1998) rank investments in business process redesign applications as a distant second priority, followed closely by investments in technological

infrastructure. In their vernacular, these two categories correspond to internal consistency. Decision support systems, traditional development, and maintenance and enhancement activities completed the ranking. Grover et al. (1997, 1998), suggest, though, that while these projects may serve distinct objectives, their roles should be interrelated because they ideally serve a common set of objectives articulated in the firm's strategic plan.

When comparing IT investment priorities by organizational profile, Grover et al. (1997, 1998) found some evidence of a link between business orientation and IT investment. For example, infrastructural investments ranked higher for companies in more intense competitive environments, while more proactive companies ranked investments in strategic systems higher and traditional systems lower than less proactive companies. In firms reporting a high cost strategy orientation, reengineering investments were deemed a high priority, and firms using differentiation and niche strategies tend to favor strategic systems rather than traditional systems.

Other interesting observations from the above study are 1) a growing tendency by organizations to use steering committees and seek user input when evaluating and establishing IT priorities because of the large impact these decisions have throughout the organization, 2) a growing respect for the strategic implications of IT and its role as a contributor to organizational goals and objectives rather than merely as a back-office support function, and 3) the importance of establishing IT priorities and making IT investment decisions using a holistic, organizational perspective.

Economic Justification

When it comes to addressing the roles and value of information technology, there is often a great deal of skepticism. Consider that when the first telephone was invented, it was thought to have too many shortcomings to be considered as a reliable means of communications, never mind a vehicle for commerce, according to an 1876 Western Union internal memo (Lynn, 1997). Today, the telephone is a standard component in nearly every home and a serious tool for commerce. Portable telephones and cellular technology have further advanced the telephone's capability and society's subsequent dependence on this device. Despite such achievements, naysayers continue to exist and cast their doubts. In a cost-cutting world, financial resources are scarce, and IT-related projects must be carefully cost justified. Yet, this is often difficult to do, especially *ex ante*, because of the many unknowns, uncertainties, assumptions, and future implications. In particular, user adoption, future benefits, hidden costs, and competitive advantage are difficult to prognosticate (Clemons and Weber, 1990; Diebold, 1987). Nearly 75% of all IT investments, according to a study conducted by *Consumer Economics Report*, have no easily calculated business value (O'Brien, 1997). This is due in part to the fact that IT investments are typically part of a string of interrelated investment decisions (some prior and some future) which are required in order for these investments to realize their full potential (Applegate et al., 1996).

Intangibles

It is generally believed that IT has a significant and positive impact on firm performance, capabilities, and competitive advantage. Yet, even with empirical studies attempting to quantify the contributions provided by IT, the literature has failed to conclusively validate the causal relationships between IT and these constructs. This causal ambiguity is a result of the systemic impact IT has on organizations. Leavitt (1965) first posited the systemic nature of IT by conceptually modeling its subsequent effects on people (actors), jobs (tasks) and organizational structure. In subsequent work, Markus and Benjamin (1997) affirmed these complex relationships and the causal ambiguity of IT. Because of the multidimensional aspects of IT and its extended reach throughout a firm, the direct benefits derived from IT remain elusive. Despite numerous attempts, researchers have been unsuccessful at positively isolating the contributions of IT from other, moderating factors. Consequently, much of the analysis has shifted in favor of the qualitative benefits derived from IT.

Research by Saunders and Jones (1992) ranks strategic impact of IT as the most important dimension when evaluating contributions from IT. Unfortunately, strategic contributions from IT are among the most difficult to measure and quantify (even through proxies) due to the many dynamic relationships between customers, suppliers, and rivals. Moreover, the value of IT and its application changes with time (Grover et al, 1997; Post et al., 1995; Hopper, 1990). These rationalizations give credence to the statistic noted earlier; that the benefits of 75% of all IT projects cannot be quantified. Despite any verisimilitude, statistics like this undermine the credibility of information systems professionals and fuel the debate over the value of information technology that is so prevalent in the literature. Moreover, as research by David, Grabski, and Kasavana (1996) attests, the contribution and value of information technology, particularly in the area of hospitality industry productivity, remain perplexing due to measurement difficulties, lag time, and resource redistribution. Yet, these authors provide little advice as to how the situation can be remedied. As a result, investment in information technology continues to face increased scrutiny, which will likely occur for some time to come (Quek, 1995; Semich, 1994). Several contributing factors further clarify the rationale behind this increased scrutiny. These include 1) the rising complexity and scope required for organizational integration, 2) a greater number of information technology decisions being made by management outside a company's information systems/technology organization, 3) an incipient sense of frustration with the perceived returns from information technology investment, 4) the desire for greater accountability in linking information technology investments with strategic business goals, 5) the complexity associated with architectural planning and migration activities, 6) the escalating cost of investment required and the uncertainty of recouping these investments, 7) the difficulty in which to quantify and measure intangible benefits, 8) the pace at which technology becomes obsolete, 9) absence within the firm of the expertise needed to develop, maintain, and implement these technologically sophisticated systems and applications, 10) the perceived risk and market uncertainty, 11) prior projects that did not perform as expected, and 12) the elongated time to market (Mathe and Dagi, 1996; Mata, Fuerst, and Barney, 1995; Strategic Consulting Group, 1992).

The “Look-to-Book” Ratio

Measuring the productivity of distribution channels is a difficult task due principally to a growing tendency for consumers to shop around for the best rate before booking hotel accommodations and a hotel’s inability to track the source of origination of some reservations. The first scenario leads to what is known as a poor “look-to-book” ratio (Shapiro, 1997a). One or more distribution channels may receive high volumes of activity as the result of consumer inquiries but low conversion rates or actual bookings. In these cases, it is unclear as to which channels contribute to the booking decision, and which one actually convinced the consumer to make the purchase.

Onward Distribution

The second scenario results in an emerging phenomenon known as “onward distribution,” the use of hotel data and products listed in airline GDSs by third-party booking entities available via the Internet, intranets, extranets, behind-the-scenes booking engines, and other on-line booking facilities (Dombey, 1997). In broadening their distribution capabilities, airline GDSs sell access to their systems and allow use of their technology as behind-the-scenes databases and booking engines for many of the newer reservations booking services now available. Unlike travel agents that are assigned IATA numbers for the purposes of tracking room-nights generated and commissions due, entities benefiting from onward distribution lack any tracking mechanism or common reporting standards. Thus, in many cases, hotels have no way of tracking the source of origination for many of its reservations.

Traditional Financial Measures

The literature suggests that the most popular methods for assessing and evaluating IT come from the field of finance and focus on cost-benefit analysis and discounted cash flow analysis (DCF). Generally, these approaches have intuitive appeal, are easy to apply, are seen as objective, and are considered theoretically well grounded. The commonly used and accepted techniques include cost-benefit ratio, payback, average rate of return on investment (ARR or ROI), internal rate of return (IRR), and net present value (NPV) (Laudon and Laudon, 1999; Violino, 1998; Apostolopoulos and Pramataris, 1997; Post et al., 1995; Bacon, 1992; Brealey and Myers, 1991; Emery and Finnerty, 1991; Moore and Selling, 1977). A summary of these techniques is presented in Table 2-4.

Table 2-4: Common Evaluation Techniques for Conducting Cost-Benefit Analyses

Method/Rule	Formula	Strengths	Weaknesses
<p>Simple Cost-Benefit Ratio: A simple ratio of a project’s total benefits to the total costs incurred; projects are accepted if their ratio is greater than one or if a firm has a minimum cost-benefit ratio that must be attained</p>	$\frac{\text{Total Benefits}}{\text{Total Costs}}$	<ul style="list-style-type: none"> • Can easily calculate and compare • Provides a means to rank multiple projects based on capital efficiency 	<ul style="list-style-type: none"> • Ignores time value of money • Fails to consider the timing of cash flows • Ratio is compared to ad hoc and arbitrary yardsticks • Minimum cost-benefit ratio in a firm is arbitrarily set • Can be misleading when comparing multiple projects since this technique is insensitive to the magnitude of the project and its returns • Does not account for qualitative/intangible factors • Ignores risk
<p>Payback or Break-Even: Time period needed to recover initial investment expenditure; projects are accepted if their payback periods are deemed appropriate by guidelines established within the firm</p>	$C_0 + \sum_{t=1}^n C_t = 0$	<ul style="list-style-type: none"> • Can easily calculate and interpret • Reflects a “real world” in which technology costs decline over time and the technology itself quickly becomes obsolete • Provides a yardstick to complement other techniques like NPV and IRR 	<ul style="list-style-type: none"> • Ignores time value of money • Fails to account for cash flows after payback period • Cutoff period is arbitrary • May be misleading when evaluating mutually exclusive projects • Encourages a short-term, rapid-return focus at the expense of long-term benefits • Does not account for qualitative/intangible factors • Ignores risk

C_0 = Initial investment; C_t = Cash flow for time period t ; r_t = interest rate for time period t ; t = time period (year); n = duration (in years)

Table 2-4: Common Evaluation Techniques for Conducting Cost-Benefit Analyses
(Continued)

Method/Rule	Formula	Strengths	Weaknesses
<p>Average Rate of Return on Investment (ARR or ROI): Sometimes referred to as the average return on book value or the accounting rate of return, this formula represents the ratio of average net income of an investment after depreciation and taxes to the average annual investment; projects are accepted when ratio is greater than or equal to company or industry averages</p>	$\frac{\text{Avg. Annual Income}}{\text{Avg. Annual Investment}}$	<ul style="list-style-type: none"> • Can easily calculate and compare 	<ul style="list-style-type: none"> • Ratio is compared to ad hoc and arbitrary yardsticks • Ignores time value of money, giving too much weight to distant cash flows and insufficient weight to more immediate receipts • Focuses on accounting income, not cash flows, which are affected by how a firm treats depreciation and which cash flows are defined as capital expenditures • Does not account for qualitative/intangible factors • Ignores risk
<p>Internal Rate of Return (IRR): Rate of discount at which a project's NPV equals zero; projects are accepted when the calculable IRR is in excess of the opportunity cost of capital</p>	$\frac{\text{Payoff}}{\text{Investment}} - 1$	<ul style="list-style-type: none"> • Widely used and recognized • Can easily compare rates 	<ul style="list-style-type: none"> • Difficult to calculate for multi-year projects with multiple payoffs • Multiple rates of return may exist when there is more than one change of sign in cash flows • May provide inaccurate rankings when comparing investments of different size or different timing of cash flows • Incorrectly assumes that net cash inflows can be reinvested at the same rate • Cannot finesse the term structure of interest rates, making it difficult to account for multiple opportunity costs • Does not account for qualitative/intangible factors

C_0 = Initial investment; C_t = Cash flow for time period t ; r_t = interest rate for time period t ; t = time period (year); n = duration (in years)

Table 2-4: Common Evaluation Techniques for Conducting Cost-Benefit Analyses
(Continued)

Method/Rule	Formula	Strengths	Weaknesses
<p>Profitability Index (Benefit-Cost Ratio): Ratio of a project's present value to the initial investment; projects are accepted when the index is greater than one</p>	$\frac{\text{Present Value}}{\text{Initial Investment}}$	<ul style="list-style-type: none"> • Can easily calculate and compare • Useful for ranking projects (by greatest NPV per dollars invested) under conditions of capital rationing • Closely resembles net present value 	<ul style="list-style-type: none"> • Can be misleading when comparing mutually exclusive projects • Ratios cannot be summed in the same way values can be added • Does not account for qualitative/intangible factors
<p>Net Present Value (NPV): Present value of the investment's money flows using a required rate of return or hurdle rate; projects are accepted when investments show a positive NPV</p>	$C_0 + \sum_{t=1}^n \frac{C_t}{(1+r_t)^t}$	<ul style="list-style-type: none"> • Theoretically superior method • Accounts for time value of money • Allows comparison of mutually exclusive projects and projects of unequal duration 	<ul style="list-style-type: none"> • Some may find this approach more difficult to comprehend and more involved in terms of calculations • The risk-adjusted discount rate can be difficult to determine • Does not account for qualitative/intangible factors

C_0 = Initial investment; C_t = Cash flow for time period t ; r_t = interest rate for time period t ; t = time period (year); n = duration (in years)

Traditional financial evaluation techniques such as those depicted in Table 2-4 are necessary but not sufficient tools for justifying information technology investments and assessing the business value of complex information systems and applications (Currie, 1995; Semich, 1994; Diebold Group, 1990). Despite their limitations, these techniques are widely used and sometimes misused. For example, research by Bacon (1992) suggests that payback and IRR are more widely used than the theoretically superior NPV when assessing IT investments. If either of these techniques are used alone, the results could be misleading when comparing projects of different size or timing in cash flows. Nevertheless, these techniques are widely used and accepted in practice.

Financial approaches fail to capture all of the contributions provided by IT since they only encompass one dimension, the financial dimension. They tend to focus almost exclusively on cost savings and labor reduction, namely efficiency improvements. The bulk of the costs included in such analyses are direct costs (e.g., hardware, software, labor). Indirect costs (e.g., training, support, and productivity losses due to downtime) and other intangible costs are more difficult to quantify, and, therefore, are not well-reflected in the financial models.

These approaches are based on forecasted cash flows versus actual or realized expenditures, cost-savings, and incremental revenue because the analysis is typically done a priori. Rarely is post-implementation follow-up and analysis conducted. As a result, forecasting errors are seldom taken into consideration. While these financial modeling techniques are important and useful, they only tell a partial story or present an incomplete view of a firm's successes and or failures. Thus, they should be used with caution when evaluating IT investments. Since not all impact (good and bad) from IT can be assessed in monetary terms, the use of financial tools should be complemented by other techniques that account for qualitative, functional, and technical characteristics. Management must not discount or ignore other benefits such as organizational effectiveness, quality improvements, enhanced service delivery, and long-term strategic impact.

According to Clemons and Weber (1990), IT does benefit organizations when implemented under the *right* conditions, and even if there are no apparent or immediate benefits, the role of IT may still be crucial to the firm's long-term success. Information technology is a long-term investment; its dividends are not always immediately evident but, instead, realized over time (David, Grabski, and Kasavana, 1996). In their research, Clemons and Weber (1990) have found that competitive advantage and strategic necessity confound traditional financial analyses and measures. In other words, it is no longer sufficient to base investment decisions solely on cost savings and tangible returns. One must consider the long-term, strategic implications, such as what the technology will allow the firm to do in the future—particularly in terms of enhancing guest service, improving quality, reducing overhead, and keeping pace with competitors. These authors suggest that one must also consider the costs and implications of not making a given investment (i.e., the cost of inaction). Commenting from their experience, the opportunity costs are frequently ignored.

Treating IT as Capital Investments, Not Period Expenses

One must treat information technology expenditures not as period expenses but rather as capital investments that will add value over the long-term (Applegate et al., 1996; Weill and Broadbent, 1998). Their applications and impact must be considered in a grander context, that of the entire organization. Not all technology investments have easily calculable paybacks or some other economic measures because it is nearly impossible to assess a value to information and knowledge. An emerging theory surrounding the measurement of return on investment from information technology is focusing on intangible benefits (Violino, 1997). This new philosophy suggests that what matters most in terms of return are those things that are the most difficult to measure. According to Professor Erik Brynjolfsson of MIT's Sloan School of Business, to truly assess return on investment, organizations must move beyond the traditional industrial-age thinking based on cost analysis and savings (Violino, 1997). They must look at the economic value added and the benefits to the customers, which are, in most cases, intangible. There is still a place for traditional economic measures of return on investment with respect to technology investment decisions, and these measures should not be overlooked. However, organizations should consider alternative thinking such as the intangibles approach or the "cumulative anecdotal evidence method" (Violino, 1997, p. 44). The analysis that results and the joint interaction between management, operations, and information technology professionals could prove invaluable to the overall success of the investment initiative.

Economic advantages are bestowed on those organizations that can leverage today's information technologies and redefine their business practices (Tapscott, 1996). The patterns of growth, reliability, capability, and dependency on information technology are real. Like it or not, the use of technology will continue to evolve and shape how society interacts and how products and services are purchased and sold throughout the world. Over time, technology will only become more powerful, capable, and affordable. Therefore, it will become more commonplace and its use will be more acceptable. This leaves hoteliers with few choices. They can either be proactive and position themselves, their companies, and their employees to profit from such innovations—or, they can wait, do nothing, and face the consequences, most likely a game of catch up or else technological obsolescence. Because it takes time to build the infrastructure and train staff and guests alike, hoteliers should begin positioning for the future now rather than waiting until it is too late.

Shortcomings with Existing Financial Techniques

Existing techniques widely practiced today stem from a manufacturing environment where the test of a good investment is based on realizing efficiencies and productivity gains, as measured in terms of labor savings, output, and lower unit costs—not from improvements in customer service, business processes, and competitive positioning (Semich, 1994). The role of industrial technologies is to produce high volumes of output with low unit costs. Service technologies, while not quite the antithesis, are designed to produce highly customized, personal experiences that consistently exceed customer expectations. Yet, despite these

apparent differences, most hospitality organizations continue to require the use of industrialized concepts to evaluate and justify information technologies while failing to recognize their shortcomings. Typically, all projects are subjected to some predetermined hurdle rate and rate-of-return, which are set by an organization's senior management (Strategic Consulting Group, 1992). The emphasis is primarily on quantifiable data, and there is little account for qualitative aspects (including benefits and negative ramifications).

This is not to imply that investment decisions should be based on an act of faith. Alternative techniques should be considered in conjunction with the more traditional approaches depicted in Table 2-4. These include cost reduction approaches (e.g., cost displacement/cost avoidance, work value analyses, and cost of quality) and strategic approaches that account for technical importance, business objectives, competitive positioning, long-term potential, and option value (Strategic Consulting Group, 1992). Another technique gaining in popularity is information economic analysis, which combines the importance of non-quantifiable intangible benefits, direct economic costs and benefits, and a risk assessment (Semich, 1994).

The Internet Payoff: Must Be Long Term

The Internet is still evolving, and at the present time, there is no good model for valuing the Web and its return on investment (ROI). Radosevich (1996) reports the difficulties companies face when trying to calculate an ROI for their web sites due to the many hidden costs and intangible benefits involved. In her article, Radosevich (1996) cites Holiday Inn's inability to provide economic justification for its web site. Instead, the justification had to be based on long-term strategic positioning decision versus a typical economic cost-benefit analysis.

In the hotel industry, companies typically try to cost-justify their Internet investments based on the number of bookings. The greater the volume, the larger the base is for allocating investment costs. Some companies try to circumvent the initial investment by relying on third-parties like TravelWeb and WizCom to provide the underlying booking technology to their branded web site. Regardless of the approach, it is not always possible to measure the role the Internet plays in influencing the purchase decision. Before reservations are made, travelers embark on a selection process to determine which travel products, destinations, and accommodations are most appropriate for their needs, budget, and preferences. Published travel guides have played an invaluable role in the pre-selection stages, and now, the Internet is gaining popularity in fulfilling this role because of its graphic abilities, multimedia displays, and current information.

Revenue on the Internet typically comes from one of three sources: advertising, content, or electronic transactions. As advertising sales slow, companies using online services will increasingly look to alternative ways of generating revenue. The most likely target is through electronic transactions. Companies will begin charging (if they are not already doing so) a fee for each transaction processed through them or their online channel. America Online, for example, is faced with rising costs and shrinking revenues. Because of capacity issues, it

cannot grow its user base as fast as it would like. Advertising sales and transaction fees are the two likely candidates for improving revenue (Barrett, 1997). Advertising, however, may be more of a challenge since the company's user base will remain relatively flat until America Online improves its technology infrastructure and provides better and faster access. Therefore, advertisers might choose other venues instead. This leaves transaction fees as the most likely alternative, with companies, not consumers, paying them. For lodging companies, these transaction fees would erode profit margins, much in the same way that GDS fees and travel agent commissions do today.

To many organizations, profits on the Internet have been elusive (Schiesel, 1997). The rush for companies to join the Internet has been compared to the frenzy that was associated with the Gold Rush of the 19th century. Few companies have realized the rewards they projected from the Internet thus far. However, some observers expect that this could soon change. Stipp (1996), for example, forecasted that 1997 would be the year of Internet commerce because all of the major components necessary for commerce—most notably security—would be in place. He further predicted that Internet shopping for consumers would grow tenfold by the end of the decade. More astounding, however, will be the growth of business-to-business transactions, which he projected to grow one-hundredfold.

Before long, Stipp (1996) anticipates that shopping on the Internet will be easier, faster, safer, and cheaper than other forms of shopping currently practiced by consumers and businesses today. Smart agent technology using artificial intelligence, knowledge-based systems, and/or neural networks is emerging that will enable consumers to quickly and easily comparison-shop, saving them time, money, and frustration.⁸ Software agents will do the bulk of the work, finding the most suitable products and services at the best prices available according to user profiles, interests, and prior purchase history (see Cortese, 1998 and Green, 1998). Early examples of these smart agents already exist,⁹ and all indications are that this trend will continue. According to Davis and Davidson (1991), one will continue to see an increasing number of transactions take place without the assistance of human intervention.

Throughout this research, it is well documented that travelers are using the Internet to shop for travel. What is less understood, however, is the degree to which the Internet influences the travel purchase decisions. Radosevich (1996) presents an interesting discussion about

⁸Some examples of leading players in this emerging arena include Art Technology Group, AutoNomy, BroadVision, DataSage, Firefly, FirePond, Jango, LikeMinds, Net Perceptions, PersonaLogic, Open Sesame, Trilogy Development Group, and TriVida Corp.

⁹In addition to the shopping services, product locators, and comparison/recommendation tools offered by many of the major Internet search engines, some examples of web-based software agents or "bots" helpful in conducting comparison-shopping and making recommendations for a broad range of products include the following: Active Research's @ctive Buyer's Guide (<http://www.activebuyersguide.com>), Amazon.com's Shop the Web service (<http://www.amazon.com>), Bottom Dollar (<http://www.bottomdollar.com>), CompareNet (<http://www.comparenet.com>), Continuum Software's Fido the Shopping Doggie (<http://www.shopfido.com>), intelliTRIP.com (<http://intellitrip.thetrip.com>) by TheTrip.com, Jango (<http://www.jango.com>), mySimon (<http://www.mysimon.com>), and Virtual Outlet (<http://vo.infospace.com>) by InfoSpace.com. Cambridge, MA-based Frictionless Commerce, Inc. is also active in this area and will soon introduce a new value-comparison engine.

many of the challenges measuring the value of a web site and what Shapiro (1997a) terms the look-to-book ratio. Experiences vary from company to company, and organizations are continuing to learn and discover hidden costs related to the development, support, and maintenance of their web sites. Hardware and communications must be scalable to meet consumer demand, and content must change frequently to ensure that patrons return often. Costs for developing a commercial web site vary considerably, anywhere from a few thousand to a few million dollars (US) depending upon the type of site and its capabilities (Radosevich, 1996). The costs add up quickly. Forrester Research estimates the average cost of development and maintenance of a promotional web site to be \$300,000 (US) (Radosevich, 1996). According to Ted Julian, Director of Internet Research at Framingham, Massachusetts-based International Data Corporation, web site development for sites capable of electronic booking average between \$840,000 and \$1.3 million (US), with a significant portion going to staffing costs (Kay, 1997). Many companies exceed these estimates. Other large expenses include investments in the technology infrastructure and in on-going enhancements and maintenance. In most cases, the latter costs are the most difficult to project.

These high investment costs require payback analysis and justification for approval. However, it is difficult to measure the returns or potential returns since not all shoppers use the Internet for the actual purchase of a product or service, even though information ascertained on the web may have been the influencing factor. For example, CyberAtlas (www.cyberatlas.internet.com) reports the findings of a CommerceNet/Nielsen survey that found that 53% of all Internet users used the World Wide Web to reach a purchase decision, yet only 15% of those surveyed completed their purchase online. This behavior is typical of what has been observed in the hotel industry, where a significant number of consumers use the Internet to learn more about individual hotels and destinations and to conduct comparison-shopping. The actual booking (i.e., purchase), though, is processed through more conventional channels (Bruns, 1997).

IT as an Enabler

While it is important to have well-defined, rational criteria for making IT investment decisions, one must not overlook the strategic potential and implications. Tapscott (1996) describes what he terms the “investment dichotomy.” In his research on investment strategies, Tapscott asked 400 senior executives of leading companies to describe the future opportunities for their businesses. The responses all centered on strategic initiatives. When he then asked how the company would allocate financial resources, he noted that the majority of the investments focused on tactical versus strategic initiatives. The rationale used to explain this dichotomy is the relative ease in which one can justify tactical investments where there are tangible benefits versus the difficulty one has in quantifying strategic decisions with benefits that are more intangible and long-term.

It can be difficult to estimate the contributions from IT and forecast its long-term value to a company (Post et al., 1995). Perhaps Andy Grove, head of Intel, best expresses the

frustration associated with assessing the economic impact of IT investments while, at the same time, recognizing IT's strategic significance. When responding to a question about the return on investment from Intel's Internet initiatives, Grove responded:

“What's my ROI on e-commerce? Are you crazy? This is Columbus in the New World. What was his ROI?” (“Electronic Commerce,” 1997, p. s5).

In light of these words, practitioners should consider the advice of Mathe and Dagi (1996, p. 459) when considering investments in IT:

“It may often be useful to regard the acquisition of new technology as an enabling option. Whether or not the option ought to be exercised does not depend on the strategic value of the technology, but rather on the strategic value of what it ultimately enables.”

The Service Perspective

With recent technological developments like the Internet, advances in telephony, and the proliferation of personal computers in the home market, hotel companies have unprecedented opportunities to reach out to current and potential customers around the world. IT, if given the chance, can play a crucial role in helping hotels learn more about their guests in terms of preferences, behaviors, and trends so that services can then be customized through greater information sharing. IT can also enable employees to produce more consistent and efficient services, according to company-determined standards. Because of continued resistance towards IT, many hotels are continuing to lose ground in the information age. Furthermore, they lack the technological infrastructure to support many of the recent developments in global distribution channels. Consequently, if they fail to take prompt action, they may find it difficult, if not impossible, to catch up (Brynjolfsson and Hitt, 1996; Vitale, 1986).

The hotel industry exemplifies Levitt's (1972, p. 41) definition of service as “personal ministrations” and “servitude.” Personal interaction, pampering, and eager-to-please staff are the hallmarks of leading lodging companies like Ritz-Carlton, Four Seasons, and others. Traits such as these allow lodging providers to build world-class reputations and charge market premiums. Yet, it is these same traits that hinder creativity, increase uncertainty during the service encounter, and raise the costs of conducting business.

In an age of hypercompetition, the traditional rules for conducting business are no longer valid since there are no sustainable, competitive advantages (Burrus, 1993; D'Aveni, 1994). Hotels can no longer be satisfied with their current market share or competitive methods (Tapscott and Caston, 1993). As such, they must continually search for new paradigms, challenge the status quo, and innovate. By looking at service delivery in a new light, hotels can develop new service innovations and apply information technology to expand their staff's service repertoire (Barrington and Olsen, 1987). To accomplish this, however, hotel

companies need visionary leaders, not “maintenance engineers” (Hamel and Prahalad, 1994b), who are willing to take risks and think creatively.

Thinking Creatively: Industrialized Service Revisited

Levitt (1972) suggests that quality and efficiency can be improved if less emphasis is placed on service as servitude and more consideration is given to manufacturing principles; namely, the substitution of “technology and systems for people and serendipity” (p. 41). Levitt is not alone in his thinking. Chase (1978) and Chase and Erikson (1988) also suggest applying manufacturing methods to service. In fact, Bowen and Cummings (1990) recognize that services and manufacturing firms can learn from one another by sharing various operating principles, strategies, and philosophies. However, this should not be interpreted to mean that all manufacturing concepts are relevant in service organizations. It is merely a suggestion that there are many applicable theories. Thus, researchers and practitioners should remain open-minded so as not to rule out any possibilities.

To many, industrialized service seems like an oxymoron. If taken at face value, Levitt’s suggestion may appear extreme, especially in the hotel industry where guest interaction is not only a desirable occurrence but also an expected requisite in delivering personalized service. One could easily interpret Levitt’s philosophy as a call to create a “factory-style” service where procedures are timely, efficient, and uniform and where the service encounters can be characterized as cold and insensitive (Martin, 1986). However, thinking in this way is a misinterpretation of Levitt’s theory and diminishes any value it may have. Instead, Levitt’s philosophy should be rationalized as a call to new thinking in order to find “full balance” (Martin, 1986) between the procedural aspects and the convivial and sometimes serendipitous nature of the service encounter. In other words, the emphasis should be placed on finding ways to provide friendly, personalized service in a timely, efficient, and uniform manner. It is Levitt’s intent to find ways to reduce the variability typically found in the service encounter so as to improve the quality of the interaction—not necessarily eliminate it altogether.

The long-standing presumption in the hotel industry is that interacting with people and catering to a guest’s every need or whim is precisely what a guest seeks when opting to stay at and pay for accommodations at most hotels. As a result, the adoption of computers and information technology in the industry has been hindered in most aspects of the guest service encounter. Traditionally, hotel managers have mistakenly viewed computerization as the antithesis of personalization and, therefore, have considered it to be an unacceptable tool in the service delivery process. Today, this paradigm must be challenged as a result of increased competition, rising operating costs, shortages in labor, and the need to do more with less.

In light of these challenges and despite some of the widespread criticism his work has received in the service literature (e.g., Shostack, 1977; Davis, 1983; Schlesinger and Heskett, 1991), there is merit to Levitt’s notion of industrialized service—particularly when

considering specific aspects of the guest life cycle such as reservations and the booking process. In these cases, information technology can be used to strengthen the service encounter by improving service delivery, consistency, reliability, accuracy of information, and speed or efficiency of the transaction. IT is a support tool that, when used appropriately, can augment staff skills by expanding their service repertoire (Barrington and Olsen, 1987), enhance personalization (Treacy and Wiersema, 1995), and provide an alternative form of service delivery (Berry, 1980).

Levitt (1972) asserts that when addressing service delivery issues for improvement purposes, service companies tend to study those who perform the associated tasks (i.e., actors) rather than the processes (i.e., technologies) that comprise the service encounter. It is this approach, he argues, that inhibits new developments and long-lasting improvements in service delivery. To overcome this, Levitt (1972) suggests a paradigm shift: thinking in technocratic terms rather than in humanistic terms. The excessive focus on the humanistic elements of service, in his estimation, precludes any consideration of what role IT can play in the service delivery process or the service encounter. By changing focus to a more open perspective, new opportunities can be considered.

In Levitt's (1972) terms, McDonald's Corporation, the fast-food hamburger giant, is the epitome of an industrialized service where equipment and technology, rather than people, are heavily relied upon to produce product consistency and standardization throughout the entire chain of more than 25,000 stores in 115-plus countries. While service at McDonald's is far from the personalized service expected in most hotels, there are some lessons that can be learned in terms of buffering the "technical core" (Thompson, 1967) so as to reduce variability, remove individual discretion, improve consistency, and streamline the amount of information exchanged during the service transaction. For hotels, there is a paradox that must be managed. As demand for more personalized services increases, it becomes more difficult to create mass-production efficiencies (Levitt, 1976). The challenge, according to Wallace (1989) is to use information technology to provide the best features of craft production (i.e., personalized service) and mass production (i.e., consistency and standardization).

Service Typologies

The service literature is replete with articles expressing agreement on the attributes that differentiate service organizations from their manufacturing counterparts (see Levitt, 1972, 1976; Shostack, 1977, 1984; Thomas, 1978; Sasser, Olsen, and Wyckoff, 1978; Mills and Moberg, 1982; Lovelock, 1983; Berry, 1980; Barrington and Olsen, 1987; Zeithaml, Parasuraman, and Berry, 1990; Becker, 1992; Reeves and Bednar, 1994). There is general agreement that the distinguishing attributes include intangibility, the temporal nature of the service (i.e., perishability and the inability to store or inventory the resulting product), inseparability/customer participation in the delivery process, heterogeneity of customer perceptions, simultaneous production and consumption, and the ease and speed in which services can be copied by competitors. Despite such agreement, researchers have yet to

concur on a suitable typology or taxonomy that describes all service organizations due to the diverse nature of services offered.

Discussion regarding a number of different attempts to classify service environments follows. The significance of this discussion is the possibility that no one classification scheme can be used to define a service organization and all of the services it provides. Perhaps researchers need to study services from a different perspective, one in which the unit of analysis is the service process rather than the organization as a whole. The service organization is multidimensional; as such, a grand typology cannot possibly address each aspect at the level of detail necessary to fully understand the dynamics of each type of service encounter witnessed in today's service organizations.

To better understand the possibilities of industrializing the reservations process in the hotel industry, it is helpful to look at the service encounter from a typological perspective. Shostack (1977, 1984) suggests that all organizations can be classified on a continuum with tangible-dominant (i.e., products) anchoring one end of the scale and intangible-dominant (i.e., pure services) at the other end of the spectrum.

For Thomas (1978), the continuum is characterized by equipment-based and people-based activity. An important observation from Thomas (1978), however, is that most companies provide multiple services and, therefore, can be located at multiple points on the continuum. This notion can be extended to infer that for a given service having multiple delivery alternatives, there are also multiple points of presence on his continuum. For example, conducting a bank transaction can be done in person with a teller, with an automated teller machine (ATM), over the telephone, or from one's personal computer. In each situation, the interaction between the customer and the service provider is different; therefore, the service should be depicted by more than one point on the continuum.

For Chase (1978), the continuum is described by the degree of contact between the customer and the service provider (i.e., low contact to high contact). Based on Thomas' (1978) observation, the degree of contact could result in multiple points on the continuum, since the extent of the contact is largely dependent upon the type of transaction and the customer's experience in making such transactions.

Schmenner's (1986) approach essentially combines the continuums presented by Thomas (1978) and Chase (1978) to develop a service process matrix to classify services and service firms. This matrix, depicted in Figure 2-3, is anchored by degree of labor intensity on the left side and degree of interaction and customization across the top to create four boxes or classifications: service factory, mass service, service shop, and professional shop.

Figure 2-3: The Service Process Matrix

		Degree of Interaction and Customization	
		Low	High
Degree of Labor Intensity	Low	Service Factory	Service Shop
	High	Mass Service	Professional Service

Source: Schmenner (1986, p. 25).

Recognizing the multiplicity of the customer-service provider dyad, Lovelock (1983) suggests five classification schemes based on the following criteria: 1) the nature of the service and its degree of tangibility, 2) the type of relationship the service provider has with its customers, 3) the extent to which the service allows customization and use of judgment by the service agent, 4) the supply and demand relationship of the service, and 5) the method of service delivery and the number of delivery alternatives offered by the service provider.

Bowen (1990) employs a panel of service experts to develop a taxonomy that was intended to transcend industry boundaries based on nine key characteristics important in defining and categorizing services. The resulting nine attributes include intangible/tangible, level of customization, employee/customer contact, importance of people, differentiation, ability of the customer to switch firms, services affecting people or things, customer participation, and continuous versus discrete transactions (Bowen, 1990, p. 45). The intangible/tangible and customer participation attributes are later dropped from his list due to excessively high standard deviations. Therefore, his final list consists of seven attributes. He then uses these seven attributes to place various service industries into like groups based on consumer perceptions of the services provided by each organization evaluated.

Mills and Margulies (1980) and Mills (1986) provide a useful typology for classifying service organizations based upon the degree of personal interaction, information processing, and information exchange during the service transaction. The unit of analysis in question is the customer (client)-organization interface. Paramount to Mills' typology are the respective roles of the service provider (employee) and the customer (a "partial employee") (Mills, Chase, and Margulies, 1983). Generally speaking, the employee and the customer must interact with each other in order to complete the service delivery process. The relationship between the service provider and the customer is best characterized as dyadic (Solomon, Surprenant, Czepiel, and Gutman, 1985).

Building on systems theory, Mills and Moberg (1982) and Mills (1986) use an input-output model to describe the production process of a service. Applied in this way, information technology serves as the service sector's production technology and is analogous to manufacturing's machine tools and production lines (Weill and Broadbent, 1998). In the service production process, data about the customer are provided to a service employee who, in turn, transforms the data (often with the help of IT) into useful information that can be used to customize and personalize the service desired by the customer. The type of service request often dictates the type of information required and, therefore, influences the nature and extent of the personal interaction during the actual service encounter. The familiarity and experience a customer has with the service being sought are also factors influencing the interaction between the customer and the service provider. Accordingly, the customer must play an active role during the service encounter since he/she is expected to provide the raw input, namely data about himself/herself and about the services being sought. Additionally, depending upon the level of services desired, the customer can play an active role in the actual delivery process (e.g., self-service). Hence, the customer can and should be considered a "partial employee" of the service organization.

The Customer-Organization Interface

Mills' typology (Mills and Margulies, 1980; Mills, 1986) defines three categories of service organizations based upon the customer-service provider relationship. The first classification is termed *maintenance-interactive* in which the degree of interaction between the customer and the service provider is fairly straightforward due to the limited amount of information exchanged in order to complete the service transaction. From the service provider's perspective, the focus is on dispensing a service rather than producing a service. The transaction tends to be routine with limited uncertainty; thus, the transaction can easily be standardized. Fast-food restaurants fit into this category.

The second classification in Mills' framework is termed *task-interactive* where the information exchange centers around the specific task requested, the skills necessary to complete the task, and how best to fulfill the service request. The service organization provides a set of knowledge to which the customer or client must have access in order to complete a desired task (e.g., banking, insurance, legal). The consumer typically knows what he/she is seeking but lacks the specific expertise or credentials necessary to fulfill the service without the assistance of the service provider. By their very nature, task-interactive transactions are more complex and involve more uncertainty than maintenance-interactive transactions. There is a certain amount of uniqueness surrounding each service request. Also, a number of choices are typically available which must be presented and discussed with each client to determine the best possible options within the guidelines set by the purchaser (e.g., cost) and within the service organization's capabilities (e.g., skills). Because the service encounter is more involved, the duration of the transaction tends to be greater than what one would expect in a maintenance-interactive environment.

Mills' third classification, *personal-interactive*, involves a rich exchange of information between the customer and the service provider. In such circumstances, the customer has a unique request in which he/she is searching for a tailored solution. There is a high degree of personal involvement, complexity, and uncertainty with each transaction. The relationship between the customer and the service environment is characterized as one of intimacy, where the customer tends to share personal (often confidential) information with the service provider (e.g., psychological counseling, health care, etc.). In these situations, the customer is not always clear about what he/she is seeking—not to mention how to remedy the situation. Thus, it is incumbent upon the service provider to diagnose each case, define possible solutions, and deliver the chosen alternative. The relationship that is developed tends to extend over time and involve subsequent encounters. It is not a short-lived or discrete transaction as in the case of maintenance-interactive transactions.

Classifying Service Organizations

When classifying service organizations using Mills' typology, there are seven dimensions (depicted in Table 2-5) that must be considered: information, decision, time, problem awareness, transferability, power, and attachment (Mills and Margulies, 1980).

Table 2-5: Mills' Typology of Service Organizations

Dimensions	Maintenance-Interactive	Task-Interactive	Personal-Interactive
Information			
Information Quantity	Low	Moderate	High
Information Quality	High	Moderate	Low
Confidentiality	Low	Moderate	High
Decision			
Employee Decisions	Simple	Complex	Complex
Importance	Low	Moderate	High
Feedback (Client to Employee)	Immediate	Slow	Slow
Time			
Interface Duration	Brief	Moderate	High
Total Time in Direct Contact	High	Moderate	High
Problem Awareness			
Client Knowledge about Problem	High	Moderate	Low
Client Ability to Evaluate Services	High	Moderate	Low
Client Expectations vs. Service Capabilities	High	Moderate	Low
Transferability			
Substitutability of Employee	High	Moderate	Low
Power			
Perceived Power of Employee with Respect to Client	Low	Moderate	High
Employee Status to Client	Low	High	High
Employee Authority with Client	Low	High	High
Attachment			
Employee Identification with Client	Low	Moderate	High
Conflict Potential	Low	Moderate	High

Source: Mills and Margulies (1980, p. 262).

The appropriate classification (i.e., maintenance-interactive, task-interactive, or personal-interactive) can be determined based upon the amount of information required to complete the transaction, the amount of discretion employees have, the complexity of the decision-making process, the duration of the service encounter, the customer's ability to recognize what he/she is seeking, the ability to substitute employees, the perceived power and status of the relationship, and the attachment a customer has to the employee or service agent providing the service. By understanding each classification, one can better predict the degree of uncertainty, complexity, and dynamism in the service encounter, which, in turn, can lead to strategies for developing standardization, improved efficiency, and opportunities to apply IT.

Additions to Mills' Typology

When considering service interactions, one typically thinks of human contact as an essential component for service delivery. However, given the advances in information technology and automation, human contact is no longer a requisite in the service delivery process. In banking, for example, a man/machine dyad has become commonplace for routine transactions (Solomon et al., 1985). Therefore, a fourth category is added to Mills typology to reflect self-service environments (e.g., automated teller machines used in airline ticketing and banking, coin-operated car washes, vending) in which the customer interacts with a machine or computer (representing the service organization) rather than a person during the service transaction (Becker, 1992).

Given the current trends in information technology, one should anticipate the addition of a fifth category in Mills' typology to reflect machine-to-machine or computer-to-computer interactions, encounters which are devoid of any human interaction whatsoever (e.g., electronic funds transfer, direct deposit, credit checks, business-to-business commerce conducted through intranets, transactions executed via software agents, etc.). It seems only logical that the role of these software agents will evolve over time from simply facilitators of information dissemination to actual decision-makers, with complete financial responsibility—working at first in partnership with their human counterparts but becoming increasingly autonomous and empowered with time (Kephart et al., 1997; Cortese, 1998; Green, 1998). If a service provider can delegate its responsibilities to a computer, it seems only fitting that a customer can do the same. Hill (1996) and Green (1998) provide examples of some of the early developments of autonomous software agents, also called “cyberslaves” or “bots,” used to search for and wade through volumes of information available on the World Wide Web; filter out relevant topics, products, or services (as defined by users); find the best prices for products and services; and even make purchases. Software agents, though in their infancy, are now intelligent enough not only to search for but also procure products and services that fall within certain parameters specified by their human bosses (e.g., hotel rooms in a certain city for specified dates and rate range), thus creating a machine-to-machine dyad. Business-to-business commerce via intranets and extranets supports this concept and is perhaps the more immediate application of such digital agents.

Rethinking the Focus and Application of Mills' Typology

Mills intended his typology to be used to classify service organizations as whole. For example, he classified banks and insurance companies as maintenance-interactive, advertising and engineering firms as task-interactive, and schools and professionals as personal-interactive (Mills and Margulies, 1980). The purpose of this typology was to avoid the criticisms of other typologies (e.g., Blau and Scott, 1962; Etzioni, 1961) that were considered too generic in scope and too focused on manufacturing environments. While Mills' typology is explicitly focused on service organizations, it fails to address the animadversion of being too generic. In today's complex and diverse world, it is extremely difficult to define a typology that holds true for all situations (Thomas, 1978; Lovelock, 1983).

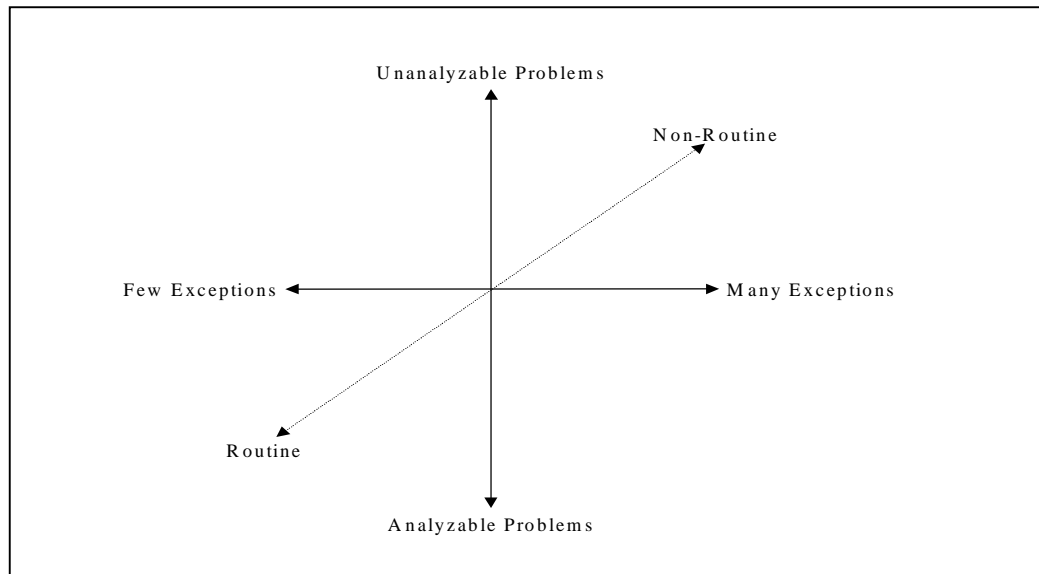
By criteria set forth by Mills and Margulies (1980), luxury hotels would clearly fall into the personal-interactive category whereas budget or economy hotels would best be described by the maintenance-interactive category (see Table 2-5). Yet, one could contend that this typology is too general and that exceptions can easily be found in how organizations are classified based on specific customers (e.g., first-time versus repeat), the types of transactions they are seeking (e.g., simple versus complex, low risk versus high risk), and the method of delivery (e.g., in person, over the telephone, via the Internet). More specifically, when considering specific service transactions (e.g., the reservations booking process) rather than the organization (e.g., a luxury hotel) in its entirety, the picture changes. Because consumers have different levels of expectations and experience, varying degrees of service for the same type of transaction can be provided while still maintaining customer satisfaction (Zeithaml et al., 1990; Parasuraman, Zeithaml, and Berry, 1991). Therefore, the use of contingency theory is appropriate when trying to classify organizations and customer transactions. Davidow and Uttal (1989) advocate segmenting customers into like groups based on the types and levels of service they desire and require. The importance of this concept is significant. By considering different customer groups and transaction types, service encounters can be viewed in a different light. It is this profound realization that makes Levitt's (1972, 1976) concept of industrialized service more conceivable—even in the hotel industry.

The Search Proposition

More than 30 years ago, Perrow (1967) presented a framework for analyzing the search process; that is, matching consumer needs and preferences with available products and services. In his research, Perrow determined that two aspects of technology, which ultimately comprise the search process, vary independently: the number of exceptions that must be processed and the degree to which a search can be analyzed. The relevant characteristics, as determined by Perrow (1967), are understandability of something's state and its stability and variability. Perrow then classified routine transactions as those with few exceptions. As such, they could be analyzed easily, with predictable outcomes. In other words, the nature of the transaction was straightforward, and the search could be done

logically, systematically, and analytically. Non-routine transactions, on the other hand, resulted from a large number of exceptions, which rendered them incapable of being analyzed and unpredictable. The result of this research is a triumvirate of continua, portrayed in Figure 2-4.

Figure 2-4: The Search Process



Source: Adapted from Perrow (1967, p. 196).

Perrow's (1967) research contributions, when applied to the present context, are significant. From his work, one can infer that a person's behavior can be influenced by how well he/she understands a given problem, the corresponding uncertainty, and the actual or perceived risk(s) associated with that problem. This level of understanding and the risk associated with the ensuing transaction (i.e., the search, selection, and booking of hotel accommodations) will also impact the selection of tools or method(s) by which the individual will employ to solve this problem. Operationalizing the problem-solving process will be dependent upon a number of factors including structure, complexity, standardization, routinization, knowledge, degree of control, and perceived risk. From a hotelier's perspective, this knowledge can shed light on how consumer groups are segmented, the services offered, and the delivery methods used.

The essence of Perrow's teachings has been the subject of considerable debate on the INFOTEC-TRAVEL listserv.¹⁰ Many participants repudiate the self-booking concept for travel accommodations because of the complexities involved and the need for specialized knowledge. In their estimation, booking travel is more involved and requires expertise from others (namely travel agents) than the process for procuring a book or musical CD (compact

¹⁰The INFOTEC-Travel listserv, available via the Internet, focuses on worldwide issues related to information technology in travel and tourism. To subscribe, send a message to LISTSERV@PEACH.EASE.LSOFT.COM.

disk) from well-known web sites like Amazon.com and CDNow. In this author's opinion, many of these viewpoints are myopic and self-serving since a number of postings were submitted by travel agents. Chowdhury, Bluestein, and Davis (1997) write that lodging's simplicity and low price point make on-line booking a low-risk decision. Additionally, according to the Travel Industry Association, 79% of all travelers book their own hotel accommodations (Wada, 1997). This evidence rejects the arguments of travel intermediaries discussed above.

At present, there is no one method (travel agent, Internet, or otherwise) that can consistently guarantee the best hotel rates or airfares. Rate and service are not the only driving factors when selecting the method(s) to search for and book hotel accommodations. There are many other factors consumers and business rank as important including convenience and control. The success to date of travel sites and their continued acceptance (as evidenced by their growing usage statistics) are testimony that some travel is conducive to on-line, self-booking. What some fail to realize or accept is that consumers are becoming more sophisticated and familiar with the travel process as the result of new, easy-to-use software tools made available by the Internet, Internet service providers (such as America Online), and travel providers themselves. While it may be true that some travel plans may be more complex and require greater assistance than is required for buying a book or musical CD, this is not always the case. The flawed logic is to think that there is only one approach to servicing traveler's needs. It is not an all-or-nothing proposition. There is no one best system or strategy; instead, the process is situational. Situations and circumstances dictate or should dictate the appropriate channels of distribution sought by a traveler.

Research by Champy, Buday, and Nohria (1996) suggest that by better understanding the steps a person undertakes when shopping for a product or service, companies can better tailor their delivery channels to meet consumer needs. While the processes in acquiring a particular product or service can differ from customer to customer, Champy et al. (1996, p. 60) identify seven fundamental needs shared by all consumers to varying degrees, regardless of distribution channels used:

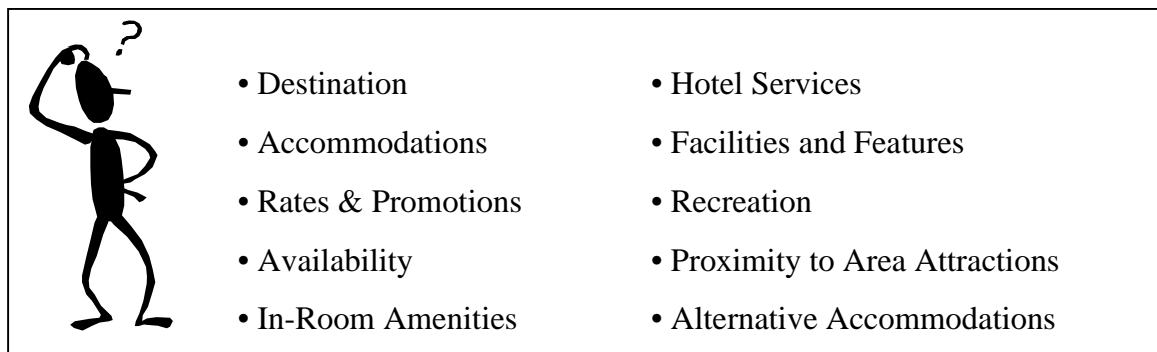
- 1) Knowledge: the search for information and the process of product/price comparisons.
- 2) Interaction: the need to communicate with the goods or service provider.
- 3) Networking: the ability to communicate with others who share similar consumption needs or experiences.
- 4) Sensory Experience: the ability to factor in sensory perceptions such as sight, sound, scent, etc. when making purchasing decisions.
- 5) Ubiquity: the ability to access the product or service when and where it is needed or wanted (i.e., at the consumer's convenience versus the provider's).
- 6) Aggregation: the assimilation of a number of related goods and services that address each and every step of the consumer process.
- 7) Customization: the personalization and individualization of products and services.

Travel can be segmented based on travelers' needs, experiences, and comfort levels. Some travel planning and purchases are routine. Others are more involved, requiring considerable planning and analysis of multiple destinations and possibly multiple segments on the same travel itinerary. The same can be said for purchasing a book or musical CD. It may be easier to locate and process an order for a best seller than for an obscure or rare work for which the consumer does not know a complete reference. In such cases, it may be necessary to seek out assistance. Therefore, it is necessary to develop situational strategies to process the diversity of consumers using cost-effective means.

Consumers book accommodations at hotels for a number of reasons in order to satisfy a set of needs, both expressed and unexpressed. Many of these needs are known in advance and articulated to the supplier; others are not. They may surface later, or they may continue to remain dormant, putting the onus on the hotel service employees to anticipate and subsequently satisfy these needs. Mills and Turk (1986, p. 93) term this "information equivocality," where the information is subject to interpretation and may lead to one or more possible outcomes depending upon how it is interpreted and by whom.

Typical search criteria are illustrated in Figure 2-5, the specifics of which are situational and dependent upon the traveler and his/her purpose of travel. When selecting a hotel, a guest is often concerned with such factors as location (i.e., destination city), proximity to certain attractions or office complexes, rates and availability, special room accommodations (e.g., non-smoking rooms, handicap-accessible), services offered (e.g., airport shuttle, business center), hotel facilities (e.g., restaurant, meeting space), recreational facilities (e.g., swimming pool, health club), and in-room amenities (e.g., voice mail, Internet access, etc.). The list can be expanded or shortened based on individual travel needs, circumstances, and preferences.

Figure 2-5: Search Criteria Used When Selecting Hotel Accommodations



Depending on how well the guest understands and is able to define his/her needs, the perceived level of risk, and one's comfort zone will impact and possibly the search process used to find hotel accommodations that will fulfill the defined set of needs. More specifically, a guest's knowledge of and familiarity with his/her situation will influence, if not dictate, the method(s) by which that guest shops for and books his/her hotel

accommodations in terms of the amount of information sought, the systematization of the search process, the level of human assistance required, the degree of control one must exert in the process, the level of analysis conducted, and the number of alternatives considered.

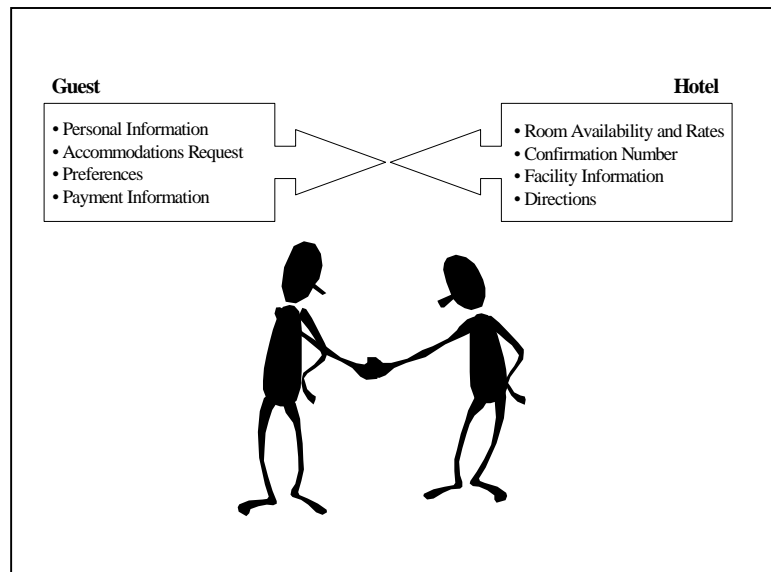
Understanding a process is a fundamental first step before one can attempt to automate it since task/technology congruence is a prerequisite to any successful application of IT (Copeland and McKenney, 1988). In this context, the value of the classification schemes and the contributions in terms of information exchange and degree of knowledge put forth by Mills and Margulies (1980), Mills (1986), Perrow (1967), and Champy et al. (1996) emerges. It is their thinking and their frameworks that help create this congruence between tasks and technology and demonstrate the growing relationships between time, technology, and customer service. When combining their theories and applying them to the context of booking hotel accommodations, one can better understand the service dyad and search process, and hence, define the appropriate methods, tools, and level of automation suitable to various customer needs, situations, and preferences/comfort levels.

According to transaction cost theory, transactions occur under states of “bounded rationality” or cognitive limitations, making it impossible to foresee every contingency (Anderson, 1984; Jones and Hill, 1988). Therefore, it is not appropriate to suggest that there is one *best* method for interacting with and fulfilling guest needs. This is a call to practitioners to offer an array of options; thus enabling guests the opportunity to choose what he/she deems the best approach for his/her situation, needs, and comfort zone at the time of commencing the booking search or making the booking request. It is impossible to anticipate all situations and develop service delivery methods that will optimize for each one without exception, but it is possible to offer a portfolio of products and services (in this case, distribution channels) that can be optimized to satisfy large segments. Support for this idea comes from Clemons and Weber (1994), who suggest that there is a continuum of potentially viable strategies, which are arranged on an efficient consumption frontier. In their belief, consumers continuously make trade-offs between product quality and price to satisfy a particular set of needs at the time the transaction takes place. By understanding the efficient consumption frontier, hoteliers can use market microsegmentation to determine the most profitable customer groups and service delivery methods.

The Hotel Booking Process

Take for example the reservations booking process for a typical full-service hotel. At first glance, the reservations booking process for a typical guest, say a frequent business traveler requiring a simple reservation, more closely resembles those characteristics defined for maintenance-interactive settings (see Figure 2-6). After all, the booking process, in simplest terms, represents a clerical transaction that is brief in duration, easily transferable between multiple reservation agents, and characterized by low attachment and minimal information exchanged. It is a peripheral service that supports the core: the guest stay.

Figure 2-6: Typical Information Exchanged When Making A Hotel Reservation



This thinking is not intended in any way to reduce the significance of the reservations process but rather to shed some new light on traditional paradigms in hopes of advancing industry practices while taking into account advances in information technology that can improve the value proposition and service dyad for both the customer and the service provider. The reservations booking process is a critical transaction or “moment of truth” (Carlzon, 1987) that should set the stage for all subsequent encounters, not just those associated with a particular stay. From the service provider’s perspective, the reservations booking process is the primary source of information input that feeds all succeeding stages of the guest life cycle, namely preregistration and registration. This systems theory perspective illustrates the building process and the importance of collecting complete and accurate information at the beginning stages of the guest life cycle: the reservation. From the guest’s perspective, the experience during the reservations booking process can create a first and lasting impression of the hotel company. Barrington and Olsen (1987) term this the “residue.”

In terms of the hotel industry, the core service is the hotel stay. The reservations booking process is a pre-consumption support service that influences the core service. Therefore, both core and peripheral services are instrumental in influencing a guest’s perception of service performance. However, Walker (1995) suggests that the amount of weight placed on each varies. In other words, the core service (i.e., the hotel stay) is a greater determinant of customer satisfaction than a peripheral service (e.g., the reservations booking process). The implication is that organizations may be able to reduce peripheral services without negatively impacting a guest’s overall level of satisfaction. The only caveat is that the peripheral service must be performed sufficiently so as to produce, at a minimum, a neutral disconfirmation. Perhaps hotels can change their focus during the reservations booking process from one of exceeding guest expectations to one of simply satisfying guest needs. In doing so, hotel companies are likely to improve financial performance since they can better allocate

resources to where they will have a greater impact on the organization's overall profitability (Rust, Zahorik, and Keiningham, 1995).

The amount of information exchanged often depends on the customer, his/her previous history with a hotel (or other hotels in the same chain), the purpose of his/her stay, and personal experience. For a first-time customer, the service encounter for booking hotel accommodations is likely to be longer than that for a repeat customer since the reservation agent must collect important personal information such as room preferences and billing information that would otherwise be stored in a company's database. Additionally, the guest is likely to have more questions regarding the hotel facilities and/or the booking process itself.

For a repeat customer, however, the information exchange should be substantially less since the hotel already has this information stored in a customer profile which can be quickly and easily accessed by any service associate. The repeat customer is also more experienced, knows the "product," and, therefore, tends to have fewer questions and more accurate expectations regarding his/her upcoming stay. In other words, the repeat customer knows the routine, and the hotel knows the customer. When using IT to support the process, each guest transaction, reservation, hotel stay, etc., becomes an opportunity for a hotel to expand its knowledge about a particular guest and update information in its company-wide database for use in subsequent service encounters and at any customer contact point. In effect, this database becomes a learning tool (Connolly and Moore, 1995). The more it is used, the more it learns by collecting additional, pertinent information about each guest. Kirsner (1999) calls this "progressive profiling." Information will then be readily available to each service provider in the organization, thereby reducing the information exchange required during the actual service encounter. Not only does this alter the nature of the service encounter, but it also creates new opportunities to expand the personalization of the service being provided.

The guest profile becomes the raw input for each and every service encounter. Furthermore, it extends the service repertoire (Barrington and Olsen, 1987) of service agents such that anyone in the organization can provide the same level of highly-personalized service to any given customer; thus, mitigating much of the concern over transferability typically associated with personal-interactive encounters.

Ideally Suited for Electronic Bookings and Commerce

Electronic bookings are inherently cheaper to process than those reserved by telephone because a significant portion of the labor component is removed from the equation. Travel is conducive to automation and electronic commerce because the product traded at the time of the transaction is a travel itinerary. It is purely information-based. Travelers are turning to the Internet to find the best fares, compare products, and learn more about their destinations before they arrive so as to maximize the benefits of their stay. The growing complexity of travel information is one of the leading catalysts for growth on the Internet (Shapiro, 1997a). Brochures, travel guides, and other print material are quickly obsolete. The Internet, on the

other hand, can be updated easily and quickly, providing consumers with instant access to the latest rates, availability, weather conditions, events, and more. The Internet is a tool that can help sort, filter, and digest large volumes of information that are too vast for human consumption while quickly comparing between product and destination alternatives. Thus, the Internet serves as a vast library of information for consumers, travel agents, and corporate travel planners that provides essential information to support informed decision-making.

Another factor leading to the growth of the electronic bookings and the Internet is the mechanization of the booking process itself (Shapiro, 1997a). The congruence between the task (i.e., reserving a room) and the technology (i.e., personal computers, the Internet, and web browsers) is the underlying success (Copeland and McKenney, 1988). Once the information gathering, product comparison, and decision stages have been completed, the actual booking process is, in most cases, a simple and routine process. These types of transactions lend themselves well to automation.

A Trend Towards “Do-It-Yourself”

There is a rising trend in self-directed service in a variety of industries (Popcorn and Marigold, 1996; McKenna, 1997). In banking, for example, automated teller machines are often the preferred method of service delivery. PC-based banking and telephone banking are rising, too. For petroleum services, many consumers prefer the self-service model with the pay-at-the pump feature over other, more time-consuming and possibly less-friendly alternatives. Grocery stores are experimenting with self check-out. This trend is also impacting the hotel industry. For years, hotels have offered self check-out methods (e.g., folios slid under the guestroom door, video check-out using the in-room TV, and lobby kiosks), self-service snacks via vending machines and in-room mini bars, and now, self-service check-in using lobby kiosks. These are just a few of the many examples of how self-directed service is gaining momentum in today’s society.

FedEx, a market leader and innovator in the express package delivery business, provides another example of how IT can change the service encounter and expand service capacity without adding staff. To streamline operations and improve customer service, FedEx developed a program called PowerShip for corporate customers and a scaled-down version called FedEx Ship for home and small business users. These applications provide FedEx customers with all of the tools necessary to complete the entire shipping process directly from their own personal computers. As “partial employees” (Mills, Chase, and Margulies, 1983), these customers are now empowered and completely self-sufficient when completing their routine service transactions. Using these applications, FedEx customers can automatically complete mailing labels, track shipments, and monitor invoices without any involvement from FedEx service agents. There is no more waiting in telephone queues for the next available service agent. Instead, sending express packages is as simple as “point, click, and ship.” FedEx estimates that there are as many as 200,000 customers using their automated channels each day, which means—in addition to greater customer loyalty—less staffing because an estimated 650,000 customer service calls and 2 billion pieces of paper

have been eliminated (McGee, 1995). Like banks using ATM's or gas stations that allow customers to pay at the pump, FedEx has implemented a person-machine dyad (Solomon et al., 1985) to extend service delivery options, expand capacity, improve service consistency, and create new efficiencies. Moreover, customers seem to be enjoying better service levels and increased control over their transactions.

Time Pressures/Convenience

From a business professional's point-of-view, self-service is increasingly becoming more appealing as a result of many of the pressures being experienced in today's labor markets. Labor shortages and increased competition for the labor supply that does exist are making it difficult and costly to find, attract, and retain qualified individuals. All indications suggest that this trend will continue to worsen through the year 2000 and beyond (Johnston and Packer, 1987). As a result, business operators are forced to explore viable alternatives to delivering traditional services. By allowing the customer to assist in the service delivery process, an organization can alleviate some of its labor burdens.

Control

With respect to travel, self-booking options provide travelers with better control and convenience plus increased confidence since they, themselves, booked all of the arrangements. They know that they have secured the best possible rates and dates and that all of their preferences have been taken into account because they did the booking. Using self-service methods, consumers can also benefit from other incentives besides convenience. Some companies (particularly airlines and hotels) offer additional frequent traveler points for booking their reservations online. Industry analysts value 500 frequent-flier points at \$5 (US) (Wilder, 1997a), much less than what a typical travel agent commission would cost. Some companies (e.g., Hilton Hotels) offer travel sweepstakes (e.g., Preferred Hotels' Gracious Gestures) while others like Radisson have introduced proprietary "Look to Book" and "Hot Deals" programs. TravelWeb offers special promotions with its "Click-it! Weekends." Traveler's Advantage offers travelers a five percent rebate for all trips booked via its site while others offer Internet-only rates, which are better than those rates quoted through other sources such as travel agents, toll-free numbers, etc.

Building a Segment of One

Customers are the assets of the future (Cline and Blatt, 1998). Therefore, the more an organization knows about its customers and the more insights it can develop through the information it collects regarding the products and services sought, the more valuable these assets become. Because traditional customer relationships are changing as the result of new technologies and distribution channels, hotel executives must take notice and revamp their

marketing strategies. One-to-one marketing and relationship management are gaining in popularity and are made possible by interactive media, collaborative filtering software, sophisticated customer databases, systems that support mass customization, learning systems, and the Internet. Technology plays a vital role in helping companies learn more about customer buying habits, preferences, and idiosyncrasies. The full value of information technology can only be realized when a firm has gained control of the acquisition, storage, and retrieval of knowledge (Mathe and Dagi, 1996). Only then can companies deliver highly customized, personal service and create more targeted promotions. As a result of these affordable, yet sophisticated, information technologies, firms are now able to “mass customize” (Pine, 1993) their product and service offerings and target the “segment of one.”

Under this new paradigm, the customer becomes the center of focus, with particular attention placed on his/her individualistic needs, desires, and preferences. At the same time, the organization can continue to strive for efficiency, effectiveness, and cost reductions. Mass production has never been fully accepted in the service industry, and with today’s consumers becoming more demanding and more diverse, the concepts of mass customization and catering to a segment-of-one become important. Data warehousing and the Internet are examples of technologies that provide the industry with opportunities to develop the segment-of-one and exploit it to provide the ultimate in personalized service. As a result, competition will shift from traditional methods such as rates, location, and amenities to a new paradigm centered on knowledge. In other words, those organizations that can collect and synthesize information and patterns about their customers, build a knowledge base, and convert this knowledge to a higher level of personalized service and value will be the industry leaders of tomorrow.

Of all the functional disciplines in the hotel industry, the one that will likely be the most impacted is marketing. Research by Cornell University’s Professor Chekitan Dev concludes unequivocally that the current form of marketing within the industry will be dead by the year 2000 because information technology will change the customer-service provider relationship (“Marketing Beyond 2000,” 1996). For hotel marketers, there are many positive aspects to the new marketing paradigms such as interactive communications with customers, more accessibility to customers, and better tracking of customer data, spending, and habits.

For marketers, this is like a dream come true. Yet, these same information-based technologies will work against them, creating new barriers to reaching, communicating with, and appealing to their customer base. Customers are now armed with better tools and information to conduct comparison-shopping. Technologies such as the Internet make consumers aware of the many product offerings and alternatives available in today’s market. For example, TheTrip.com’s intelliTRIP.com (<http://intellitrip.thetrip.com>) offers consumers a tool to simultaneously shop and compare fares from multiple web-based travel sites in under 90 seconds to find the best fares between two locations. Furthermore, they furnish customers with more and better information and the ability to preview a hotel’s offerings to help reduce uncertainty and perceived risk associated with a purchase—especially if it is their first experience with a particular hotel. As lodging accommodations become more commodity-like, there is less value to a brand name. Consequently, customer loyalty dwindles. With consumers having more immediate access to information, it becomes

imperative for hotels to ensure that the information they provide is current, accurate, and easy to use. Otherwise, a consumer may take his/her business elsewhere.

A Systems Theory Perspective

Information is the raw ingredient of any service organization, and how it is processed will influence the service firm's overall productivity (Mills and Turk, 1986). In studying the reservation booking process for hotels, it is important to consider the process as one component of a much larger system so as to best understand the implications and impact it has on subsequent processes (Deming, 1986); hence, the importance of the systems theory perspective. Walker (1995) and Barrington and Olsen (1987) define three stages of customer involvement: pre-consumption (anticipatory phase), consumption (the actual experience), and post-consumption (the residue). Lovelock (1991) and Walker (1995) further distinguish between "core" services and "supplementary" or "support" services, or what Mills (1986) refers to as "peripheral" services.

Applying systems theory to organizations, Sink and Tuttle (1989) recommend diagramming an organization's activities using an input-output model (see Figure 2-7), much like what Mills and Moberg (1982) have done in their work. Using this approach, it is easy to see the sequential dependence (Thompson, 1967) between the reservations process and the hotel stay. The reservation booking process is a discrete transaction that adds value over time in subsequent interactions with the customer and the service provider.

In this model, the upstreams represent points of origin for guest data and primary sources of input for the reservation process. Typically, an upstream is the person making the reservation, namely the guest or his/her delegate. In a digital world, the upstream can easily be construed as a software agent working on behalf of a guest or a smart chip embedded in a credit card, purse, etc.

The inputs represent data about a guest, his/her needs and preferences, the dates of accommodation, and payment information. In a service business, data are the raw ingredients. The value-added transformation processes convert these data to useful information that enables an employee or group of employees to provide highly-customized and personal services so as to treat each guest as unique or part of an exclusive segment, commonly referred to as a "segment of one."

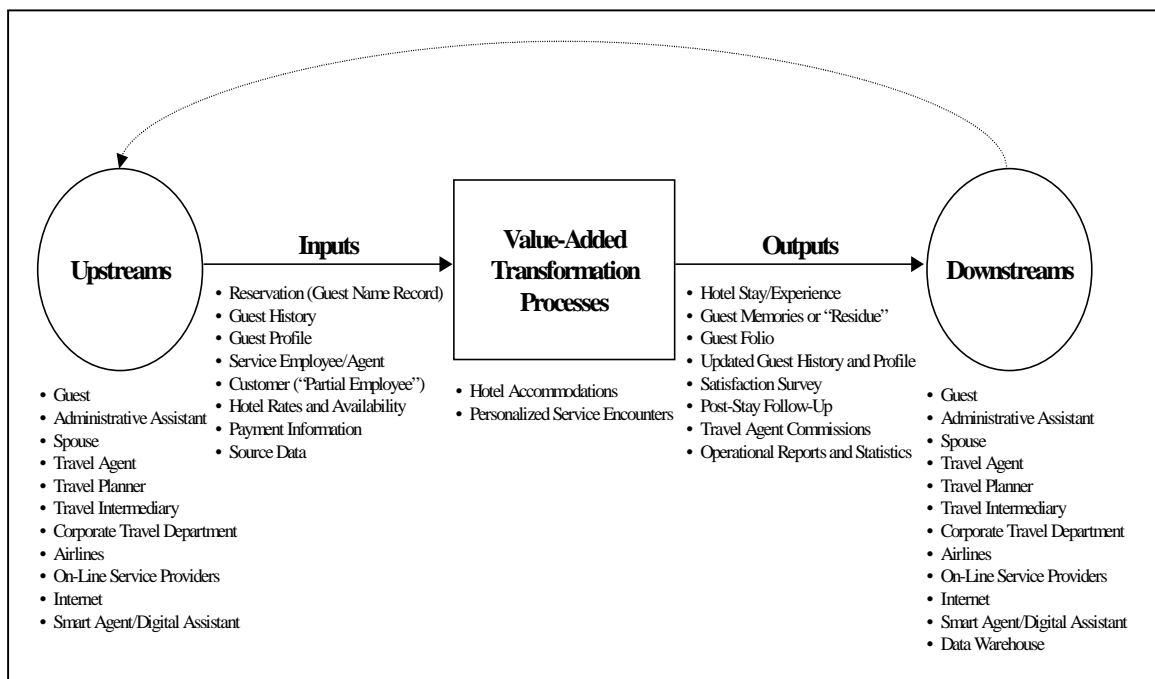
The outputs from the guest's perspective are largely intangible. They include the stay itself (the product purchased or the hotel room) and the memories or residue. For the hotel, the outputs are operational reports, guest feedback, and commissions paid to travel agents or other third-parties in return for their booking services.

The downstreams represent the final link in the chain. In most cases, these are the same as the upstreams, revealing the model's cyclical nature. In other words, these downstreams may become upstreams in the next transaction or reservation booked. This recursive relationship

is depicted by a dotted line. The exception is the organization's data warehouse, which is mostly a marketing and operational reporting/analysis tool used for internal needs and analysis versus external purposes.

The model is serial or sequential in its flow, like that of an assembly line, with each stage having profound implications on successor components. Since outputs of one segment become inputs to another, accuracy in each stage is paramount to the integrity of the model. A reservation is the starting process of a guest's stay; it, therefore, becomes the critical point of dependence for all subsequent services in the guest life cycle. If not done well, the hotel will realize the true meaning of the old adage: "Garbage in equals garbage out."

Figure 2-7: Hotel Reservations Input-Output Diagram



When looking at Figure 2-7, it also becomes apparent that much of the reservations process is controlled by entities external to the hotel (e.g., travel agents, travel intermediaries, a guest's administrative assistant, and information technology belonging to other organizations). Each of these external entities represent potential fail points (Shostack, 1984) or breakdowns in the service delivery process. Therefore, it is imperative for a hotel to have the appropriate technology that will ensure accuracy of information dissemination and collection if consistency and reliability are to be present when delivering the core services.

Aside from the guest, the reservation becomes the predominant source of input for the core service, the hotel stay. As a result of this dependency, the reservation is an influential factor in the quality and delivery of the core service. An inaccurate reservation will produce flaws

in the delivery of the guest accommodations and lead to guest dissatisfaction. Empirical research by Bitner, Booms, and Tetreault (1990) and later by Keaveney (1995) supports this notion. Using the critical incident technique to better understand customer switching behavior, these researchers discovered that core service failures are the single-most influential reason customers change service providers. For travel-related experiences, both studies cited problems with the reservation process that lead to breakdowns in the delivery of the core service—the hotel stay.

From an IT perspective, the global distribution system (which supports the reservations booking process) must also be viewed in a larger context since it is the aggregation of many disparate systems, both internal and external to the organization. Components of a global distribution system include airline reservation systems, travel agency systems, hotel central reservation systems, hotel property management systems, yield management systems, frequent traveler systems, telecommunications, electronic switches, the Internet, online service providers, and more (Connolly and Moore, 1995). Each component represents a potential source of breakdown in the service delivery process. Having the right systems in place can help alleviate this risk by tightening control of the information dissemination and collection processes. While most luxury hotel chains employ computerized reservation systems, they fail to exploit the capabilities that technology offers for fear of depersonalizing the service. Consequently, these organizations are less effective in delivering consistent and reliable service with respect to the core service. Because a global distribution system in the hotel industry is a complex network or web of systems that provide seamless access to a hotel's room inventory, rates, facility information, and guest profiles, the use of IT is imperative in assuring the consistency and accuracy of information provided to all distribution points, internal and external to the organization.

Dispelling the Myths about Information Technology and Service

Long ago, Ives and Learmonth (1984) identified the importance of applying IT to all phases of the customer life cycle to improve customer service, yet to many hotel executives, applying IT to guest-related processes is the antithesis of their organizational goals of personalization and “high touch.” What these executives fail to realize, however, is how IT can support and, therefore, enhance the service delivery process. This literature review suggests that there are a number of opportunities to implement IT in hotels. Both Collier (1983) and Roach (1988) posit that IT plays an important role in the production and delivery of services and has helped to redefine services and create new ones. Olsen (1996) and Cline and Blatt (1998) suggest that information technology will be the key to remaining competitive in hospitality firms as the industry shifts more towards a knowledge-based economy, one in which guest data become the most important assets of the firm.

There are numerous examples of how IT is improving service delivery and altering the very nature of the service delivery process throughout all types of service organizations (Collier, 1983). For example, the success of well-known reservation systems such as American Airlines' SABRE and United Airlines' APOLLO and their influence throughout

the travel and hospitality industries is well-documented (Bessen, 1993; Hopper, 1990; Konsynski and McFarlan, 1990; Pine, Peppers, and Rogers, 1995).

Discussed below are some examples of how several well-known and respected service organizations use IT to enhance customer service and ensure quality. An important observation is that many of the services described are not for everyone. Customers often must meet certain preconditions to qualify for such services. These services have come about as a result of companies segmenting their customers into like groups and adjusting the service delivery processes according to the needs of each group (Davidow and Uttal, 1989, Cline and Blatt, 1998).

Enhancing Guest Service through Information

With more electronic transactions taking place, the volume of guest information collected increases to a level that humans cannot easily manage without the aid of technology. Data warehousing and data mining technologies are gaining in popularity to address this issue and to enable detailed and accurate analysis regarding customers' preferences. Moreover, interest in these technologies is growing as hoteliers wrestle with trying to determine the lifetime value of their guests and the profitability of servicing different groups of customers. While these may be difficult feats to measure, the lifetime value of a customer and the costs for servicing various customer segments can only be ascertained if a firm has the ability to store and mine transactional information about each customer (Clemons and Weber, 1994).

Davis and Davidson (1991) discuss the need to "informationalize" a business. In order to accomplish this, companies must recognize the value of information and the information collection process. Second, they must share information with all parts of the organization, especially where customer contact is involved. The authors cite Canadian Airlines as one example of exemplary customer service because of how it uses information collected at prominent customer contact points: reservations (distribution channels), check-in (airports), and service delivery (in-flight). Information about customers is shared with each point of contact. Additionally, customer database records are updated at each point of contact as new information about that customer is learned. This enables the company to share that information and further tailor its service offerings to provide a truly unique, customized service experience. The value of informationalizing comes in the forms of streamlined overhead, internal operating efficiencies, and value-added services leading to differentiation. As Pine (1993) writes, effective utilization of information technology provides opportunities for mass customization, which, in turn, enable organizations to offer more variety without corresponding increases in cost. He adds that the mass production of individually customized goods and services drives strategic advantage and economic value.

Like Canadian Airlines, British Airways has recognized the value of information collection and dissemination to its line employees. To enhance service levels and personalization of its Executive Club, British Air's elite frequent-fliers, the company culls information from its reservations system, frequent traveler database, and check-in systems and provides this

information to every point of customer contact (Foley, 1997). To both companies, extensive customer databases enable better customer tracking and more customized services. These technologies also allow the assessment of a customer's lifetime value, an increasingly popular yet difficult variable to assess in the competitive equation.

Personalization

Zeithaml et al. (1990) cite how IT is used to "mass customize" service for more than 6.4 million members of Marriott International's Honored Guest Awards program. The use of IT helps companies like Marriott standardize, yet personalize, services to ensure consistency in delivery. Davis and Davidson (1991) describe how Canadian Airlines International uses IT to "informationalize" all aspects of customer encounters. The airline collects information everywhere it comes in contact with its customers, most notably with its distribution (central reservation) system, at the ticket counter, and again at the departure gate. The information collected is stored in the company's computer system and used during each subsequent service encounter in order to personalize the service and speed the transaction.

At AT&T's Universal Card Services division, IT is an essential component of the organizational infrastructure that enables its service agents to provide fast, efficient, and personalized service (Treacy and Wiersema, 1995). When customers call the Universal Card Service Center, their customer profiles and accounts are automatically retrieved before the call is even answered by a member of the service team. A fast customer database and caller ID make this possible; thus, enabling the service encounter to focus more on understanding the customers' needs or problems rather than collecting personal information that has already been provided in previous transactions. As an added benefit, AT&T has reduced talk-time on its toll-free lines, thereby reducing its overhead.

Speed and Convenience

At Hertz, customer profiles are stored for all Hertz #1 Club Gold members. When a customer needs a rental car, he/she calls the toll-free reservation number and provides his/her frequent traveler number. The traveler's profile is instantly retrieved containing pertinent billing information and car preferences. The only information the customer needs to provide are the specific dates and the location of his/her desired rental. The total transaction time has been streamlined. What's more, when the customer arrives at the Hertz pick-up location, he/she can bypass the rental counter and proceed directly to the parking lot. A large, billboard-style sign flashes the customer's name in neon lights and indicates the parking space where the car can be found. The rental contract is hanging from the rear-view mirror and the keys are in the ignition. The only thing that remains is a brief encounter with the security agent upon exiting the lot. The entire transaction takes only a few minutes. Despite its brevity, the encounter is quite personal, and the service delivery is consistent time after time. If a customer is late (a frequent occurrence when traveling), his/her reservation is automatically updated to reflect the new estimated time of arrival. Interfaces with airline

systems allow Hertz to continuously monitor customers arrival and departure schedules and update their files accordingly. All of this is made possible because Hertz has invested in IT to support its service delivery process from start to finish.

Marriott International's full-service lodging group, following Hertz' lead, has reengineered its check-in process with a program called "First Ten." The underlying assumption is that the first ten minutes of a guest's stay are the most important when determining guest satisfaction as a result of the "halo effect"—hence the name First Ten (Marriott and Brown, 1997). Through market research, Marriott found that the majority of its customers have previously stayed with Marriott, that most of these repeat guests are members of its Honored Guest Awards program, that most guests make advance reservations, and that most guests pay their hotel bills with a major credit card already stored in the company's customer database. Since the guest registration follows the reservations process, Marriott took advantage of its MARSHA reservation system to improve the collection and dissemination process, which, in turn, strengthens the delivery of the core service. Because of these realizations, Marriott redesigned its check-in process on the basis that it has already collected the pertinent guest information required for a guest stay. Guest preferences and billing information are stored in a guest profile, used during the time of reservation, and attached to each reservation for subsequent use. The information is then downloaded to appropriate hotel so that when the guest arrives, the hotel can extend a more personal greeting, avoid the traditional paperwork and administrative tasks associated with check-in, and process the guest in a more timely and consistent fashion.

The benefits of Marriott's First Ten program are many. For starters, it reduces the amount of time required for guest registration. Speed of check-in is frequently cited in Marriott's market research as one of the most important drivers of customer satisfaction. Under the new program, Marriott's registration process is more personalized. The focus is now on customer interaction, not the administrative duties associated with information collection because Marriott is reusing information it has already collected. Additionally, the traditional barrier of the front desk has been removed. Service associates now roam the hotel lobby and greet guests as they enter the front door. They bring the service to guests, rather than the other way around. In sum, the guests are delighted with this new approach, as evidenced by rising scores on Marriott's guest satisfaction surveys. First Ten, however, is not for everyone. There are some guests who, because of their particular situations (e.g., they are paying by cash or they are walk-in guests), cannot benefit from this service. For these guests, the service is no less personalized. It is just different. These guests are directed to the front desk where the more traditional style of guest registration is used, and because most of the traditional traffic has been channeled away from the front desk, desk clerks can now spend more quality time with each guest—versus the typical hurried approach used when numerous guests are standing in line.

Marriott's First Ten program is possible as a result of two things: 1) the information technology at both the corporate and property level necessary to support and enable the information sharing required and 2) the willingness of the staff to consider a new approach to a traditional transaction. In effect, Marriott has applied some industrialized concepts (by analyzing its inputs, processes, and outputs) without negatively impacting the quality of

the service. In fact, according to the customers, the quality of the new service is better than the old approach. Marriott has applied IT to strengthen the information collection process, which subsequently improves accuracy and reliability of the core services provided during the hotel stay. What Marriott has done is segmented its customers to reduce variance and tailor its services. Separate processes address special circumstances so that no one area gets bogged down, yet each guest receives the attention he/she deserves. This is what Levitt (1972, 1976) had in mind when he suggested the industrialization of services.

The same argument could be made that if hotels thought differently about the reservations booking process, they could find alternative booking processes using IT that allow the customer to assume a greater role in the booking process while reducing the dependency on the hotel company's reservations staff.

Hotel Global Distribution Systems

A hotel global distribution system is a complex construct comprised of various entities and distribution channels. Heretofore, the distribution channels for hotels have included travel agents, toll-free reservation numbers, convention bureaus, corporate meeting planners, the hotels themselves, and travel services like EasySABRE. The hotel GDS structure in place today stems from the role and influence airline GDSs have played in selling and distributing hotel room inventory. Technological innovations, however, are providing new, easy-to-use, and information rich tools to enable travelers to book their own travel accommodations without having to rely on travel intermediaries or airline GDSs.

Evidence of changing distribution channels and the growing trend for travelers booking their own reservations can be seen in many forms. First, there are the many developments taking place on the Internet, which is quickly moving towards interactive, simultaneous transmission of voice, data, and video. Perhaps the most visible Internet development in the hotel industry is Pegasus Systems Inc.'s TravelWeb, which allows travelers to shop for and subsequently book travel arrangements. Other popular Internet booking services include GetThere.com (formerly Internet Travel Network), Microsoft's Expedia, PCTravel, and Travelocity (a subsidiary of the SABRE Group). Additionally, many bureaus of tourism have developed home pages and the necessary links to describe attractions, accommodations, and amenities in their locales and, in some cases, provide access to booking services. A second development is the recent alliance between America Online and American Express Travel Services. This alliance allows America Online subscribers to book travel services and hotel accommodations through American Express' Travel Services division. A third development is recent product introductions by airline companies such as United's United Connection that enable customers, using personal computers, to build travel profiles, check frequent travel account balances, and book reservations for airlines, rental cars, and hotels for any company listed in the Galileo GDS. A fourth development is the rise of intranet (i.e., business-to-business) commerce. One of the most notable product announcements thus far is American Express Interactive (AXI), a product developed jointly by American Express and Microsoft Corporation.

It is developments such as these that are making it easier than ever before for customers to shop for and book travel arrangements; in fact, the industry is moving more and more towards a one-stop, one-step shopping experience for a multitude of products and services. For travel agents, these developments will lead to a redefinition of their roles in serving as travel intermediaries. For hotels, the initial hope is to reduce travel agent commissions, reservations staff, and talk-time on toll-free numbers. Yet, as each of these methods become more popular, providers of these services are likely to, if not already, charge a transaction fee which will add to a hotel's operating overhead. The challenge for hoteliers is to determine which channels of distribution should be employed today and in the future. Difficult, investment decisions with questionable returns will be required as the number of distribution alternatives grows. Hoteliers must forecast the new alternatives before they come on-line, evaluate the investment decisions for strategic and financial rewards, and allocate the necessary firm resources with sufficient lead time so as not to miss market opportunities.

The future is likely to see major paradigm shifts for the hotel industry, such as yield management programs that seek to implement dynamic or real-time pricing models (Davis and Meyer, 1998) and optimize by profit rather than by revenue, as is the case today. These shifts require more industrialized thinking. If hotels can channel reservations through services that allow them to yield greater contribution margins, they can improve their operating results and enjoy a competitive advantage over those unable to effectively manage their distribution channels.

GDS and the Triple Win

Watkins (1990) once wrote that to be considered effective, lodging technology must increase room-nights, reduce overhead, or improve guest service. A hotel GDS has the potential to provide all three.

Global distribution systems play a critical role in the sales process of any product or service. In the hospitality industry, significant advances in global distribution systems have raised the stakes of competition by providing access to more markets, creating new sources of revenue, and enhancing guest service while changing the overall economics of the booking process (Connolly and Moore, 1995). More importantly, the method of booking hotel accommodations has shifted to alternative approaches that are cheaper to operate, bypass traditional intermediaries, and require greater involvement from the customer, thereby freeing up traditional booking channels to process more complicated scenarios. As they continue to evolve, global distribution systems will reshape how travelers plan and arrange accommodations for personal vacations and business trips alike and how hotel companies interact with their customers.

The ultimate goal of a GDS strategy should be to fully automate the entire booking process. How a hotel company uses a GDS to gain a sales and marketing advantage and how a company ensures effective representation (i.e., presentation of rates, availability, product

amenities, etc.) in each channel using the prevailing interactive, multimedia technologies will become top priorities. Currently, the industry is far from reaching this goal due to a number of inherent limitations. These include the age, inflexibility, and lack of hotel functionality contained in airline GDSs; the legacy systems used by hotels; the fragmentation of ownership within the hotel industry; inconsistent applications and technology hardware platforms in use throughout hotels; and the lack of standards for interfacing and data transfer. Moving forward, it is necessary to recognize these constraints in order to understand the complexity of the issues and to ensure that these issues are properly addressed.

Defining What is Meant by GDS

To fully understand the potential of a global distribution system, one must properly define a GDS, its core elements, and its place in the value chain, or as Tapscott (1996) suggests, the value network. Traditionally, the global distribution system for a hotel organization centered on a toll-free telephone number, one or more central reservations call centers, and a CRS. It is important to note, however, that a GDS is more than just a CRS. As the level of automation grows, the very nature of the global distribution system changes and must, therefore, be redefined. New technology standards give rise to open systems that replace proprietary ones. This gives way to new forms of connectivity with internal and external systems, thereby extending the reach and capability of the global distribution system. The use of technology breaks down traditional barriers to extend the enterprise (Davidow and Malone, 1992; Tapscott and Caston, 1993; Tapscott, 1996). Time and place no longer need to be viewed as constraints, but rather resources that allow access to rooms and availability to anyone, at any time, and in any place throughout the world (Davis, 1987). Interoperability provides universal access and creates a host of new opportunities, such as disintermediation and self-booking.

Vialle (1995, p. 7) defined a GDS as “a computer distribution system for displaying available services, effecting bookings, and ticketing by tourism producers—airlines or otherwise—on an international scale.” Hensdill (1997b, p. 41) accentuates the electronic nature of a GDS with her definition of electronic distribution systems (EDSs): “the means by which hotel properties distribute inventory and rates and take reservations without the need of mail carriers, fax machines or even telephones.” These definitions capture the importance of information technology, communications, and real-time activity, yet they fail to emphasize the elements of commerce, customer service, and convenience. The concept behind global distribution systems is to deliver a product to market quickly, reliably, and cost-effectively, anywhere in the world to win market share and build customer loyalty. A global distribution system is not a single system or entity. Rather, it is a collection of systems, technology, telecommunications, people, and strategies, that when combined, provide an effective means of marketing and selling a hotel’s guestrooms and facilities. It is this entire electronic distribution and travel network, or business ecosystem that Emmer et al. (1993), and later, Castleberry, Hempell, and Kaufman (1998), refer to as the global distribution network (GDN).

As stated previously, a hotel's global distribution system is the cornerstone for all other hotel-based technology. It is a mission-critical application and the lifeline, or what Gates (1997, 1999) calls the "digital nervous system," for most hotel chains. A system failure or disruption in service cripples the hotel organization results in costly losses to both the firm and the properties it represents. The GDS is more than just a computerized point-of-sale. In its many roles, the GDS communicates information, tracks inventory, enforces selling strategies, and sells and markets hotels. It is a tool used by hotels, travel agents, and customers alike from anywhere in the world. No longer is access restricted to hotel reservation offices or central call centers. Its role extends beyond reservations order processing to marketing and more, and its primary benefits are cost and labor reductions and service enhancements in terms of more accurate reservations (Emmer et al., 1993).

Generally, distribution systems refer to delivering a product or service to the marketplace where it can be purchased and consumed. The role of a GDS is to distribute a company's products (in this case, hotel room inventory) to as broad an audience as possible in the most effective and efficient means (Crichton and Edgar, 1995). For some service-related businesses, as is typically the case for hotel accommodations, airline tickets, and car rentals, the service is purchased in advance through a reservation. The product at the time of the transaction is a promise for a service or set of services (e.g., rental of a hotel guestroom, the right to an airline seat, or use of a car) at a future date. Because the service is a perishable product, hotels must maximize its distribution and optimize the sale of hotel rooms to increase the likelihood that rooms will not go unoccupied for a given night. For most companies, distribution systems are a vital source of competitive advantage; that is, they determine how a company can distribute its products and services to the widest possible audience at the lowest cost to the organization so as to capture and grow market share.

The dynamics of distribution have changed drastically over the years as a result of segmentation, greater competition, more demanding customers, and now, newer forms of technology. Any time, any place computing requires easy and convenient access, allowing consumers to make purchase decisions on their terms (i.e., when and where it is convenient to them). Also, new players have emerged in the global distribution arena, adding to the number of distribution options available. These players hold great potential, yet they may add to the overhead of the distribution process, particularly with increased emphasis on a transaction cost pricing model. If not properly factored into the equation, a hotel company may needlessly allocate resources to channels that are ineffective, or it may pay commissions and transaction fees that otherwise could be avoided. These problems become more profound as the number of players and the methods of booking hotel accommodations grow.

While the Internet has provided hotels with many new avenues to distribute their products in today's complex marketplace, it has also exasperated the situation. More outside entities, over which a hotel has little or no control, are now involved in the selling process and are looking for compensation (i.e., in the form of commissions or transaction fees) for the services they provide. This is why a well-thought strategy must be developed with respect to global distribution systems. In today's competitive marketplace, it is no longer sufficient to rely solely on traditional forms of competitive methods such as brand identity and location. There are too many competing products and viable alternatives. Moreover, the consumer of

today is more knowledgeable and equipped with better tools that enable him/her to shop for the most appropriate products and services given a set of personal criteria and preferences.

In order to develop a full-scale global distribution system strategy, one must consider the many components that comprise the GDS. A GDS is a multifaceted construct. Its components include people, processes, computer systems, networks, and data. Because of the complexities and financial investment required to build and own a GDS, it is not feasible for one company to embark on such an effort alone (Hopper, 1990; Post et al., 1995). Joint ventures, alliances, and reliance on outside entities are commonplace and must, therefore, be taken into account as part of a hotel organization's overall GDS strategy.

Evolution of GDS in the Hotel Industry

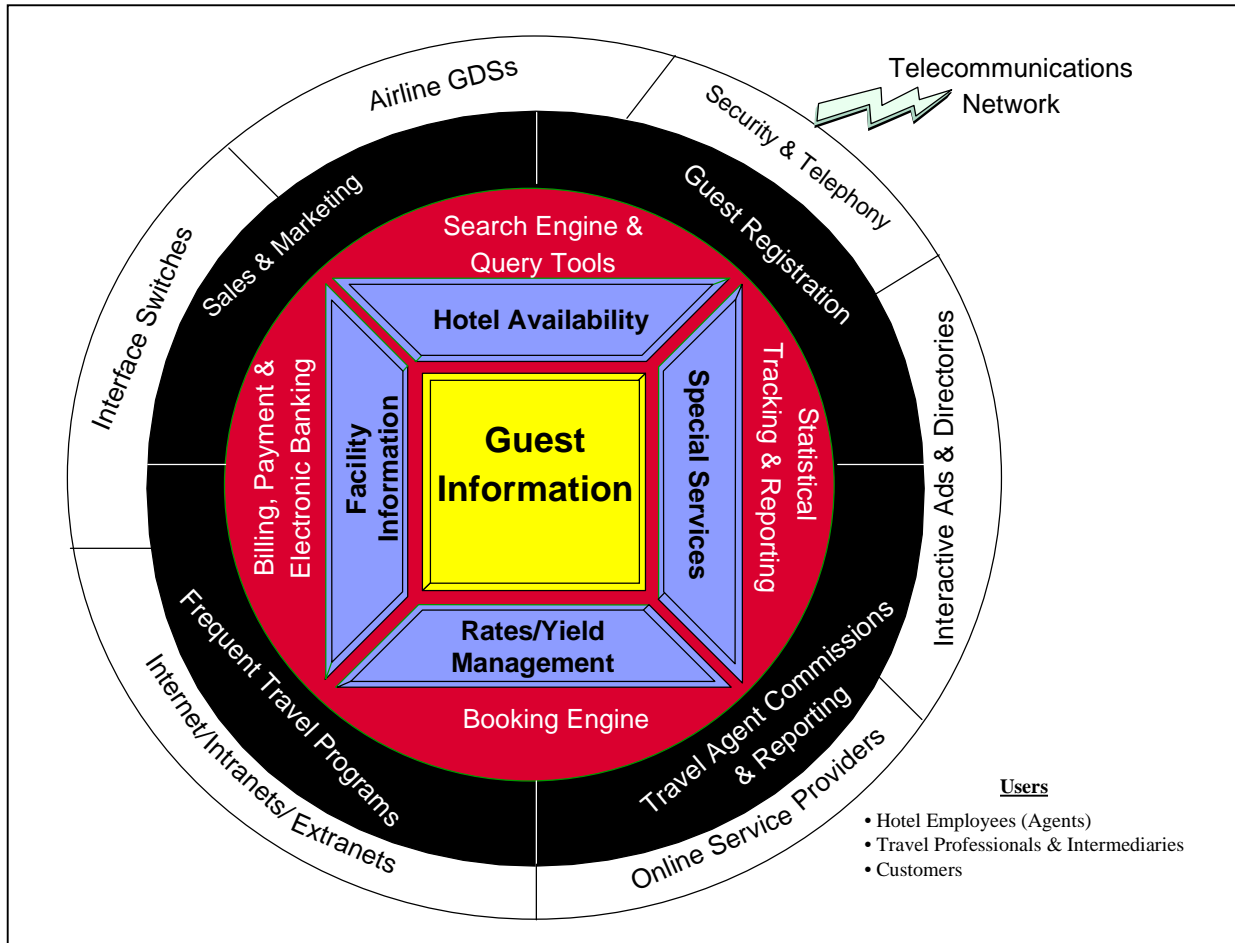
The definition of a global distribution system for hotels evolved from the airline industry. Throughout the 1960's and 1970's, the airlines introduced automated central reservations systems commonly referred to as CRS. American's SABRE and United's APOLLO (now part of Galileo) were the two largest. Over time, access to these systems was extended to travel agencies as a way of increasing bookings and reducing overhead. Airlines recognized as early as the mid-1970s that it was cheaper for them to process travel agent reservations electronically (i.e., via computer) versus over the telephone (Coyne, 1995). As these systems grew in power and reach, they began selling seats for other airlines and forming global alliances with other airlines and travel-related services. They expanded their coverage to include hotel accommodations, rental cars, cruises, travel merchandise, and more. Thus, they became generic, broad-based travel-reservation systems (Emmer et al., 1993). In return for their services (listings and reservations processing), they charged transaction fees for every booking or sale processed. Hence, they became global distribution systems, where global referred both to international reach and breadth of product offerings. Following suit, the hotel industry began adapting this terminology. With increased emphasis being placed on a global marketplace as the result of increased focus on international trade, travel, and financial markets, it seemed only logical to rename these systems as global distribution systems. Despite this new vision, the focus has mainly revolved around the CRS, which is only one component, albeit an important one, of a hotel GDS. Moving forward, this scope must broaden, since a GDS is far more complex and encompassing than a CRS.

Guests are the Central Focus

Figure 2-8 illustrates the multi-faceted dimensions of a GDS in the hotel industry. At the heart of this diagram is the guest and all of the information related to the guest. After all, the guest is the mainstay in the hotel business. Since the guest is the principal purpose of a hotel's existence, it makes sense that he/she serves as the focal point of the distribution system and strategy. Guest information goes beyond the basics of name, address, dates of stay, and method of payment. It must also include guest preferences and guest history.

When combined with dates of stay and room request data, this information comprises what is referred to in industry argot as the guest name record (or GNR).

Figure 2-8: Understanding the Hotel GDS



Building and Shaping a Knowledge Base

With respect to guest information, the goal should be to build a usable knowledge base that will allow hotel service employees to provide a unique, personalized experience. The GDS becomes the central repository and distribution vehicle for this knowledge. The reservations process is often the first encounter with a guest and the primary collection point of vital guest information. This information will then feed subsequent phases of the guest life cycle, namely registration and the guest stay. Therefore, it is incumbent upon the hotel to

accurately collect this information up front and subsequently communicate this information to all service delivery points and personnel responsible for providing these services. Each future encounter throughout the chain of interaction with that guest should then call upon and add to this knowledge base so as to provide a more holistic experience of the guest and to create a more extensive understanding of the customer and his/her needs and preferences. By using advanced database technology, this information can then be queried, analyzed, and distributed to all associates in the organization. It is no longer limited to one or two employees who have developed a close personal relationship with the customer. In the end, it is the service received and experienced that will make the overall difference and form the lasting impressions on each guest. Since the reservations process is one of the earliest stages in the guest life cycle, it is the logical starting point to begin collecting guest information.

For repeat guests, the basic information can be retrieved instantly, thereby shortening the process and advancing the level of the exchange to one of greater meaning. Once this information has been collected, it can be shared with each subsequent encounter, thereby reducing the need for basic information exchange and improving the accuracy of service delivery. The nature of these later encounters can also move to the next level—that of more personalized service and richer information exchange. This newly acquired guest information can then be incorporated into the hotel's knowledge base, complementing what already is known. As the cycle continues, the organization reflects a true learning culture.

A GDS collects and distributes reusable information to all service points within the organization. It can also extend the reach of the organization by sharing this information with external entities providing services as an agent of a particular hotel. Businesses require information and knowledge of how to use this information to be competitive. As such, content and access become the two most critical conditions of success (Vogel, 1997).

A fundamental principle of communication theory is that a network's potential benefits grow exponentially as the number of interconnected nodes increase (Quinn, Anderson, and Finkelstein, 1996). Another basic tenet of communication theory is that as communication flows become relatively more convenient, more powerful, and less expensive as the result of new mediums, traditional means of communications become less convenient, less powerful, and more expensive to operate (Noam, 1997). Both of these maxims apply to a GDS. First, its value increases exponentially as the number of people connected to it increase, and the more information is shared, the more valuable it becomes. Second, through the use of information technology, communications are faster and cheaper than via more traditional means such as by telephone, which is being displaced by newer, cheaper forms of communications such as electronic data interchange (EDI). In most cases, electronic transactions are preferred over less efficient means of communications such as telephone, fax, or electronic mail.

Hotel/Facility Information, Rates and Availability

The next level in the GDS pertains to information regarding the hotel (i.e., property-level data): its facilities, services, rates (rate plans), and availability (room status). Some of this information is static such as a hotel's address and number of rooms. Other information, such as availability and rates for a given date or date range, is more dynamic, changing frequently during the course of business. The situation becomes more complicated when yield management and pre-negotiated (contract) rates are considered. Managing the currency of information and disseminating this information in real time to all parties and systems in the distribution network becomes an awesome challenge. This is why the proper GDS linkages and infrastructure are vital to one's competitiveness. In essence, the GDS provides each hotel with "shelf space" or market access. How the hotel is indexed, displayed, and subsequently sold will depend upon to which distribution channel(s) a hotel subscribes.

Traditional Problems Sharing Hotel Information

Accessing information about a particular hotel is an important part of the guest shopping experience. This information is critical in the marketing process of a hotel. It also plays a crucial role in setting guest expectations regarding service levels that he/she will likely experience during the actual hotel stay. It is this information that often differentiates between competing hotels. In addition to rates and availability, guests typically want to know directions or how far a property is from a particular location like an attraction, airport, or office park. They also want to know about various room types and amenities (e.g., views), the availability of special services and facilities (e.g., recreation) and what types of events might be featured in the local community during their stay. For many hotels and resorts, the types of service requests are often quite involved due to the many epicurean tastes of their guests and the uniqueness of many of the rooms.

Generally speaking, the more unique a hotel is and the higher level of services it offers, the more complex and time-consuming the reservations process will be. A large number of room types complicates the inventory and selling processes. By creating room types that capture unique room attributes, a hotel can then inventory these attributes and sell them upon request. Thus, there is a higher reliability in guaranteeing that the requested room features can be met. This creates added complexity in selling, yielding, and managing the hotel's room pool than if generic room types are used. In most hotels, it is easy to describe, sell, and substitute a generic king-bedded room. However, in a luxury hotel for example, there are many more dimensions that must be considered such as the decor of the room, the view, its history, etc. Also, for specialty hotels, luxury hotels, and resorts, the types of services requested tend to be more intricate; for example, arranging limousine service, helicopter transport, or a sailing excursion. It is not uncommon for a reservation agent to arrange golf tee times, dinner reservations in one of the hotel's dining facilities, or theater tickets, etc. at the same time the room reservation is made. Thus, the reservation system's capabilities must be extended beyond the reach of hotel rooms and include booking capabilities for all services and

facilities offered at a particular resort or luxury hotel. The level of departmental interconnectivity required is higher than that for other hotel segments.

Making information available in a usable format is challenging, particularly when the information must be distributed to the extended sales force (e.g., travel agents, Internet users) via the airline GDSs or to reservation call centers using a chain's CRS. First, this information must be collected and checked for accuracy. Second, it must be organized and put in some meaningful and usable format. This requires that the data are accessible and searchable. It also requires that the information itself is standardized and displayed in a uniform format. For years, hotels have struggled to fit a multitude of rates, room types, and other information into a format compatible for airline GDSs. Often, this compromises the value of the information, making it difficult for a particular hotel to describe and convey the value of its uniqueness or charm. Finally, it must be distributed to all selling points in the distribution network. This includes reservation call centers, hotel sales/reservations associations, travel agents, Internet users, etc. The information must be distributed to anyone, anywhere, and at any time where a reservation can be made – and be kept current. The latter stages are often where the difficulties lie. According to Emmer et al. (1993), it was not uncommon for as many as 15 days to go by before a change in hotel information was reflected in an airline GDS.

Because of the reliance on older technologies, airline systems designed to sell seats on airplanes versus hotel rooms, and systems beyond a hotel's realm of control, the amount of "space" allotted for such descriptive information and the format in which it is displayed is limited. Moreover, the older technology limits its ability to be searched and retrieved in a timely manner. Search criteria are limited to only a few qualifiers, making it relatively difficult to discern one property from the next. Additionally, searches can take as long as 60 seconds to perform (Emmer, et al., 1993). For more specific information, airline GDSs typically display "fact sheets" of text-based information regarding the hotel. If not organized in an easy to scan fashion, the information may, and often does, go unnoticed. The information itself is typically displayed in plain-text (ASCII) format and is not searchable via querying tools. It is incumbent upon the agent to read each page (assuming time permits) and convey this information to the customer. If this information is not properly communicated, it is possible that guests will request and be promised accommodations that a particular hotel cannot possibly meet. This is an all-too-common occurrence. Thus, the overall usefulness of this information is diminished as a result of inadequate technology. Consequently, an over reliance on airline GDSs can lead to more commodity-like positioning, where tangible aspects such as price and location are the basis of product differentiation versus amenities, attributes, and service levels.

Despite their global market reach and deep penetration in the travel agent arena, airline GDSs can clearly be restrictive for hotels because of the way attributes and distinguishing features are displayed and sold. This is one of the many reasons why the Internet holds so much promise for the industry. While airline systems are powerful, use sophisticated technologies, and extend the reach of the hotel industry globally, they can constrain how hotel rooms are displayed, described, and sold. The software used for these applications is complex, dated,

and difficult to change. Although these programs work well in the airline industry, they lack important support for the hotel industry.

The dynamics of selling a hotel room are different than those for selling an airline seat. There are many more complicating factors, features, and variables, especially when group sales and packages are involved. Therefore, the amount of information needed to complete a sale is greater, particularly as product uniqueness increases. Yet, airline GDSs in their current form are insufficient at supporting the hotel industry's needs. For example, displaying a listing of hotels in a given area seems like a simple query. However, the definition of an area can be subjective. If the area is New York City where the population of hotels is abundant, one may want to define the area as narrowly as possible so as to limit the number of hotels that will display in the resulting list. Conversely, if the area is a remote village in Kenya, the area may require broader definition so as to generate a suitable listing of offerings. In modern systems, both of these queries could be handled simply by setting an appropriate parameter at the beginning of the search. However, the age of the airline GDSs and the inflexible programming environment eliminate or severely restrict any possibilities of this modification being implemented in the foreseeable future.

The display distance is typically set in relationship to an airport serving a particular region and the default setting is standardized for all queries (e.g., 30 miles). So if a particular search involves a remote area where the nearest metropolitan airport servicing that area is, say, one hundred miles away, there is a good possibility that hotels in this region will be under-represented by the airline GDSs. Unless the travel agent using a GDS is familiar with a particular hotel or if a guest specifically requests a certain hotel in these areas, many hotels go unnoticed and lose booking opportunities. Because these systems are ingrained in the airline industry, complex and costly to change, and aimed at serving airlines (their core constituency) there is little chance that these systems will be modified in the near term to improve their performance or ability to serve the hotel industry.

Moreover, the hotel industry provides little clout when negotiating for new functionality in airline GDSs, although evidence of this is changing with the growth of organizations like HEDNA (Hotel Electronic Distribution Network Association) and THISCO (The Hotel Industry Switch Company). To get around these limitations and restrictions, hotels must look beyond airline GDSs and wean themselves from the dependencies of today. An emerging concept is to bypass airline GDSs altogether. Both TravelWeb and WORLDRES.com are testing this capability in separate initiatives. The success of these endeavors could prove invaluable to hotels as they emasculate the stronghold that airlines have enjoyed in the hotel booking process over the years.

Tracking and Managing Room Availability

Tracking and managing room availability is a fundamental function of a hotel CRS and, therefore, of a GDS. Since rooms (which are a perishable commodity) are the primary products being sold, accurate inventory is paramount. With multiple people selling rooms for

multiple properties in multiple locations simultaneously, managing room inventory becomes a daunting chore, especially if the GDS lacks the automated links to provide last-room availability and seamless integration (called Type S connectivity) with each selling point in the network. The process is confounded by the need to simultaneously manage and control several dimensions or attributes (e.g., room type, rate, package, market segment) in order to yield the highest possible revenue for a given night. While most hotel reservations systems can manage multiple dimensions, they are unable to manage them concurrently. As a result, hotel room inventory is subdivided into what is referred to “buckets,” which are defined based on the single-most important attribute (e.g., room type). This approach is limited because it requires rooms to be allocated and because it presupposes that a guest always fits into one of the predefined categories. If not, manual manipulation of the system is required in an attempt to satisfy all of a guest’s requests. Additionally, to honor group commitments, many systems require rooms to be pre-blocked (at least by room type) even before definite reservations are received. Consequently, the reservations system will deduct these rooms from the total available supply rather than treat them as an integral part of the hotel’s complete inventory.

More sophisticated reservations systems allow further subdividing of the available inventory in each “bucket” or category along a second dimension (e.g., rate) to provide greater control (namely limits, either minimums or maximums, and fences) and interchangeability of room types. For example, either a king-bedded room or a double-double room can accommodate a single traveler requesting a generic room for one night, depending upon availability and demand. In these cases, the system will accept the reservation and adjust the total available inventory appropriately to avoid overbooking without forcing the depletion of a specific room type. These systems also provide the ability to block rooms based on multiple attributes without having to assign a specific room number. Complex algorithms are required to effectively manage, control, and optimize inventory (i.e., open and close availability, set rules and restrictions, etc.) within the reservations system, and then it is incumbent upon the hotel, through its GDS, to ensure that these rules, restrictions, rates, and availability are populated throughout all channels that comprise the GDS. Through effective control of room inventory comes increased profitability. It should be noted, however, that even with these complex algorithms in place, limitations do exist which require manual shifting of inventory to rectify the situation.

Historically, a hotel’s inventory was managed directly at each property. The “master books” were maintained locally. Rooms were then allocated to the various channels (e.g., airline GDSs and hotel CRSs) under an open and close statusing system. Each distribution point only had access to a subset of the hotel’s inventory. The approach was mostly manual and required a high degree of maintenance and oversight, and as the number of distribution options increased, so did the complexity of managing a hotel’s inventory. If not properly managed, which was often the case due to imprecise forecasting, this approach led to over- or underbooking, two equally unattractive situations. Moreover, consumer confidence in the process was eroded. They were sometimes denied rooms when rooms were available; other times, they were promised rooms when there were none to be had.

Interfacing and the Drive Toward Seamless Connectivity

Over time, the linkages between a hotel's property-based systems (i.e., PMS) and its chain's GDS and between the hotel GDS and the airline GDSs have improved.¹¹ However, not all chains have the GDS technology infrastructure in place to support seamless connectivity. Therefore, these organizations must continue to manage multiple sets of books. Because multiple sets of books are still being maintained throughout the distribution network and not always properly synchronized, credibility issues still remain, and hoteliers feel the loss of control over their inventory because they have been "victimized." Their current technology limits their capabilities and creates frustrations that have been eliminated in more technologically-advanced organizations. With more advanced, automated linkages between core systems, much of the manual, human oversight is eliminated, and access to last-room availability is provided to the major points in the distribution network.

The current trend is to move toward seamless connectivity or a single-image inventory, where a travel agent or other member of the extended sales force can "look" directly into and book within a hotel's CRS (Vallauri, 1995). The industry's current emphasis has been on developing seamless connectivity between a hotel's CRS and the airline GDSs. Emmer et al. (1993) predict that one day, the focus will shift to building seamless access directly between airline GDSs and hotel PMSs. Using the approach of seamless connectivity, a travel agent or other member of the extended sales force is granted access to the same set of information and last-room availability that had typically been restricted to internal sales associates. In effect, this eliminates the need for multiple sets of inventory books, creating a single-image inventory. Since each point in the distribution network has access to and is quoting from the same set of information, credibility in the process is greatly improved. Instant confirmation numbers (generated by the hotel company's CRS) can be provided, and each hotel company has control over how its properties are displayed and the types of information regarding facilities and services are provided. Complete integration of a hotel's property management system (PMS), CRS, and the airline GDSs is a fundamental tenet to provide travel agents and other external sales agents (including customers who book directly from the Internet) with the ability to book last-room availability right down to the individual property level.

Lack of seamless interfaces and a single-image inventory can prove counterproductive, and in the words of Emmer et al. (1993), suicidal. First and foremost, it is an impediment to delivering consistent, high quality customer service. Without this capability, travelers or travel agents are not necessarily guaranteed access to accurate and timely information. Rates and availability may be obsolete. As a result of misinformation, a hotel or third-party selling rooms on its behalf can unwittingly turn down business when rooms are available or oversell a hotel when rooms are not available. Either situation leads to frustrated customers. For example, a hotel distribution channel may report no availability in the system when, in fact, rooms are available. In this example, hotel room availability was never updated and became unsynchronized with the master inventory. Second, restricted access to inventory and rates

¹¹See Vallauri (1995) and Coyne and Burns (1996) for a discussion on the different levels of GDS interfacing: manual, Type B, Type A, and Type S seamless connectivity.

creates inefficiencies in the distribution process. It causes the development of a hierarchy with an associated degree of bureaucratic processes. Third, the inconsistencies in rate and availability between distribution channels can lead to distrust and a tainted reputation. Finally, incomplete data necessitate additional steps by the guest or travel agent to fill these informational voids. This typically requires accessing one or more of the hotel's other distribution channels. As a result, the distribution channels are taxed unnecessarily, driving up the cost to maintain them and service the customer. By providing seamless access and a single-image inventory, hotels can reduce their overhead, streamline the process, increase their bookings, and reduce human error (Emmer et al., 1993).

Yield Management Ramifications

With the advent of yield (revenue) management systems, the rate and inventory management functions become even more complex when utilizing multiple distribution points. In the past, hotels would set their rates seasonally. Other than perhaps for a few special events, a hotel's rate structure was fairly static throughout each season. Introduce yield management, and the dynamics change exponentially. Today, it is not uncommon for a hotel chain to change its rates multiple times throughout the day, based on availability and occupancy projections. Magnify these changes by the number of hotels in a chain, and the volume of rate changes is in the thousands. If the industry adopts dynamic or real-time pricing models (Davis and Meyer, 1998) where rates change continuously like a stock market based on supply and demand, consumer bidding, and other variables, the volume of rate changes would be even more substantial and result in exponential growth. Regardless of the scenario, to be effective, each rate change must be communicated to every distribution channel in the system, as soon as it occurs. This is a daunting task, but with the aid of information technology and a capable technology infrastructure, the update process can be done in a very timely and efficient manner.

Rate management must also take into account the hundreds of pre-negotiated (i.e., contract) rates, numerous affinity rates offered to those who qualify, and total, unconstrained demand. To maintain control over discounting, rate decisions historically were often made at the property level. Today, however, the model is shifting since this is not always feasible, especially when trying to provide more convenient access to customers and travel agents alike. In an interconnected world, rates and availability must be made available to everyone in the distribution network. If not, the problem becomes one of rate integrity. Consumers will lose trust in some channels in favor of others, or worse, they will seek alternative options. To offset this negative image, many hotel companies have introduced "best available rates" (or BARs) programs whereby the rates quoted at any given time are the lowest possible for which that guest qualifies at the time of the request. While this has helped to reduce some of the customer anxiety associated with rate shopping, it has not fully rectified the problem. Guests continue to contact multiple points in the distribution network, searching for the lowest possible rates and verifying the accuracy of rates quoted. This excess shopping overtaxes the distribution channels, consuming valuable time and resources that could be devoted to selling versus validation. Furthermore, it makes it difficult, if not

impossible, to capture, categorize, and analyze turndowns (i.e., denials and regrets) across multiple points of distribution, an essential ingredient for calculating total, unconstrained demand for yield management (Orkin, 1998).

Despite such limitations, the GDS offers several tools to revenue managers. Its automated linkages to a hotel's yield management system ensure that information on the books as well as historical data are accurately and timely fed into the yield management's optimization routines. After the yield management system has calculated the appropriate forecasts, it can optimize the availability, determine the appropriate rates, and set the selling restrictions and recommended strategies in the reservation system. The rates must then be shared in a timely manner with every channel in the distribution network to enable equal access to travel agents, call center reservation agents, hotel employees, and Internet users alike. Real-time uploading of rates, availability, and selling restrictions is an important GDS function, now that yield management has become commonplace in the industry. Automatic rate uploading is also important with the group sales process for responding to requests for proposals from various groups, travel agents, or wholesalers looking to buy large blocks of rooms. Seamless connectivity, as discussed previously, can alleviate many of these situations and thereby provide booking agents with the best possible rate available given a set of criteria at that moment in time, anywhere in the system.

The requirements for real-time access to rates, availability, and hotel information placed on hotels by customers, travel intermediaries, and the industry itself presents some technological dilemmas that must be addressed. In order for hotels to optimize speed and performance of their reservation systems, it is necessary to maintain data in multiple locations. In an online world, distributed databases are a fact of life because people want instant access to everything, whenever and wherever they want. Because of the complexities associated with large databases, it would be incomprehensible for a single database to process all queries and related transactions. Consequently, in order to streamline searches and reduce the amount of processing by a single system, data are distributed to multiple systems and databases. For example, airline GDSs and switches contain a certain amount of hotel information, typically static data but not always. This allows these systems to process initial queries. For example, when a traveler accesses an Internet web site and searches for all hotels with availability in a given city for a given date range, the query can be processed quickly (i.e., in real time) by searching a database maintained by the web site engine. Conversely, if the search engine had to check each individual hotel database for which this web site represents to see if these conditions can be met, the search would take infinitely longer. The compromise that hoteliers make is a trade-off between data redundancy and speed. The data redundancy increases the management burdens because if data are not accurate, customers will be misled. The result will be either oversold rooms or lost bookings, neither of which are attractive alternatives. To overcome this dilemma, hotel organizations must eliminate duplicate data where possible by trying to reduce data redundancies. When not possible, hoteliers must provide database updating and synchronization at routine intervals. Additionally, to enhance real-time access, hoteliers need to ensure high-speed data networks and high performing computer processes and databases to enhance the overall speed of their systems.

The goal should be seamless access to rates, availability, and information to all channels in the network unless otherwise advertised. For example, airlines and some hotels are using the Internet to offer deep discounted fares and rates that are only available via this channel. They do this to provide an incentive to their customers to use a lower-cost booking channel. This approach works so long as all channel operators/users and the customers themselves know what they must do to find and secure the best possible fares or rates. Some hotel companies, however, have resisted this approach in favor of rate integrity. From a guest service perspective, they favor quoting the same rates and availability information from all channels in the network. One approach is not necessarily better than the other. However, each company must set its strategy and understand the consequences. For example, will special discounts offered only on the Internet create more confusion and questions than bookings? The goal should be to find ways to increase bookings and overall yield.

By effectively managing the distribution channels, a hotel can provide incentives to direct customers via those channels that require less overhead to operate than other, more costly ones. Too many special rates and discounts offered to small audiences via specialized channels can be cumbersome to manage, both for a hotel and for a guest. Under such circumstances it may be necessary for guests to use multiple booking channels to shop for and then subsequently book accommodations. For example, a hotel may offer a particular company or group of individuals (e.g., part of an affinity group) a certain percentage discount off any available, published rate. To shop for the lowest rates, it may be more advantageous to go to the Internet. However, this channel may not accept the corporate account number or a group affinity code to honor the discount. Therefore, a telephone call to another channel may be required to see that the discount is appropriately applied. Use of multiple channels to book a single reservation can add unnecessarily to the overhead of the booking process.

A growing trend in rate management that may help to alleviate some of the problems cited above is the use of “net” rates. With net rates, the hotel provider negotiates rates with various third-party sales agents. These rates represent the lowest rate a hotel will accept on a given day for an available room and for a specified room type. It is then incumbent upon the travel agent to add his/her travel commission if he/she so chooses. Using this approach, hotels can open their availability to all channels. The booking method and the relationship between a hotel and the booking channel will determine whether or not the booking can receive a commission. This approach ensures that travelers are always getting quoted the best possible rates, given their room requests, dates of stay, and preferences. However, it poses new ethical dilemmas for travel intermediaries. If a traveler requests rate and availability information for a hotel which lists rooms available on a net basis (i.e., they are non-commissionable), will the agent honor the guest’s request and book his/her reservation or will the agent try to persuade the guest to select an alternative room type or hotel in order to receive a commission? One would hope that a guest’s interests are always placed first. The implications for a traveler are twofold. First, a traveler must select reputable agents and build a trusting relationship. Second, a traveler will need to shop agencies to see which one has the best relationship and negotiated rates with the travel provider of choice. Here again, the focus is on aggregation. The top volume producers are likely to have the advantage and negotiating clout.

The central issues when looking at rates and availability information are where this information should be stored and where control over the master books should be maintained—at the property or at some central location. Traditionally, this control has been held at the local or property level. However, chains are increasingly favoring a more centralized approach, with input and override capabilities from the local level. Hensdill (1997a) suggests that with single imaging, centralized inventory management is the logical approach since it provides a single point for rate dissemination. Additionally, she envisions centralized yield management. The type of centralization to which Hensdill (1997a) refers relates mostly to centralized processing and management. Yet, the implications are more far-reaching than she implies. What if the large chains decide to yield by city or by region versus by hotel? Some of the leading chains with a significant operating base and products representing multiple product lines in a given city could reshape the entire competitive playing field. The debate here should focus less on where the data reside; this point becomes inconsequential as long as all points in the distribution network have concurrent access to the same information.

By linking revenue management systems with the hotel GDS, seamless access to rates, restrictions, and selling strategies becomes more probable. In turn, this improves consumer confidence in each channel and lessens the number of inquiries received by each channel from those shopping rates or seeking confirmation of the rate(s) already quoted. The even bigger and far-reaching potential of better channel management, however, is the ability to yield by *profit* as opposed to revenue. Instead of simply managing yield based on revenue, one can now consider the possibilities of factoring in the acquisition costs of business. This new approach to yield would allow hoteliers to strengthen bottom-line performance rather than top-line performance by being even more selective in the business it selects when they must decide between displaced room-nights.

Critical Technologies: The Search and Booking Engines

Underlying the GDS components described above are two critical technologies: the search engine (or querying tools) and the booking engine. With the advances of the Internet, it is easy to see how essential a fast and reliable search engine is to quickly wade through volumes of information. A search engine is not just for the Internet-based distribution channels. It plays a vital role in all channels where a guest must find appropriate accommodations given a set of criteria (e.g., location, vicinity to attractions, price range, amenities, types of recreation), personal preferences, and company travel policies (if applicable). The GDS must provide tools that allow customers and end-users alike to navigate quickly and find the accommodations that meet the requests at hand, within a hotel, a product line, a chain, or even among a group of competing hotels featured in the same travel booking system (e.g., Expedia or Travelocity). The robustness of these search tools becomes more important as the discriminating features between hotels become fewer and as guests' needs become greater. The booking engine is the vital link to convert a prospective customer into an actual customer. After the appropriate accommodations have been found,

the booking engine allows the guest, agent, or reservations associate to process the booking and update the inventory throughout the GDS network.

Sales and Marketing with GDS

Sales and marketing is another key aspect of the GDS network. Traditional views of a reservation system and its agents have focused on order taking processes. While this is one component of the activity, the central elements are sales and marketing. The reservations staff is and should be viewed as part of the hotel's sales force. Likewise, the GDS should be viewed as a sales tool, not just as an order entry device. The sales and marketing component becomes more obvious when one considers group sales and the role of the sales office in attracting and booking groups and conventions, maintaining leads, and managing correspondence and sales contracts. Here the dynamics become more complex, as the GDS is frequently required to match the availability of sleeping rooms with that of meeting and convention space, recreational facilities, and destination amenities and activities. Additionally, a GDS must facilitate a hotel's ability to analyze and respond to requests for proposal (RFPs).

Important components of the GDS include the sales forecast book and the function book (diary). The GDS manages and reports on availability and rates as well as group ceilings, cut-off dates, pick-up rates, attrition, etc. It also bridges the sales department with the rooms and reservations departments and helps to eliminate duplicate transactions or needless hand-offs. Upon acquisition of a group contract, rooms must be reserved and blocked, using the group rooming list to build individual reservations for each member of the group. Real-time access to room availability, rates, cut-off dates, and selling strategies is just as important with the sales office as it is for travel agents. The GDS becomes a tool that helps them determine whether business should be accepted or declined. Built-in "what-if" tools, modeling capabilities, historical data, and knowledge can provide the necessary decision support in real time. If decisions are not properly made, the hotel's REVPAR may suffer.

Heretofore, much of the attention placed on electronic bookings under the umbrella of global distribution systems has been geared towards transient guestrooms rather than on meeting space and group sales. Fortunately, however, this is changing as chains look to advance their capabilities and level of automation to support group sales and conventions. These areas offer significant opportunities for hotels to enhance their lead-tracking capabilities and service levels, not to mention maximize revenue opportunities. There is no question that the group sales, meetings, and conventions functions are more complex than the reservations function for transient sleeping rooms. The number of variables and the amount of information that must be exchanged are far greater. For example, in arranging meeting space, one must consider the types of meetings, the space requirements, room layout, menu planning, amenities, rate structures, billing, rooming lists, and more. Because airline GDSs and universal switch companies have not geared their products to enable the selling of such services and due to the lack of standards in this area, the development of centralized sales and marketing systems has lagged behind that of reservation systems.

Opportunely, this is changing. Several hotel chains have implemented centralized sales and marketing systems that allow agents to sell meeting space and group rooms within their respective organizations. While traditionally focused on lead generations and referrals, these organizations are being transformed into full-service booking centers. The marketplace offers several products to support these functions including products from Micros/Fidelio (Fidelio Sales and Catering), National Guest Systems (Miracle), Newmarket International (Global Delphi), and SABRE Decision Technologies (Envision/Function Book).

Via the Internet, new tools are emerging to help meeting planners in shop for and book convention and meeting space.¹² These tools aid in shopping destinations and facilities, issuing requests for proposals, and finding special deals (hot dates). These new tools are a welcome relief to meeting planners who typically spend countless hours and develop frustration when planning meetings and conventions. As an illustrative example, consider a large, international company that would like to plan its annual sales and marketing meeting for approximately 500 associates. This company's preference would likely be to hold its meeting in a major metropolitan city offering a wide variety of entertainment and recreational facilities, not to mention a destination that would attract the widest number of participants possible. Naturally, the company would be looking for the most affordable accommodations possible, given its set of requirements. For the meeting planner assigned to coordinate all of the arrangements for this event, the planning process is rather daunting. The list of possible cities is endless: Paris, Barcelona, Seoul, New York City, etc. The challenges include finding hotels and meeting space that can accommodate a group of this size for the given dates and offer the various recreational facilities and amenities desired by the group, coordinating transportation, etc.—all within an acceptable price range. As one might suspect, the combinations and permutations of planning such an event are overwhelming given the level of details and the number of variables that must be considered (e.g., sleeping rooms, meeting space, catering, transportation, recreation). The process is even more complicated if the company is flexible on the dates of its meeting in order to achieve better rates.

The above example represents a significant opportunity for hotel GDSs. Hotel companies that can facilitate such shopping, planning, and bookings will be able to differentiate themselves through increased service. A sophisticated hotel GDS should allow meeting planners the opportunity to enter a list of parameters and preferences for a given meeting. The system, in turn, would provide a listing of hotels and rates that match the guidelines, dates, and specifications entered. It could even suggest alternative dates and locations that would fill off-peak demand and offer clients better rates. In the end, clients will have a smaller pool of options, thus allowing them to shop in a more timely and efficient manner. The amount of time and the cost of shopping are drastically reduced.

In return for such convenience, clients will appreciate the ease in which they can do business with a hotel company, which will likely become the basis for building a long-lasting

¹²See Appendix A under the heading Meetings, Conventions, and Conference Centers for a sampling of some of the many tools now available to assist professional meeting planners in shopping for and booking meetings and conventions.

relationship. For hotel companies, developing such capabilities offers tremendous opportunities for building competitive advantage. Competitive advantage can come through developing customer loyalty as well as through new opportunities to win new business and maximize revenues. Consider a large chain with multiple convention and resort hotels that might be eligible for such business. With a sophisticated hotel GDS in place, the hotel company could quickly and easily assess the business opportunities and determine which facility or facilities could meet the client's needs, and provide the most profitable opportunities for the hotel company.

With a well-connected GDS, work can now be completed closest to the source of activity, thus providing better and more timely service to the customer and creating an end-to-end transactional environment. After all, this is the fundamental purpose of a GDS and the main tenet of the hospitality business.

The Extended Sales Force

The hotel property reservations and sales force is augmented by a number of entities. For chains, reservation call centers, regional and national sales offices, and sister properties/brands are logical extensions of the sales force. These agents are equipped with the tools, technology, and know-how to cross-sell any number of brands, products, and services within a given hotel company as well as share leads, referrals, turndowns, and overflow demand.

Another natural element in the global distribution network for the travel industry is the travel agent and other intermediaries such as corporate travel planners, wholesalers, consolidators, bucket shops, destination marketing organizations, convention and visitors bureaus (CVBs), etc., or in the case of large groups and conventions, incentive houses and housing bureaus (organizations that work with large conventions to plan and book lodging accommodations and process the rooming lists). Accordingly, a travel intermediary is anyone or any organization that plays a role in influencing a travel purchase decision or in booking the actual reservations. There is a certain amount of discretion exercised by these intermediaries when selecting or assisting in the selection of hotel accommodations for their clients. The travel agent, for example, provides a useful service to hotels by marketing their facilities and booking accommodations for those who wish to stay there. In turn, they expect compensation in the form of commissions, typically 10% of room revenues for each reservation booked.

Other entities that should be considered as part of the extended sales force include Internet search engines, web portals, online booking services, travel clubs, auction sites, and bidding services. These play important roles in the matchmaking processes and are gaining popularity and usage.

Electronic bookings are inherently less expensive to process than bookings made over the telephone because they reduce the labor required and eliminate the costs incurred when using

a toll-free number. Thus, hoteliers should place greater emphasis on establishing electronic networks and the digital infrastructure required to promote and facilitate electronic bookings. For HEDNA, a primary focus has been to increase the number of electronic bookings and encourage travel agents to alter their booking behavior. Current statistics from HEDNA suggest that only 55% of all travel agent bookings come through an airline GDS, whereas 45% are made over the phone (25% through hotel central reservations offices and 20% directly at the property, respectively) (Rice, 1997). Hotels that can drive up the number of electronic bookings can substantially decrease their overhead.

Travel Agent Commissions

Timely and accurate payment of these commissions has been known to improve travel agent loyalty. Therefore, many of the larger chains have developed and implemented centralized applications to track, report, reconcile, and pay travel agent commissions. Although this may be viewed as more of a support service, it is included here as part of the GDS system because of its overall influence and significance in the travel booking process. To work successfully, the GDS must track travel agent activity by IATA number. This includes reconciliation between expected room-nights versus actual room-nights, since reservations can be canceled, extended, or shortened. Proper and timely administration of this function reduces unnecessary overhead researching reservations after-the-fact and matching them with guest folios. In the end, a centralized travel agent management system provides a valuable service to an important marketing arm of the hotel. Slow payments and inaccurate tracking of travel agent bookings are commonly raised concerns by travel agents (Schulz, 1994). For example, if a reservation made by a travel agent is modified at a later date by another distribution channel or at the time of registration, the travel agent may not receive credit for channeling the booking to the hotel. By using automation to rectify these problems, hotels can maintain positive relationships and ties. As a result, the travel agent distribution channel can be a rewarding and lucrative one for a hotel by filling rooms that might otherwise go unsold. Travel agents, when used correctly, can be an effective sales force for hotels, not an adversary as many hoteliers view them (Schulz, 1994). However, this channel also requires careful oversight so that commissionable rooms are not displacing higher-margin rooms coming from non-commissionable channels.

Other External Linkages

A GDS must also provide linkages to various external systems such as electronic banking, and airline frequent travel programs. Online billing, banking, and electronic funds transfer are growing trends. Corporations are seeking ways to control and reduce travel and entertainment expenditures. As part of this new wave of cost-consciousness, they are turning directly to the suppliers to provide detailed reporting on their company's purchase activity. Furnishing this transaction history, summarizing it, and presenting it to client organizations in a meaningful format will become new sources of value-adding services and strengthen the customer-supplier alliance that is so commonly sought after by customers in this competitive

environment. Corporate intranets will help to provide this detail and electronically bill large organizations in regular intervals for all travel that has occurred company-wide. Billing transactions can then be electronically matched and verified against employee expense reports. Companies could then streamline their accounting and accounts payable departments and submit a single check, or better yet, make an electronic payment each month to their hotel supplier(s) of choice. This level of automation would also streamline the accounting process for a hotel, ensure faster payment, and reduce float.

The Internet model of commerce (e-commerce) is adding to the speed in which electronic payment is becoming an acceptable alternative. In the traditional model, a GDS must be able to authorize credit card accounts to guarantee reservations. In some cases (e.g., advance purchase), the purchase occurs at the time of reservation. Therefore, the GDS must be equipped to handle an electronic credit card settlement. In the future, as electronic payment and usage of smart cards grow, a GDS will need to be equipped to handle full settlement and funds transfer with various forms of electronic currencies. A GDS will also need to be more adept at dealing with and converting foreign currencies, thus emphasizing the global nature of the industry. This means that reservations should be quoted in a guest's native currency (or the currency of his/her choosing) while taking into account the appropriate, up-to-date currency exchange rates.

Frequent travel points are quickly becoming a new form of currency, thanks in part to new promotions by credit card companies, telephone companies, and others. Affinity cards allowing consumers to earn points for travel have mushroomed. Hotels have long maintained relationships with airline frequent travel programs to help build and earn customer loyalty. Staying at hotels often earns guests bonus mileage on their airline carrier of choice. Therefore, hotels must include membership information for each of their guests in their guest history and profile systems. Managing these relationships, the various promotions, and the awarding of points requires strong technological ties between the hotel company and the participating airline. The GDS provides the vital linkage. It must store the appropriate rules and bonus promotions and forward guest account information to the selected airline program when points have been accrued as the result of a hotel stay. Successful links require that a hotel's GDS communicate and pass the necessary information to and from the hotel property management system. In turn, the GDS must be able to forward this information reliably to each participating airline program. Equally important is a growing demand for guests to have the ability to check account balances, redeem points, and request room upgrades instantaneously during the reservations process. In order to meet such demands, a GDS must have the proper real-time linkages to a frequent travel system.

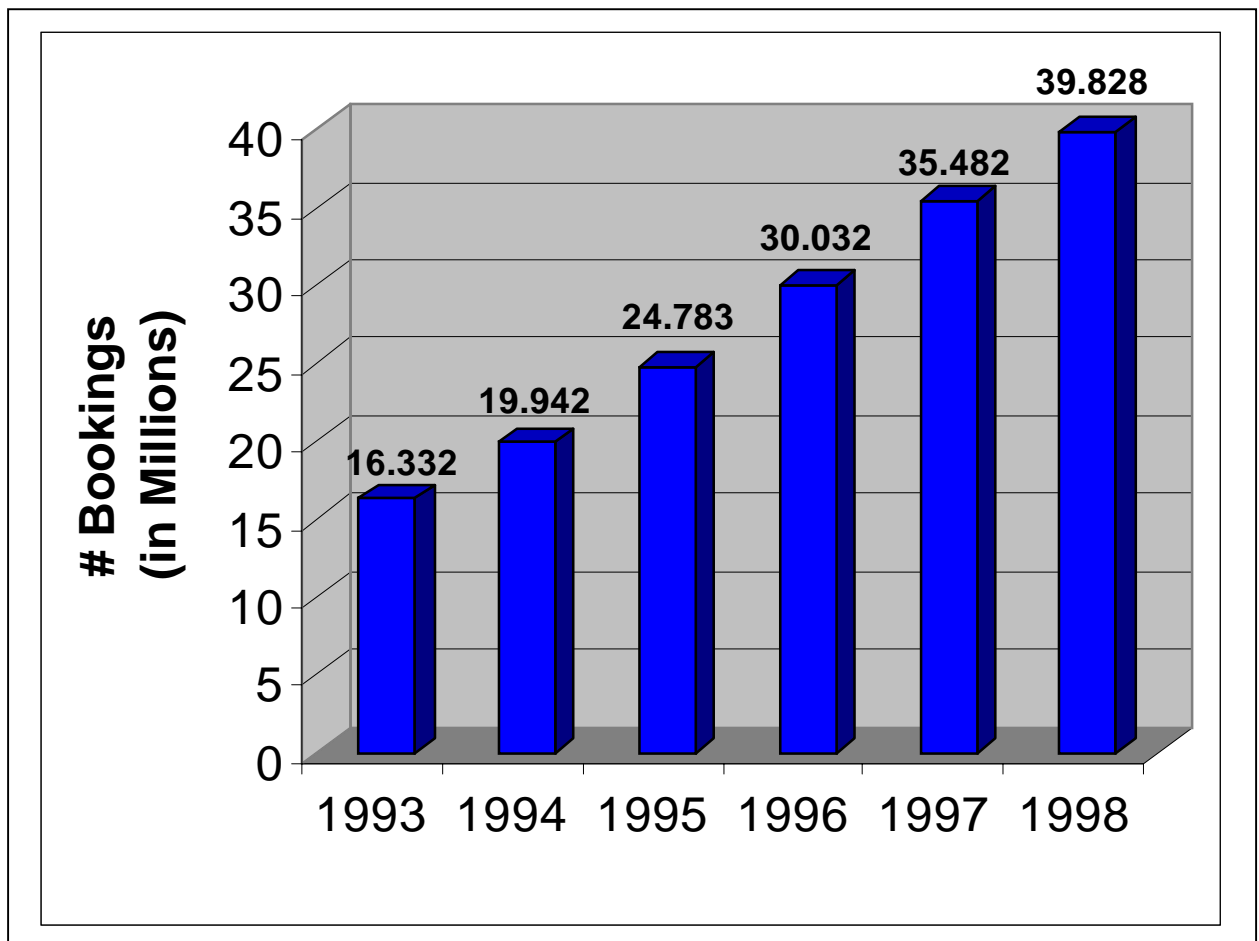
Airline GDSs

Fundamental to today's hotel GDS strategy is connectivity to the many airline GDSs because they provide access to the travel agent market—some 500,000 agents according to Michaud (1997)—and because they are increasingly being used as the backbone and booking engine of many Internet travel booking services. In short, airline GDSs are a prominent

source and distributor of hotel information (e.g., rates, availability, etc.), which is supplied to them by the participating hotels.

Emmer et al. (1993) write that computer reservation terminals are quickly becoming a travel agent's lifeline. Since 1993, electronic bookings via airline GDSs have enjoyed double-digit growth, as depicted in Figure 2-9 (HEDNA, 1999). Based on this evidence, it goes without say that airline GDSs are powerful links in any hotel GDS network and significant contributors to hotel room sales. Additional statistics furnished by HEDNA further illustrate this point. In 1996, airline GDSs accounted for more than 30 million hotel reservations, which netted in excess of 60 million room-nights ("GDS Bookings," 1997). Rice (1997) reports that airline GDSs account for the majority of all hotel bookings. Airline GDSs account for one-third of all net hotel reservations, whereas 44% come directly to hotels, 16% come through hotel central reservations offices, and 1.6% come through the Internet. Surprisingly, however, airline GDSs account for the highest percentage of no-shows (57% compared to 43% for telephone reservations) (Rice, 1997).

Figure 2-9: Net Hotel Bookings from Airline GDSs



Source: HEDNA (1999).

Through consolidation, the number of primary airline GDS vendors (i.e., dominant, global players) has been reduced to four: Amadeus, Galileo, SABRE, and Worldspan. Each vendor is vying to control the world's supply of airline seats, rental cars, and hotel accommodations. Market share in terms of hotel bookings for each GDS is as follows: SABRE (39%), Galileo (34%), Amadeus (17%), and Worldspan (3%) (Rice, 1997). The secondary (i.e., more regional) players include Abacus, Axess, Infini, and Sahara.¹³

While the hotel industry has enjoyed a large degree of success through airline GDSs, this technology is unable to fully represent hotels and their unique attributes. After all, these systems were initially designed to sell airline seats, which have very different and far less complex characteristics than hotel rooms. Other problems include outdated technology (these systems date back as much as 30 years), inflexible programming languages, costly maintenance and administration, complex and expensive interfaces, time-consuming updates, and rising transaction fees. Hence, hoteliers are growing increasingly dissatisfied with the capabilities of airline GDSs, and in an age of direct marketing customized to each individual consumer, the airline GDSs are showing their shortcomings. However, many obstacles preclude the development of a replacement system, including cost, technical expertise, and market penetration. Since airline GDSs continue to hold a lock on distribution, play a critical role in reaching key markets, and are used as the primary booking engine for so many distribution channels today, their use will likely continue for years to come, even though in some situations they may be bypassed.

Universal Switches

To close the gap and gain access to these technologies, independent hotels became part of franchised chains or built independent networks. The gap started to diminish about ten years ago with the development of universal switches and the rise of reservation service firms like Utell International. These switches are communications devices that essentially translate, convert, and exchange information between hotel systems (CRSs or PMSs and airline GDSs). Today, these switches help to level the playing field, providing all hotels, independent and chain-affiliated alike, with equal access to the airline GDSs. The marketplace features two switch providers: Pegasus Systems' THISCO, with a 42% market share, and Cendant's (formerly HFS) WizCom, with a 48% share of the market (Rice, 1997). These vendors provide competing services, and their universal switches have become among the most vital components in the hotel GDS strategy because they provide hotels with universal access to airline GDSs, travel web sites, and more. They provide a vehicle in which hotels can be represented and sold via multiple distribution channels, complete with last-room availability.

¹³The purpose of this research is not to provide a full history of the developments of airline GDS but to demonstrate the importance and role of airline GDSs in a hotel GDS strategy. If interested, the reader may wish to refer to Chervenak (1992), Vialle (1995), Coyne (1995), Emmer et al., (1993), Copeland and McKenney (1988), and "CRS," (1995).

As the number of distribution options grows, connectivity to these switches becomes more valuable. For example, Pegasus' TravelWeb and WizCom's TravelWiz are logical extensions of the services these switches provide. Both are Internet booking services that are connected to its respective switches to provide consumers with online hotel booking capabilities. With a switch in place, hotels need only develop and maintain (note: this could be outsourced, if desired) one interface to the switch of choice. The switch provider will then develop and maintain all linkages to external systems. Although there are still subscription fees, transaction costs, and interfaces to be maintained, the overhead is significantly lower than maintaining four separate links to each of the airline GDSs. Additionally, the switch vendors help provide more leverage for the hotel industry when trying to negotiate for added functionality in each airline GDS. Because of the connectivity they provide, the switch companies are quickly becoming one of the most influential and strategic components in a hotel GDS network.

Enter the Internet, Intranets, and Extranets

Throughout this research are references to the Internet, company intranets, and extranets as growing parts of the hotel global distribution network. These entities and the assorted technologies they use (e.g., search engines, filtering tools, multimedia, push technology, software agents, etc.) are among the fastest growing components of the hotel GDS environment and offer the most potential for reshaping how the distribution network reaches its constituents. Hotel property management systems and reservation systems are becoming "web-enabled" to support Internet bookings without having to rely on intermediary systems like airline GDSs and switches. These tools offer new alternatives for bypassing traditional GDS players, and they provide anytime, anywhere access to reservation services. Reservation channels that bypass airline GDSs and travel agents provide streamlined access and reduce transactional overhead. The Internet also has potential for serving as a company's wide area network (WAN) that connects multiple sites (hotels, call centers, offices, etc.), intermediaries, and customers. Taking advantage of the Internet's communications and networking capabilities will enable hotels to further reduce their operational overhead.

One example of a pioneering Internet application comes from Atlanta-based US Franchise Systems, Inc., which is deploying the Internet in support of a corporate strategy for maintaining a low-cost market leadership position in its Microtel Inn & Suites brand ("Microtel Inn & Suites," 1997). This is the first national chain to use the Internet's virtual private network (VPN) capabilities in lieu of developing and supporting its own corporate data network to transport all reservations-related data traffic between hotels and the company's central reservation system. In effect, the Internet becomes Microtel's wide-area network (WAN), thus negating the need for costly leased phone lines or satellite equipment, greatly simplifying network support, and drastically reducing overhead. Scottsdale, AZ-based Global Resources, Inc. developed the chain's CRS, known as FIRST, based on its Falcon Reservation System. FIRST provides a two-way interface, complete with last-room availability, to Microtel's property management system (PMS) ImagInn from MCorp.

Growth of Electronic Commerce

Electronic commerce is not a new concept. It has been around for some time. In fact, upwards of 95% of all *Fortune* 1000 companies use some form of electronic data interchange (EDI) ("Electronic Commerce," 1997). What is new, however, is the increased attention on electronic commerce because of the role of the Internet. The Internet essentially provides a cost-effective infrastructure for communications, standards, and a set of tools necessary for businesses to take advantage of electronic commerce, either business-to-business or business-to-consumer. What was once affordable by only large organizations is now attainable by small companies and individual hotels. Expensive, private data networks between two companies can now be replaced by the Internet, a public access information highway, thereby enabling electronic commerce between any organization or consumer with access to the Internet.

Growth of Travel on the Net

Travel-related services are among the fastest growing areas for electronic commerce via the Internet and are projected to account for almost half of all web transaction revenue by the end of 1997 (Shapiro, 1997b). There are an estimated 11,000 travel-related web sites, more than 2,000 of which support online reservations (Underwood, 1996; Visgaitis, 1997; Loftus, 1997).

The growth of travel on the web is significant, especially when considering that online travel bookings in 1996 represented only one-half of one percent of all travel bookings or a meager \$276 million (US), which on the surface seems hardly worth noting given the overall size of the travel and tourism industry ("Conference Statistics," 1997). However, the trend is changing, and the numbers are growing at an accelerated rate. Jupiter Communications anticipates that by the year 2000, online bookings will account for as much as five to seven percent of the total ("Commerce Statistics," 1997). Lodging revenues alone will grow almost tenfold over the next five years from \$1.1 billion (US), or 4.44 million trips, in 1998 to nearly \$10 billion (US), or 37.12 million trips, by the year 2003, predicts Forrester Research (McQuivey et al., 1998). This underscores the power, capability, and potential of the Internet. The Internet and the lodging industry are considered to be a good match for each other for the following reasons cited by Chowdhury et al. (1997) and Wada (1997):

- 1) The Internet communicates rich content extending beyond room rates and availability. Pictures, video, maps, and more assist hotels in proactively selling their products. These sites are more than just order-takers.
- 2) The majority of consumers book their own lodging accommodations rather than relying on travel agents. For example, according to a Travel Industry Association study of travel in 1995, 79% of all travelers booked their own hotel accommodations (Wada, 1997).

- 3) Internet booking sites are targeting the customer directly rather than travel professionals. Thus, these services are making it easier and more convenient to shop and book travel. Plus, they are complementing their web sites with additional tools, information, and services to ease the travel planning process.
- 4) The Internet supplements booking services provided by reservation agents at call centers.

Covering the Gamut

Today, the Internet covers the entire gamut of lodging accommodations. Not only does it provide information and booking services for all of the traditional lodging segments (i.e., budget to luxury), but it also provides access to bed and breakfast establishments, country inns, hostels (youth and elder), cruises, campgrounds, timeshares, and even home exchanges. The geographic regions covered are just as expansive, ranging from major metropolitan areas to some of the most remote locations known. This adds to the richness of content available and makes the Internet the most comprehensive source of travel information, anywhere in the world.

Despite the limitations of today's technologies (e.g., modem speed, software user-friendliness, etc.), millions of people are accessing the Internet and booking travel (Shapiro, 1997a). With more advanced features, better organization, and faster performance, all of which are promised as part of Internet2 and its complement the Next Generation Internet (NGI),¹⁴ the number will only skyrocket. Increased backing from the US government and the Clinton administration with favorable terms for commerce (i.e., duty-free, hands-off regulatory approach) will also add to the Internet's popularity and acceptance rate. A survey by Yankelovich Partners suggests that hotel reservations were the most attractive item for online purchases (receiving a 75% response) among people who have never before purchased items online (Weber, 1997). Jupiter Communications predicts travel-related sales to reach \$1.15 billion (US) in 1997 and grow as high as \$6 billion (US) by the year 2000 (Shapiro, 1997b). Leading this growth are well-known Internet booking services such as Microsoft's Expedia, Travelocity, and Preview Travel; each average in excess of \$4 million (US) in weekly sales, according to company press releases. Another growing area of influence is coming from web portals, those aggregators of information and services (e.g., Yahoo! and Excite) that provide gateways, easy access, and search/comparison-shopping tools for end-users.

Electronic bookings are on the rise and are projected to continue growing. According to HEDNA, electronic bookings in 1995 rose by almost 40% over the previous year and accounted for 26 million reservations (Hensdill, 1996a). With 98% of all U.S. travel agencies automated, the number of electronic reservations in 1996 was expected to grow to 35 million (Gilbert, 1996). Most of this growth comes from travel agents due to the time

¹⁴For further information regarding these developments, please refer to <http://www.internet2.edu>.

efficiencies and improvements in technology (i.e., better access to hotel rates and availability). Additional growth will come from the rising popularity of online bookings via the Internet.

Entry to New Markets, Untapped Potential

Hotel GDSs have provided hotel companies with an avenue for growth. Not only have they increased room-nights for individual hotels but they have also allowed hotel companies to expand by adding new franchises and managed hotels to their portfolios. Market positioning, penetration, and economies of scale have driven the success of reservation systems. Access to airline GDS systems allows hotels to extend their reservations reach to travel agents and others. For independent hotels, it is estimated that a GDS provides between two and 15% net of all room-nights booked and can be done at a cost of less than four percent of the gross room revenue (Gilbert, 1996). Travel agents are increasingly looking to book hotel rooms to supplement airline commissions that were capped by airlines in 1995 and again in 1997. Currently, hotel bookings only account for 11% of a travel agency's total revenue (Golden, 1994), and because of information gaps and restricted access to rates and availability, they represent an agent's greatest risk (Schulz, 1994). Oftentimes, a travel agent is held accountable if a hotel booked by that travel agent does not meet a guest's expectations. Therefore, it is incumbent upon hotels, if they want to participate in this added selling power, to develop and implement effective strategies for managing and *sharing* hotel information, rates, and inventory to these external channels. Gilbert (1996) suggests that hoteliers should not underestimate the role of GDSs and travel agents in favor of the Internet because of the volume of business these resources provide.

Travel is conducive to Internet commerce because the product traded at the time of the transaction is a travel itinerary. It is purely information-based. Travelers are turning to the Internet to find the best fares, compare products, and learn more about their destinations before they arrive so as to maximize the benefits of their stay. The growing complexity of travel information is one of the leading catalysts for growth on the Internet (Shapiro, 1997a). Brochures, travel guides, and other print material quickly become obsolete. The Internet, on the other hand, can be updated easily, providing consumers with instant access to the latest rates, availability, weather conditions, events, and more. The Internet is a tool that can help sort, filter, and digest large volumes of information that are too vast for human consumption. Thus, the Internet serves as a vast library of information for consumers, travel agents, and corporate travel planners that provides essential information to support informed decision-making.

The second factor leading to the growth of the Internet is the mechanization of the booking process itself (Shapiro, 1997a). The congruence between the task (i.e., reserving a room) and the technology (i.e., personal computers, the Internet, and web browsers) is the underlying success (Copeland and McKenney, 1988). Once the information gathering, product comparison, and decision stages have been completed, the actual booking process is, in most

cases, a simple and routine process. These types of transactions lend themselves well to automation.

While Internet-based bookings today only comprise a small percentage (typically less than 2%) of total bookings for any travel-related company, the numbers are growing and projected to reach significance by the turn of the century. Needless to say, the impact of the Internet is being felt, causing the major travel providers to shift their web focus from providing information to enabling direct bookings. Based on a survey of online shopping conducted by CIC Research, there are between 7.2 and 10.8 million pleasure travelers using the Internet with a potential buying power in excess of \$10 billion (US) for travel alone ("American Express and Microsoft," 1996). Ranking second, only to computer purchases for online commerce transactions according to Forrester Research, travel-related purchases over the Internet grossed \$126 million (US) in 1996 and are expected to reach \$1.6 billion (US) by the year 2000 (Visgaitis, 1997). Jupiter Communications' projections of online travel purchases are more optimistic and that by the year 2002, travel will represent the largest category for consumer online spending. This company estimates online travel purchases to be in the vicinity of \$600 million (US) annually and forecasts growth to reach \$6 billion (US) by the turn of the century (Shapiro, 1997b). While the estimates of Internet bookings are difficult to measure precisely and although the projections vary widely by source, the reality is that consumers are both shopping and booking online—and in growing numbers. The consensus is unanimous among the various Internet analysts and market watch groups; this trend will continue for the foreseeable future.

Of the more than 11,000 travel-related web sites, there are more than 2,000 sites that support online reservations, many of which offer Internet-only travel deals for lodging, air, car, and cruise accommodations (Underwood, 1996; Visgaitis, 1997; Loftus, 1997). Many of the deep discounted fares are targeted towards leisure travelers and are designed to sell excess or distressed capacity. Although not always predictable, many business travelers may also benefit from these specials versus calling a travel agent or travel provider directly and being penalized for making last-minute arrangements.

Despite the growth in online travel services and usage, studies indicate that there is still a large number of travel managers relying on older technologies to make travel arrangements. For example, Cahill (1997) suggests that 80% of all reservations booked today are done so using non-electronic means (e.g., fax or telephone). Corroborating this statistic is a study of 282 US travel managers conducted by Runzheimer International. This study revealed that while use of online booking methods is on the rise, 58% of all travel managers regularly use fax machines and 19% use electronic mail to book reservations (Hensdill, 1996b). These approaches are less efficient and more laborious than online booking methods. They cannot provide real-time access to rates and availability and interaction. Moreover, they require rekeying the information into a hotel's reservation system, which could result in potential data entry errors that could lead to service breakdowns. By pushing more towards online booking methods with seamless access to information, rates, and inventory, these problems can be avoided.

Agenting Transactions and Relationship Management

The Internet is bringing a sense of reality to the “virtual enterprise.” It is also giving rise to agenting transactions and relationship management. In a sense, it is a preview of what is yet to come. The convergence of personal computers, telephony, the Internet, television, other forms of media, and feature-rich software will ensure that new forms of electronic commerce take shape. By providing universal access to information, the Internet has the potential to transform commerce, from marketing to consumption. Enhancements in personal digital assistants, smart agent technology, information appliances, wireless communications, and interactive television will fuel new forms of commerce. Moreover, the consumers’ quests to redefine price-value relationships (i.e., higher quality at lower cost, delivered faster and more customized) for the products and services they buy will not only require but demand new forms of commerce and new channels of distribution—all of which require technology to deliver. Tantamount to this new paradigm created by the Internet will be an increased focus on transaction-based economics, where fees are charged for actual usage, sales, bookings, leads generated, etc.

Chat Rooms, Discussion Groups, and Bulletin Boards

Another component of the Internet that should not be overlooked is the web’s word-of-mouth capability. One should not underestimate its ability to amplify people’s feedback, both positive and negative, and its ability to outlive traditional forms of communication. Some companies routinely monitor these forums to gain valuable customer feedback and insight as to customer/market needs. They also monitor these forums for references made about their companies or products and provide “damage control” when necessary.

Discussion or “chat” groups, news groups, and bulletin boards create a sense of community and build loyal followings. From a consumer’s perspective, these forums provide precious insight that enables them to make more informed purchase decisions. The information garnered here can guide consumers in the selection of a hotel product or company just as easily as it can steer them away from one that resulted in a negative experience for someone else (even if the people have never before met). For example, Amazon.com uses these forums to advertise and build hot links to its electronic bookstore. With this approach, the company can customize reading lists for each special interest group because their demographics are well-defined. The result: discussion groups provide and generate leads and referrals for Amazon.com. In the future, smart agents, or as Tapscott (1996) refers to them, “knowbots” will automatically read, evaluate, and filter the content of these discussion groups and use it to feed the selection and decision criteria for each and every purchase decision.

Internet Service Providers

Extensions of the Internet are the online service providers such as America Online, CompuServe, Prodigy, and others. These services provide users with travel booking services through alliances with airline GDSs and travel agents in addition to those available via the Internet. A similar concept would be airline direct models such as United's United Connection, which provide users with dial-up access to its reservation system and frequent flyer system.

Intranets and Extranets

One of the fastest growing markets for electronic commerce is the business-to-business marketplace via intranets talking to each other to comprise an extranet. International Data Corp. (IDC) predicts that web-based commerce between businesses will grow from \$1 billion in 1995 to \$117 billion (US) by the year 2000 (Stipp, 1996). In the words of Lotus Development Corporation's president Jeff Papows in his keynote address at the Spring 1997 Comdex show:

“The burgeoning use of the Internet and the rapid development of corporate intranets and extranets will spawn new markets, foster entirely new relationships between business entities and usher in an era of profitable electronic commerce, particularly in business-to-business commercial applications” (“Electronic Commerce on the Threshold,” 1997).

Business-to-business transactions are rising in volume via the connectivity of multiple intranets in what has become to be known as extranets. Texas Instruments, for example, has contracted with GetThere.com (formerly Internet Travel Network) for corporate travel. By providing access to its top 400 frequent travelers, Texas Instruments expects to shave \$1 million from its \$200 million (US) travel and entertainment budget in the first year of operation and as much as \$11 million (US) over the next five years (Wagner, 1997a). Charles Schwab's in-house travel agents spend, on average, one hour per business trip coordinating all of the travel arrangements, costing the company between \$55 and \$60 (US) per trip. With access to the Internet, the company expects to reduce the time to just 15 minutes and the overhead to \$18 (US) (Wagner, 1997a, 1997b).

Leading many of the new developments in intranet development and online travel is computer giant Microsoft. In July of 1996, Microsoft formed an alliance with American Express, the largest travel agency network in the world with travel bookings in excess of \$15.1 billion (US), to provide an online booking service for corporate travel (“American Express and Microsoft,” 1996). The goal of this alliance is to embrace Internet and intranet technology to revolutionize how corporate travel is booked. According to American Express, 66% of its corporate customers will likely use Web-based interactive booking by 1999 (Christensen, 1997b). The American Express/Microsoft product, originally called Rome but recently renamed to American Express Interactive, will help companies control travel

expenditures, the third-largest controllable expense in most companies, by enforcing corporate travel policies and making pre-negotiated rates accessible to all company associates. The product also expects to tap a portion of the \$145 billion (US) market for US corporate travel bookings. The resulting product provides business travelers with a fast, convenient, and secure method to book travel accommodations consistent with corporate travel policies and guidelines directly from their PC's. At the same time, the system will provide better control, expense management, and increased savings to companies who choose to implement the system. American Express studied travel expenditures in *Fortune* 500 companies, focusing on what it termed the four most significant time-eaters associated with the travel process: booking a trip, filing and processing expense reports, managing cash advances, and reconciling central bill accounts ("American Express Expands," 1997). From this study, American Express concluded that indirect costs add as much as 10% to a company's travel budget. By automating these processes, American Express projects overhead reduction by as much as 75% (American Express Expands," 1997). Following this lead is IBM, with the help of SABRE's Business Travel Solutions, who is bundling travel booking functionality and expense reporting in its Lotus Notes and Domino Merchant software (Rosen, 1997a).

The possibilities for using the Internet are many and limited only by one's imagination. In time, the convergence of telephony and computers will enable real-time transmission of voice and video using the Internet to communicate with anyone in the world, regardless of what type of telephones or computers are used on either end. While holding a conversation, the users can continue to surf the Internet, download or transfer files, and watch videos. This research explores at greater lengths the many developments, capabilities, and services available using these technologies as channels for distribution.

Supporting Entities and Technologies

The hotel GDS model would be remiss if it did not include various support entities. Underlying the entire GDS model is an intelligent telecommunications and security infrastructure that makes it all possible. This formidable and sophisticated infrastructure must maintain a high degree of reliability, offer high-speed throughput, and provide secure transmissions. With the convergence of computers, telephone, and televisions, these networks must be able to concurrently handle large volumes of multimedia traffic. This infrastructure includes the telephones, cable, routers, firewalls, encryption, and the networks that allow for the secure exchange of data, voice, and multimedia to sell and market the hotels. Traditionally, these networks were private networks, built and supported by each organization or outsourced. Today, they also encompass public networks like the Internet. These networks, in and of themselves, are extremely complex and include a number of devices from telephone switches, satellite dishes, and networks to computer monitors (to track network traffic), security devices, and more. All combined, these components comprise the information superhighway for the organization. They must be intelligent to route traffic via the fastest and most cost-effective path possible. They must also be smart enough to reroute traffic in the event of a network or system outage, and they must be secure

to limit access to only authorized individuals and entities. The intelligence built into the network ensures its reliability, security, and operability without a lot of human interfacing. While most of the network functions are behind the scenes, they are critical to the success of the GDS model.

Telecommunications, Telephony, and Networking

There are also a variety of telephony products, services, and components that are used to make reservation call centers more productive and efficient. Most visible is the toll-free number, which until recently was country-specific. Today, toll-free numbers are global, allowing a single number to be advertised worldwide. Call centers use automated call distributors (ACD's) which route calls to available agents, sometimes even at other hotels or call centers. They also provide meaningful reports regarding agent productivity, talk time, and total time spent waiting in the queue (i.e., hold time). Caller ID is another form of telephony service that can benefit the reservation process by helping to recognize a caller and retrieve his/her travel profile and most recent reservation before the call is answered. These are just a sampling of many of the telephony components that comprise the hotel GDS environment.

Another support component of a hotel's GDS network is marketing media and collateral: advertisements (print, television, radio, billboards, Internet, etc.), promotions, and directories. Traditionally, these elements would likely have been omitted because they were unidirectional, print-only media. However, in today's interactive, electronic world, the distinction between these forms of marketing collateral and online booking systems becomes blurred. Now, they are instrumental in alluring customers to booking venues. For example, electronic "click-it" advertisements or directories on the Internet can easily and transparently be connected to online booking services. Therefore, they are no longer considered outside the realm of the GDS network but rather an integral part of it.

Statistical Reporting and Data Mining

Statistical tracking, reporting, warehousing, and data mining represent additional support functions. A hotel GDS has become instrumental as a primary feed for systems such as these that support aggregate or consolidated reporting. While their functions may not necessarily serve the day-to-day operations of the business, they do provide hotels with vital information regarding the demographics of their customers, their buying habits, their individual preferences, and the method of booking. For most hotel companies today, these technology components represent some of the hottest in the industry because they help organizations better understand their customers, group them into like segments, service their needs, and optimize their margins based on consumer types and segments. In the end, they can support relationship building that is requisite for one-to-one marketing. In many instances, the reservations process is a guest's initial contact with a hotel. It also serves as one of the primary information collection points in the guest life cycle. Therefore, it is compulsory for

each hotel to ensure accuracy at this phase in the guest life cycle since the information collected here feeds all subsequent phases and ultimately builds the data warehouse. Successful data mining will only be as reliable as the quality of the information entered.

The People Element

Lastly, the component that has been missing in the model until now is people. People—and soon their technological counterparts like smart software agents and voice-activated response systems—are an essential component of any hospitality business, and the GDS model cannot function without them. People categorically refer to the obvious users of the system like a hotel's reservations staff and the reservation agents at the central call center. People also refer to the extended sales force such as travel agents, wholesalers, representatives at sister properties/products, CVB staff, etc., and of course, people refer to the not-so-obvious, the customers themselves.¹⁵ Traditionally, customers would not be considered as users of the GDS system. Their use of GDS services and interaction would be indirect through travel agents or hotel reservations staff. With the Internet and other forms of online booking, customers are now part of the sales force. They are booking hotel rooms for themselves, their families, their associates, and their friends just as a travel agent would do. They can also instantly communicate experiences, both positive and negative, instantly to hundreds and thousands of people with a few keystrokes and the click of a mouse. Therefore, they must be factored into the GDS network much in the same manner as any other system user or agent. In summary, anyone who has access to the GDS has the tools and knowledge to carry out a transaction. In essence, each and every person is now an “expert” in nearly every sense, just as a travel agent, corporate travel planner, or hotel reservation agent.

The GDS as an “Ecosystem”

From the model and its ensuing description, it is easy to see just how complex the hotel GDS network is, how diverse its components are, and how interdependent each of the entities are. The GDS is an interwoven network of entities, both internal and external, that become part of what Moore (1996) refers to as the hotel “business ecosystem.” It provides the infrastructure or, as others (e.g., Davis and Davidson, 1991; Tapscott, 1996) have coined, the “infrastructure” that will become one of the main driving forces for competitive advantage in the hotel industry. The hotel company must build relationships and key alliances, vertically and horizontally, in order to establish a successful GDS environment. It is possible and sometimes desirable for one or more components to be outsourced. This decision, however, is subject to many factors (such as resources, core competencies, and values) and must be made on a case-by-case basis. Because of the very nature of the GDS network, it is clear that many components have virtual linkages. Morrison (1996) calls this the “electronic

¹⁵Customers can also refer to delegates or people representing guests who coordinate and book travel accommodations on their behalf such as an administrative assistant, a family member, etc.

infrastructure.” This trend will continue as information technology becomes more pervasive and as GDS access becomes more universal.

Maintaining Inventory Control: A Daunting Challenge

The challenge for hotels will be to manage and control the multiple entities that make up their GDS network, even when they do not fall under the current domain of control. In a virtual world, organizations must be willing to relinquish some of their control or sovereignty in favor of a shared destiny with other organizations comprising the internetworked enterprise (Davidow and Malone, 1992; Tapscott and Caston, 1993). Working in a virtual world requires trust among the partners. Chesbrough and Teece (1996) offer an interesting discussion regarding the management of virtual organizations. In particular, they suggest understanding the relationships between each entity in the network and how it impacts change and innovation. Underestimation of systemic versus autonomous innovation could stifle an organization and prevent it from making desirable changes to gain new market advantages. In cases of systemic change, hotels must maintain strategic leverage and coordination over the participating partners in their distribution network. Otherwise, the change will fail to come to fruition as planned.

Loss of Capacity Control

Loss of capacity control is one of the biggest challenges cited by industry executives moving into the next millennium, according to research sponsored by the International Hotel and Restaurant Association (Olsen, 1996). Control is shifting to those that own or manage the distribution channels and to those that can aggregate volume to secure substantial discounts. Anecdotal comments from interviews with hospitality executives suggest eight additional reasons why hoteliers feel the loss of control over their own inventory. These include 1) inadequate GDS technology infrastructure, 2) inventory and rate management issues, 3) commissions and transaction fees erode profit margins, 4) rise in number of electronic intermediaries, 5) shift in balance of power from supplier to customer, 6) new models of distribution and pricing, 7) accelerated rates of change, and 8) relinquished control of the customer relationship. Each of these factors is discussed in turn below.

Inadequate GDS Technology Infrastructure

The first reason relates to the GDS technology infrastructure. Quite frankly, many hotels do not have the necessary technology and information systems in place to support the selling process from multiple locations via different channels and systems. Lacking last-room availability and seamless access to the hotel’s rates and availability create hardships and add to the overall level of frustration. Those that are considered more advanced are still not state-of-the-art. The industry’s software and systems lack many of the functions required to

support the industry's future directions. It is as if the software has put a stranglehold on the industry and given rise to a host of opportunities for outside players.

Inventory and Rate Management Issues

The second explanation is somewhat related to the first. It has to do with a hotel's ability to control its rates and availability using the principles of revenue (yield) management. Many hotels accept commissionable or discounted reservations when it is possible for them to fill these rooms with higher-rated and/or uncommissionable business. Because these hotels lack the systems to set the appropriate restrictions and the technology to communicate these restrictions to each distribution channel, they find themselves taking business that they would otherwise consider turning down. This business is displacing more desirable, profitable opportunities.

Commissions and Transaction Fees Erode Profit Margins

The third interpretation as to why hoteliers feel a sense of lost control is the rise in new booking channels that require commissions and subscription fees from hotels. In many cases, hoteliers are not even familiar with these channels and as the result of onward distribution (where airline GDSs pass on hotel information to third-party booking entities, typically found on the Internet), they cannot always track the source of origination of a reservation (Dombey, 1997). Take for example one account from a general manager (GM) of a property from a well-known hotel chain in a major metropolitan city. In his hotel's guest satisfaction surveys, two percent of the guests reported that they booked their reservations online. While this falls within industry averages (one to three percent), it is much higher than those reported for his chain (.3%). Moreover, it was well in excess of what his hotel's web site had recorded. What this general manager failed to realize was the power of other Internet channels able to book his hotel because of his company's CRS link to THISCO. Services like TravelWeb had been responsible for many of the bookings and charged his hotel appropriately (somewhere in the nature of \$.30 to \$.75 (US) per reservation). In sum, the hotel's expenditures were adversely impacted without the GM even realizing it. While these fees may appear small, they can add up quickly, and they will as volume continues to grow. For those overseeing multiple properties or an entire chain, the impact is even more consequential.

This scenario is true and provides a meaningful message to hoteliers. A hotel's web site is not the only method of gaining an Internet presence. Any hotel or hotel company that subscribes to listing services in one or more of the airline GDSs or has access to either THISCO's or WizCom's switch, can be sold by anyone or any system that is connected to these devices (e.g., travel agents, CVBs, and individual consumers). That is the beauty of the technology and the preeminent purpose of a GDS: to extend the sales force and market reach of a hotel. Because most hotels are listed in or connected to one or more of these systems, they can be sold on the Internet via one of the many travel-booking web sites, whether they

realize this or not. At issue is whether the hotel property or company is proactively managing the way in which it is being represented and sold or leaving itself to the mercy of various listing services. The implications are far-reaching, as is the incremental cost to one's overhead. The profit margin erosion is very real and can be managed if appropriate strategies and uses of technology are considered.

Rise in Number of Electronic Intermediaries

The fourth possible explanation results from the rise in number of intermediaries in the selling process, especially cybermediaries seen on the Internet. While it is a commonly held belief that disintermediation will result as new electronic paths are built between the customer and supplier to create a more direct link, this thinking only applies to travel agents. The reality is that, in this digital age, the number of electronic intermediaries is increasing, albeit seamlessly to both the customer and the supplier. These new electronic intermediaries match customer needs with products and services available for purchase. They are the information brokers, the translators between computer systems, and the switches or "go-betweens" that allow reservations traffic to transfer seamlessly to a hotel's or chain's reservation system. Oftentimes, these new middlemen are unknown to hotel operators, just as in the case cited earlier. In such cases, how can one control something in which he/she is not aware? Sometimes, the hotel provider only becomes aware of the existence of these new intermediaries when they either ask for compensation for the sales they helped generate or when a grave mistake occurs that results in an irate guest.

It is important to remember that each link in the distribution process, human or electronic, represents a potential point of service failure and a potential expense, typically a charge per transaction. Therefore, knowledge of and management of these players is critical. However, since intermediaries fall outside the traditional span of control of a hotel provider and since they are further removed from the primary source of information, it is difficult to motivate these resources to sell a particular brand or product and to educate them on how best to sell that brand or product. There is also greater potential for service delivery errors and misinforming guests due to incomplete information or general lack of knowledge. This is especially true when these intermediaries are less familiar with the products (i.e., hotel accommodations, facilities, and destinations) they are selling. The quality and timeliness of service delivered by these intermediaries can impact a guest's overall perception of the destination hotel, either positively or negatively. It is that latter situation that worries hoteliers most.

Shift in Balance of Power from Supplier to Customer

The fifth explanation for the feeling of lost capacity control by hotel suppliers relates to a shift in the balance of power between the consumer and the hotel supplier. The balance of power is moving away from the supplier in favor of the consumer. Consumers, armed with knowledge easily obtained from the Internet, develop greater expectations and demands and

higher price-value relationships than ever before of any hotel in which they stay. The tools available via the Internet allow consumers to quickly and effortlessly shop and compare products and services from one company to the next before making a buying decision. They can instantly tap into the many comments (good or bad) of prior visitors and factor this feedback into the selection and decision-making processes. Their efforts are expedited by push technology and smart agents which help to filter out irrelevant or unwanted information, find the best travel bargains, and bring material of interest directly to the consumer's desktop in a manner that is easy to process and digest. This means consumers are now in charge, and hotels must create, package, price, and deliver the perfect experience every time. In a digital world, there is no room or forgiveness for error.

New Models of Distribution and Pricing

Another important and related consideration resulting in the feeling of lost capacity control is that many of the newer forms of distribution are changing the model for how hotel rooms are bought and sold. As a result, the sales, marketing, and distribution models are being turned on end, creating a new set of dynamics and a playing field. Consequently, hoteliers are uncomfortable because this new environment is one in which they have little or no experience and one in which they are slow to embrace. Consumers, on the other hand, love and embrace the new model because it is consumer-centric and affords them control of their own destiny. For example, web sites like priceline.com, TravelBids.com, and Onsale let consumers dictate the terms of their purchase decisions. The result is that the consumer is in complete control, not the supplier. With the rise of smart agents and shopping "bots," this trend will only continue, resulting in higher traffic to company web sites but not necessarily with a corresponding increase in bookings.

Accelerated Rates of Change

The seventh factor is the pace of change. The industry has had a tendency to fear and resist change. This is especially true when the changes being introduced are coming from unfamiliar or unknown sources. As a result, it is difficult to forecast the many changes on the horizon since industry leaders may not be looking in the right places or at the right indicators. By now, the business environment is characterized by the need to do more with less, faster and cheaper than ever before. The cycle time for getting products to market and the number of competitors has heightened the complexity of competition. With technology in general and the Internet in particular growing at phenomenal rates, industry players cannot possibly keep abreast of the latest indicators or determinants of their business. The rules of the game are changing, introducing uncertainty, lack of familiarity, and even fear of the unknown. The resulting anxiety creates that sense of lost control.

Relinquished Control of the Customer Relationship

The final explanation relates less to a hotel's inventory and more to the customer relationship. In an age of digital distribution, hotel providers are increasingly concerned about losing control over the customer relationship. At a time where one-to-one marketing is paramount to success and winning customers over, hotel providers cannot afford to relinquish any control in the sales process or in customer relationship building. Because of the many distribution channels and intermediaries available and onward booking, it is often difficult to track consumers, their identity and patterns, and the originating source of the booking. The problem is even more pronounced if the guest is part of a meeting or convention.

Control and management of the customer relationship are being involuntarily relinquished in favor of outside forces such as Microsoft, American Express, America Online, and AT&T (Cline and Blatt, 1998) and onward distribution suppliers like airline GDSs (Dombey, 1997). Hoteliers in general seem to lack a vision of where the GDS market is headed and the role technology is having in determining that vision. Hamel and Prahalad (1994a) made a similar observation in their research and consulting efforts to help multinational organizations prepare for the future. In the absence of such a long-range view, others from outside the industry step in and take advantage of an explosive opportunity. The result is less control over inventory, more transaction fees, and higher overhead—not to mention a new set of rules dictated by unfamiliar sources.

Proactive Distribution Channel Management

In the future, as transactional costs continue to rise, hotels will need to determine which channels are most profitable for them and how they can yield the best results using these channels. This may mean discontinuing channels that are less productive or ones that cost more to maintain in favor of channels that yield greater room revenue and require less overhead to operate. The focus will be placed on distribution share per channel (i.e., the marketing mix or the amount of volume and revenue generated by each channel in the GDS network in comparison with the others to which an organization subscribes or in which it participates). More does not necessarily mean better. Another focus will be on how the winning systems match customers with hotel providers (Olsen, 1996). With a growing number of hotel products and suitable alternatives, it becomes increasingly difficult to discern one hotel from the next. It also becomes harder to get the consumer's attention, since he/she is bombarded with an array of equally attractive options. Therefore, it will be incumbent upon leading systems and GDS providers to find ways to rise above the "noise" and convert lookers into bookers.

Disintermediation

Until recently, travel agents had near-exclusive access to information, thus creating an appropriate niche in which to operate. However, the value they provide is diminishing as new, user-friendly tools become available to the general public that offer many of the same capabilities of travel agents. These new tools are providing the general public with full access to information that once only travel agents had previously enjoyed. At one time, travel booking systems were complex and difficult to use. Users required special training to operate them and interpret the screens and cryptic codes. Today, this is no longer the case. Graphical user interfaces and easy look-up tables have negated the need for specialized knowledge, making it possible for consumers to book their own reservations without relying on travel agents.

Automation of the GDS enterprise gives rise to the notion of disintermediation (i.e., the elimination of middlemen) and the thought that a flatter, less complex network could exist. Disintermediation reduces the value chain to its most efficient state (Davis, 1987). Do-it-yourself technologies are making the elimination of middlemen possible and are bringing consumers and service providers closer together. In the words of media consultant John Berry:

“We will one day dance to the death knell of the middleman, that distorter of market efficiency and end-user pricing who stands in the way of a tighter producer-consumer relationship and the promise of lower prices”
(Berry, 1997, p. 39).

For the hospitality and travel industries, more specifically, the focus has been on the elimination of travel agents and the role that they play as intermediaries. Instead, these services can be replaced by information technology. While it is true that automation can eliminate the role of middlemen in many cases, what Berry (1997) describes is a bit idealistic. Sometimes, these middlemen provide invaluable services and provide them cheaper than they can be done internally. This is why outsourcing many functions has become so popular.

Additionally, the new model of business created by the automation gives rise to neoteric middlemen. Under the new paradigm, these middlemen are information brokers, or “cybermediaries” (Berry, 1997) bearing little in resemblance to those of the past regime (“Electronic Commerce,” 1997). A good example within the hospitality industry of modern-day middlemen are THISCO and WizCom, the electronic switches or clearinghouses that translate, covert, and pass information between disparate systems.

The Internet, as vast as it is, is creating just as many intermediaries as it displaces. For example, buyers need help in finding sellers and wading through the vast amount of information available. Search engines came to the rescue to provide this service. Through increased competition and greater consumer needs, these engines will be refined and become more focused and more powerful. As markets become more segmented and specialized, new

players emerge to fill in and bridge gaps. Future intermediaries will add value and save time through their adeptness at transforming information into usable knowledge and subsequently providing services and convenience as a result of the knowledge gained. In an information world, it will be this new knowledge that will provide the currency of tomorrow.

A Rising Polarization

Because of the many facets of GDS and the complexities involved, hoteliers must consider GDS as more than just the reservations booking process or the company's CRS. As the model depicts, it is much broader in scope with far-reaching implications. Competitive advantage will be derived less from the gap between the technology "haves" and the "have-nots" and more from the bipolarization that results between those who "know-how" versus those who "know-not." This distinction is far less subtle than might appear.

True, there will be gaps in what one company can afford versus another, with economies-of-scale favoring the larger chains. However, with many facets of the GDS technology readily available on the open market at affordable prices or accessible via outsourcing, the gap between the technology "haves" and the "have-nots" becomes very small. Therefore, the advantage will be in knowing how best to make use of this technology. This includes finding cost-effective uses as well as creating new ways to grow market share and build customer loyalty. The ultimate value will be in converting information into knowledge that then results in improved business performance, as demonstrated by the company's financials and market statistics. This can only be realized if the *right* GDS infrastructure is in place. What is right is subjective and variable by organization because each organization fills unique market needs and sets different goals. There is no one right answer, but there are some definite wrong ones. Furthermore, what is right today will likely change tomorrow, so hoteliers must be flexible and ready to adapt to meet the demands of tomorrow. As *The Economist* writes, "The core competence of tomorrow's e-commerce successes will be the ability to change quickly, perhaps even more valuable than knowledge of any particular market" ("Electronic Commerce," 1997, p. S18).

Transparency: A Hope for the Future

There may come a point in time when focus on the individual components of a GDS is less important. For example, when a person uses the telephone to place a call, he/she does not consider the many linkages and systems that are required in order for that call to be completed with an acceptable level of voice quality. The behind-the-scenes components are completely transparent during the course of the conversation. Within the hotel industry, the service levels and reliability are not to a point in which the various components can be treated as transparent as in the telephone example. Complicating the situation is the number of customer interface options. Since each customer interface represents a critical incident, hotels must fully understand how to safeguard these opportunities and guarantee unblemished service delivery. Failure to do so will result in a tainted experience for the customer and a

blemished image for the organization. The transactional economics of the GDS and its various components and linkages provide another reason that this level of attention and detail is warranted. As long as middlemen are involved, require remuneration for services rendered, and influence or control the process, the components will remain the subject of interest.

Distribution Channels and Their Economic Impacts on the Booking Process

In an earlier section of this research, a GDS was defined and decomposed into its many components. Here, the discussion will focus on the primary customer access points of each distribution channel and how reservations-related data flow from the point of origin (the customer) to its destination (the hotel of choice).

Core Technologies Comprising a Hotel GDS

A hotel GDS is comprised of six core technologies: the hotel PMS, the hotel CRS, a universal “switch” (e.g., THISCO or WizCom), airline GDSs, the Internet and intranets, and a telecommunications wide area network (or WAN). The integration of these various technologies allows hotels to distribute information regarding their rates, availability, and facilities to travel intermediaries and consumers throughout the world. Each of these technologies provides an access point to hotel information and a potential point-of-purchase. It can be said that to achieve competitive advantage, a hotel must have access to the most points of distribution possible at the least cost and provide the complete and accurate information in a seamless manner. To attain this state, several sophisticated automated links or interfaces are required, which integrate these heterogeneous systems and architectures.

Finding and Competing for Electronic “Shelf Space”

Gaining a presence in multiple points of distribution is analogous to finding “shelf space” in a grocery or retail store. More is generally considered better because it improves visibility, customer access, and convenience. Yet, this is not always the best strategy due to the cost implications and support issues associated with maintaining multiple channels. When applying the principles of organizational economics theory, it is easier to see that more is not always better. Each distribution channel has associated with it certain fixed costs, which may include hardware, software, and interface development. Depending upon the channel, these fixed costs may be quite high. To achieve transactional economies of scale, the volume of transactions (reservations) must increase if the average cost per reservation is to decrease. Hence, adding a new distribution channel may destroy this relationship. It has two effects. First, it requires a fixed investment in order to make the channel operational, and second, it will likely reduce the volume of reservations processed via the other, established channels. Both consequences increase average costs and prolong the amount of time it takes to recover

the initial investment (Clemons, Reddi, and Row, 1993). This is only desirable if 1) the new distribution channel is more cost-effective than other channels and can shift enough volume to recoup the initial investment, and 2) the new distribution channel attracts untapped markets and generates new demand. Otherwise, it may be more advantageous to have fewer distribution channels. What is difficult to measure in this scenario, however, is the degree to which a channel influences the booking decision even though it may not be the actual source of the booking.

Cost Implications

For hotel companies, connectivity to airline GDSs has been costly and problematic but necessary if they want to take advantage of the travel agent market, worldwide. The challenges of displaying detailed hotel information in an easy-to-use format and synchronizing databases in real-time add to the administrative burdens of managing a hotel's GDS. In particular, the delays in transmission between airline GDSs and a hotel GDS, the batching of transactions, and the processing of error messages that result from incompatibilities between different systems creates a cumbersome queuing process that must be closely monitored to avoid overbooking and to ensure that reservations are received at the hotel level before guests arrive. Manual and semi-automated processes also rely extensively on queues. Oftentimes, dedicated staffs are required to manage these queues. While improvements in airline GDS/hotel GDS interfaces help to alleviate the situation, they unfortunately do not completely eliminate the problems from occurring; and hence the queuing process still exists. Despite these shortcomings, hotels are dependent upon the airline GDSs because of their extensive market reach, not only to travel agents but also to Internet booking channels. Airlines recognized early on the value of the travel agent network (see Copeland and McKenney, 1988). To maximize travel agent bookings, airlines helped automate travel agents by providing easy access to their mainframe-based reservation systems. These relationships proved fruitful for the airlines and quickly became a source of competitive advantage. For hotel companies to realize some of the same benefits as airlines in terms of access to the travel agency networks, they must list their properties in each of the major airline GDSs.

To participate in this listing service is not an inexpensive endeavor. Hotels must pay listing fees and transaction costs for every reservation booked. Additionally, hotels are responsible for the information displayed about their facilities, rates, and availability. To maintain this information, the large hotel chains invested heavily in the development of interfaces between their GDSs and the airline GDSs. These interfaces are not only costly to develop but also costly to maintain. They require constant updating due to the dynamism of the airline GDS market and recent changes in the hotel industry. For example, the implementation of yield management systems in many of the large chains resulted in thousands of price updates each day to the airline GDSs. Needless to say, the high costs and complexity of these interfaces put them out of reach of the smaller chains and independent hotels. This resulted in a definite disadvantage with respect to their representation in the marketplace by external sales agents

(e.g., travel agents). The gap between the technology “haves” and the “have-nots” became evident.

Organizational Economics and Transaction Costs

Information technology plays an important role in causing or enabling changes in organizational economics (Clemons et al., 1993). New technologies often provide better, more convenient, and less expensive distribution channels; over time, they tend to lessen the benefits of more traditional channels, rendering them less effective, less convenient, and more costly to operate (Noam, 1997). Some examples of the benefits of information technology include lower costs of exchanging and processing information, more widespread access to information, greater processing capacity, more standardization, and lower costs of coordination in an interconnected environment (Clemons et al., 1993).

In light of these possible benefits, hoteliers should consider the role information technology can serve in building and supporting distribution channels and the subsequent economics of these channels, which include the cost of ownership, operation, and maintenance for each point of distribution. Understanding and controlling this cost structure can be a valuable source of competitive advantage.

Many of the interfaces between systems are costly to develop, maintain, and operate—especially for small hotels, which cannot achieve the same economies-of-scale of their larger competitors. Initial interface development can cost as low as a few thousand dollars to as much as tens of thousands of dollars (US) per interface, depending on the systems architecture, complexity of the interface, and the functionality. Since these costs are non-trivial, hoteliers must estimate the value and strategic importance of each interface before embarking on its development. The on-going support and maintenance costs must also be factored into the decision. Because the core technologies comprising the GDS environment are subject to frequent modification to keep up with market demands, these interfaces require constant monitoring and updating. Many hotels and small hotel companies cannot afford the dedicated resources and lack the technical knowledge base to make these enhancements and modifications. Instead, they either choose not to participate in certain distribution channels, compromise the degree of integration, or outsource these services and become subject to the terms and service levels of their contractual arrangements with a chosen vendor. All of these decisions have strategic consequences.

While the Internet, universal switches, open systems, and improved standards alleviate some of these cost pressures and competitive disadvantages, they do not remove them entirely. The industry is still a long way off from offering truly compatible or plug-and-play systems and interfaces. It does not help the small player to know that these same technologies are available to their larger competitors, giving them some of the same price breaks as smaller companies and hotels and further strengthening their upper hand. Therefore, automation continues to favor the larger organizations in terms of cost advantage.

Understanding Share of Distribution

It is important for practitioners to consider which distribution channels will be most advantageous to them and subscribe or participate in only those channels. One of the common questions raised is “To which channels should a company subscribe?” A commonly held belief is that more channels lead to higher visibility, which, in turn, generates more demand. This may not always be the case. The quality of these channels and their links to the GDS must also be considered. The question regarding which channels to offer is becoming more prevalent in light of the many new distribution channels that are forming as a result of the Internet. The answer to this question is likely to vary from company to company and market to market. Each company must understand the sources of its business and the cost to acquire business through each of the distribution channels. Each channel has distinct costs; some are easily measurable such as transaction costs. Others are more intangible; for example, the cost to provide information to answer a guest inquiry that may or may not lead to a guest booking. To gain an advantage in this competitive marketplace, one must think intelligently about how resources are allocated so as to achieve an appropriate economic return. With respect to global distribution channels, this can only be achieved if a hotel or hotel company understands from where its business comes, how its distribution channels are used, how they contribute to the bottom line (this includes occupancy as well as profitability), and what the costs are to operate each channel.

When marketing professionals select media or places in which to advertise, they are advised to consider the medium and its targeted audience and compare them with the profiles of their customer base. The same must be done when considering investment in distribution channels. In addition, when selecting distribution channels, one should determine what reach the channel has, its visibility, the level of marketing provided by the channel operator, and the services that front-end this channel. This equates to broader distribution and visibility. For example, being part of an airline GDS has a profound reach. An airline GDS provides product representation to anyone or any service with access to that GDS, thus extending the potential audience for a given hotel. When determining which distribution channels to subscribe and in which databases to market their product(s), hoteliers cannot ignore the reach of each channel and the popularity of its database. If the database is front-ended by a number of services, such as those found on the Internet, there is no need to join each service independently. Services such as Expedia, Travelocity, and TravelWeb provide access to numerous products and extend that access to numerous service providers. As these services promote their own web sites, they indirectly promote the products they sell and thus, increase the likelihood that consumers will find a given hotel without that hotel incurring additional marketing costs for such publicity. In summary, when selecting distribution channels, one should select them carefully and choose those that will provide the most value for the investment (as depicted earlier in Figure 2-1 on page 44).

The advantage of distribution channels versus traditional advertising is that more information can be captured regarding its impact and use via booking statistics, call volumes, and other traffic or usage monitoring. These statistics are not always available for unidirectional forms of media. It is important to note that not all channels provide equal value and that some

consumers use multiple channels when researching and purchasing hotel accommodations. In some cases, distribution channels may be redundant; in other cases, they may complement one another. As such, one cannot ignore the look-to-book ratio. It is also important to consider the fact that channel usage can vary by market segment, accommodations needed, purpose of travel, or comfort level (Shapiro and Wyman, 1981).

Developing a Model and Typology for Hotel Distribution Channels

To better understand which distribution channels are available and how a reservation flows through the distribution network, it is helpful to build a model. Building models is a useful way to illustrate and depict the flow and process of a reservation. On the surface, making a reservation seems like a relatively straightforward and simple process. Behind the scenes, there are many confounding factors and intermediaries. Thus, in reality, the process is quite complex, at least from a technical point-of-view. Defining such a model is no easy task due to the many variations and idiosyncrasies that can result. Thus, any model that is depicted results in a necessary compromise between simplicity, accuracy, and generalizability (Weick, 1979). The models presented in Figure 2-10 and Figure 2-11 are no exception, yet they are valuable tools for documenting the many approaches a guest has in making a reservation, the possible points of failure, and the number of entities involved—each of which expects some benefit or fee for the services it provides in the booking process.

Currently, there is no taxonomy or typology of hotel distribution channels that can be used to explain consumer behavior, predict future behaviors, and enable hotel organizations to better target service and channel offerings. While some researchers (e.g., Bonn, Furr, and Susskind, 1999; Weber and Roehl, 1999; McQuivey et al., 1998; Jupiter Communications, 1997; and others) have attempted to profile tourist search behavior and Internet versus non-Internet users to understand how travelers select, acquire, evaluate, and use information for travel planning, their efforts tend to focus mostly on demographic data and shed little light on the situation other than the fact that Internet usage is growing to resemble a broader mix of the population worldwide. Fodness and Murray (1999) studied tourist information search behavior looking at factors affecting the decision such as locus of decision-making authority, purpose of travel, travel party composition, mode of travel, socioeconomic status, etc. Yet, this study failed to consider any online media and focused exclusively on the search strategy. Collectively, these studies, while informative, provide little actionable guidance to industry practitioners regarding the selection, management, and service offerings of distribution channels and fall short of building any sort of taxonomy or typology that could explain channel selection and usage by consumers in terms of how they research, plan, comparison-shop, and book travel. Further exploration in this area is warranted so that the industry can better understand these phenomena in order to allocate their resources accordingly to gain effective exposure and booking potential while addressing the consumer needs.

Needless to say, building a classification scheme appears to be a most difficult challenge. This is due to the number of different perspectives one can use to study each channel; the many variables that must be considered; the combination of distribution channels that may be

used to shop for the best available rate for any single booking; and the various outsourcing models, partnerships, and strategic alliances that are presently used to provide these channels. In practice, one typical approach to categorizing guests is based on the type of traveler or the purpose of travel, namely corporate/business, leisure, or group/convention. However, when trying to apply this classification scheme to the various distribution channels used, it becomes clear that there is no direct alignment because the technology and channels used by each category are not mutually exclusive. The same holds true when trying to categorize travelers based on industry classifications of expense management: corporate-managed, self-managed, or unmanaged. Finally, classifications of distribution channels by how a guest chooses to book hotel accommodations (e.g., via a travel professional or using a do-it-yourself approach), by person doing the booking (e.g., guest or some delegate such as an administrative assistant, spouse, friend, or colleague) or via the technology used (e.g., telephone, fax, computer, etc.) provide no clear-cut answers either. Thus, gaining a complete understanding of hotel distribution channels continues to remain a perplexing matter.

To help shed light on this situation, one approach to developing a typology for hotel distribution systems may be to build upon the works of Mills (1986), Perrow (1967), and Champy et al. (1996) discussed earlier. Applying the concepts espoused by these scholars, the determination of each class would be based upon several dimensions, including the amount and type of information exchanged, the degree of involvement of both the customer and service provider in the transaction, the ease and speed of the transaction, the familiarity and routinization of the exchange, the perceived risk, the experience sought, etc.

Supporting this thinking are the works of Ouchi (1980) and Becker and Olsen (1995) which address the effects of different types of governance in relationship to the service exchange and the degree of perceived uncertainty. Ouchi's (1980) three levels of governance include market (where the essence of the exchange and purchase decision is driven primarily by price), bureaucracy (where a set of rules and procedures must be followed when making the decision and conducting the exchange), and clan (where personal relationship during the service exchange are highly desirable). At this point, the use of one of these typologies to classify distribution channels is merely conjecture based on an a priori understanding. Empirical research is necessary to determine if this thinking is, in fact, appropriate.

Developing a taxonomy for hotel distribution channels or being able to segment customers by channel—or perhaps by experience desired—is an outstanding topic for subsequent research. Although it is beyond the scope of the present study, it is an important topic that will likely gain significant interest and be the subject of great debate over the years to come. The value of understanding and classifying distribution channels from a practitioner's perspective is better, more effective distribution channel management. In other words, a taxonomy of distribution channels could provide hoteliers with meaningful insights as to where they should distribute their products (i.e., what channels should be used to market, distribute, and sell inventory), when and how these channels should be used to maximize their effectiveness and booking potential, and how companies should invest in and market these channels. A better understanding in each of these areas would help hoteliers better understand channel management, especially the costs and contributions (i.e., revenues) of each distribution

channel and the services sought by consumers. From a researcher's perspective, this knowledge would shed additional light on how consumers book hotel accommodations, how they view the booking process in relationship to the core service delivered (i.e., the hotel stay), how they evaluate the success of the booking process, what services they seek, what motivates them to use the channels they do, how they value the consumer-provider dyad, and how the concept of hotel brand is valued.

In understanding the booking process, it is important to consider the fundamental mechanics behind it. First, there is a hotel that provides rooms (i.e., supply) to a customer (guest) who is in need of hotel accommodations for one reason or another. This represents the demand. The distribution channels are what match the demand with the supply. The basic approaches are categorized in Figure 2-10. While there are many ways in which a guest can shop for hotel accommodations and reserve rooms, the primary methods can be summarized by six major categories. These include hotel/brand, corporate, intermediaries, destination-based, specialty services and new technologies.

For many travelers, a specific hotel property, hotel company, or a brand name often drives the decision as to where they should stay. In such cases, information is obtained and reservations are made by contacting the property's reservations office or sales staff directly (either in person or via telephone, electronic mail, mail, or fax), by calling the company's toll-free reservation center, by accessing the company's web site, or by contacting an affiliated (i.e., sister) property. In many situations, it is not uncommon for a guest to use a combination of these methods and others described below to gather information and complete the booking process.

In the case of corporate travel, travel arrangements are generally governed by corporate travel policies and sometimes pre-arranged contracts with one or more hotels or chains of hotels. Oftentimes, business travel is coordinated through a corporate travel office by professional travel planners or agents. At times, lodging accommodations are made via a hotel organization's local, regional, or national sales office, and increasingly, companies are turning to intranets and extranets for electronic access to availability and bookings and enforcement of company travel policies. Another growing trend for corporate travel is the use of electronic RFP (request for proposal) services which automate and streamline the corporate hotel bidding process for contract rooms, volume and rate agreements, and large groups or conventions. The reader should note, however, that not all corporate travel is booked using one of these approaches. Any of the other methods noted in Figure 2-10 may also be used; thus, underscoring the difficulties in creating a taxonomy or typology for hotel distribution channels discussed earlier.

Another popular method of booking travel arrangements and hotel accommodations is with the help of travel intermediaries. The most common of these is the travel agent, who provides expertise and consultation concerning various destinations, packages, travel excursions, experiences, and lodging accommodations as well as access to rates and availability information. Travel wholesalers and consolidators represent another form of intermediaries. These entities buy lodging accommodations in bulk and then resell them to others, typically travel agents. Generally, they are bundled or packaged with other travel

arrangements such as tours. Incentive houses are yet another type of intermediary. These organizations assist in planning and coordinating arrangements for large meetings and events. Among their roles are the selection of hotel accommodations, the negotiations for room rates, and the booking of reservations. With the popularity of the Internet, a host of new intermediaries have surfaced, ranging from online travel agents and consolidators to web portals and search engines. Web portals and search engines can play an important role in matching the consumer (demand) with a hotel or hotel company (supply). Some may handle the actual booking process, but this is typically done through an online booking service under a hosting or co-branding arrangement, an alliance or partnership between the web portal or search engine and a booking engine or online booking service. The intermediaries listed above are just a sampling of the major players. As the result of new technologies, new forms of intermediation will likely arise as well as new intermediaries themselves.

Destinations are another popular method driving travel. Some tourism experts consider destination as the primary reason all travel exists and as the determinant for all travel arrangements. Under these situations, a consumer typically has a particular destination and experience in mind but needs assistance in finding lodging accommodations at the chosen destination. While it is possible to contact travel agents and hotel companies directly, these consumers may seek assistance from convention and visitors bureaus (destination marketing organizations). Many of the more sophisticated convention and visitors bureaus now have electronic booking capabilities for area hotels in their communities and extend these capabilities to their web sites as well. Customers may also call upon housing bureaus to make their hotel reservations if the purpose of travel is to attend a large conference or convention, particularly if the event is citywide. At times, convention and visitors bureaus function as housing bureaus. Other times, separate, third party organizations are hired by event planners and organizers to process all of the lodging requests for the event's attendees. If guests are already in transit, they may use an information kiosk if one is available along their travel route or within the destination city to select and reserve their hotel accommodations. In effect, destination-based services function much like travel intermediaries and could be construed as such. However, because of the emphasis placed on destination as the primary motivator of travel or determinant of lodging needs, destination-based services warrant special distinction.

In recent years, there has been a growth in specialty services that play important niche roles in the booking process and in capturing specially targeted audiences. These services, too, could be categorized as intermediaries since they serve as middlemen in the relationship between customers and hotel providers. The Internet has popularized many of the newest players in this category. These include travel clubs (e.g., Cendant's Travelers Advantage), auctions and bidding services (e.g., priceline.com, SkyAuction.com, TravelBids), and smart agents and shopping services that shop and compare rates and availability from multiple sources (e.g., TheTrip.com's intelliTRIP). Affinity programs describe a new form of referral service seen on the Internet. Perhaps the most visible is Amazon.com's Associates Program. Under this program organizations enroll and act as referral agents by providing links to Amazon.com in exchange for a commission on all sales that were referred by the associated web site. Affinity relationships are growing in importance for capturing special niche markets, web communities, and individuals seeking specific experiences. Other forms of

specialty services include brand alliances (e.g., the oneworld and Star alliances in the airline industry) that are forming among companies to share customers and leverage products and services.

The new technologies category is a catchall for emerging technologies and distribution channels. Once these become popular and adopted by a critical mass, they should be reclassified into a more specific category.

The schematic in Figure 2-11 depicts the various entities, interrelationships, and the flow of information involved in the hotel distribution process. As the reader will quickly note, this chart is significantly more complex than the illustration in Figure 2-10 because of the many different combinations of channels that may be used to shop for lodging accommodations and complete one booking. These complexities further illustrate the difficulties one encounters in trying to develop a concise classification schema. Nevertheless, these diagrams are important first steps in gaining an appreciation for the complexities involved and in building a more complete understanding of hotel global distribution channels.

It is important to note that each component of Figure 2-11 represents a potential point of failure and a potential cost to the hotel. Because a GDS represents a mission-critical application to a hotel (i.e., a primary source of revenue), one should take the necessary precautions to ensure reliability, uptime, and service levels from each component and system provider in the GDS network. The recent WizCom outage illustrates just how severe, far-reaching, and costly the consequences of downtime are (Caldwell, 1998b; Keates and Goetz, 1998).

Figure 2-10: Types of Hotel Distribution Channels

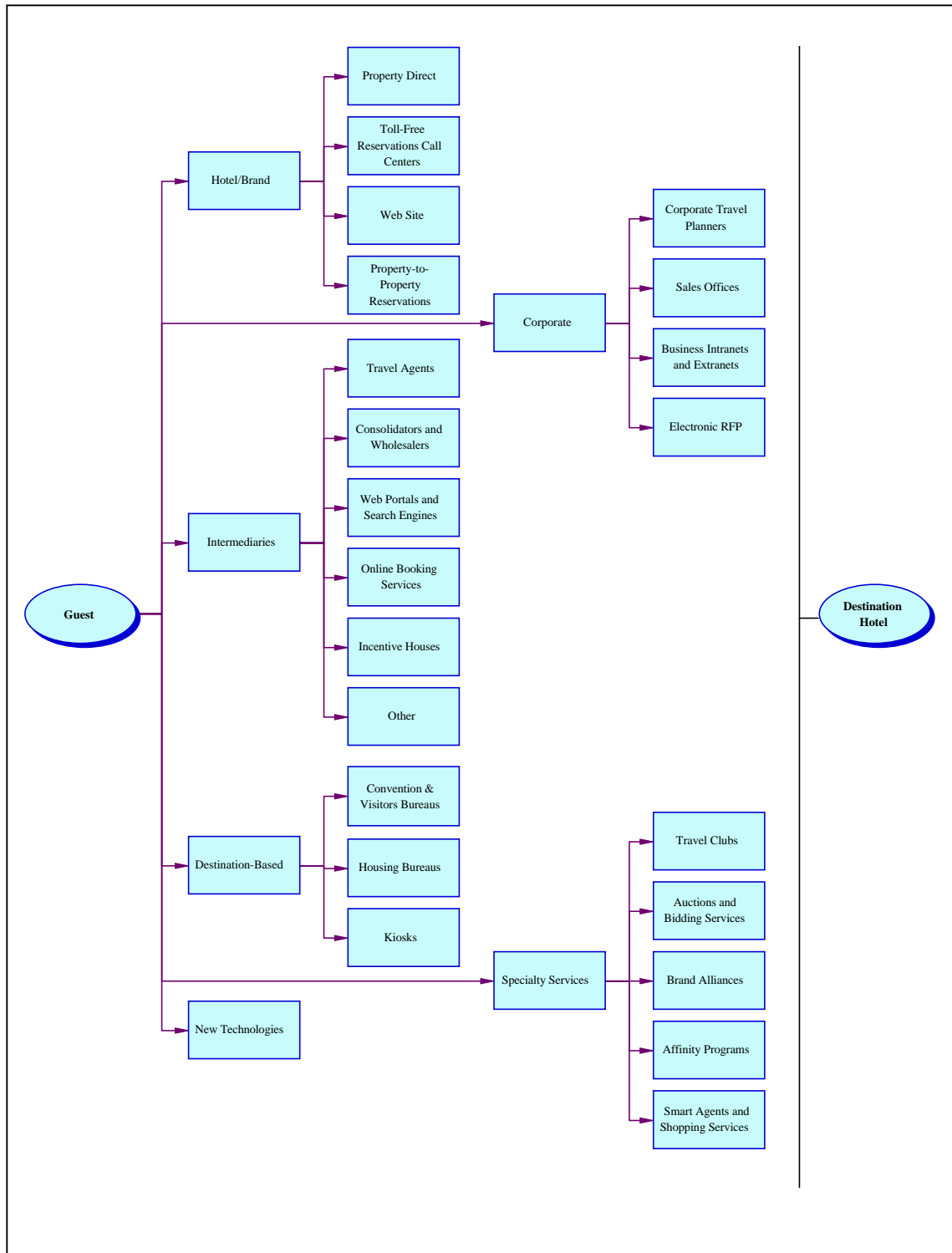
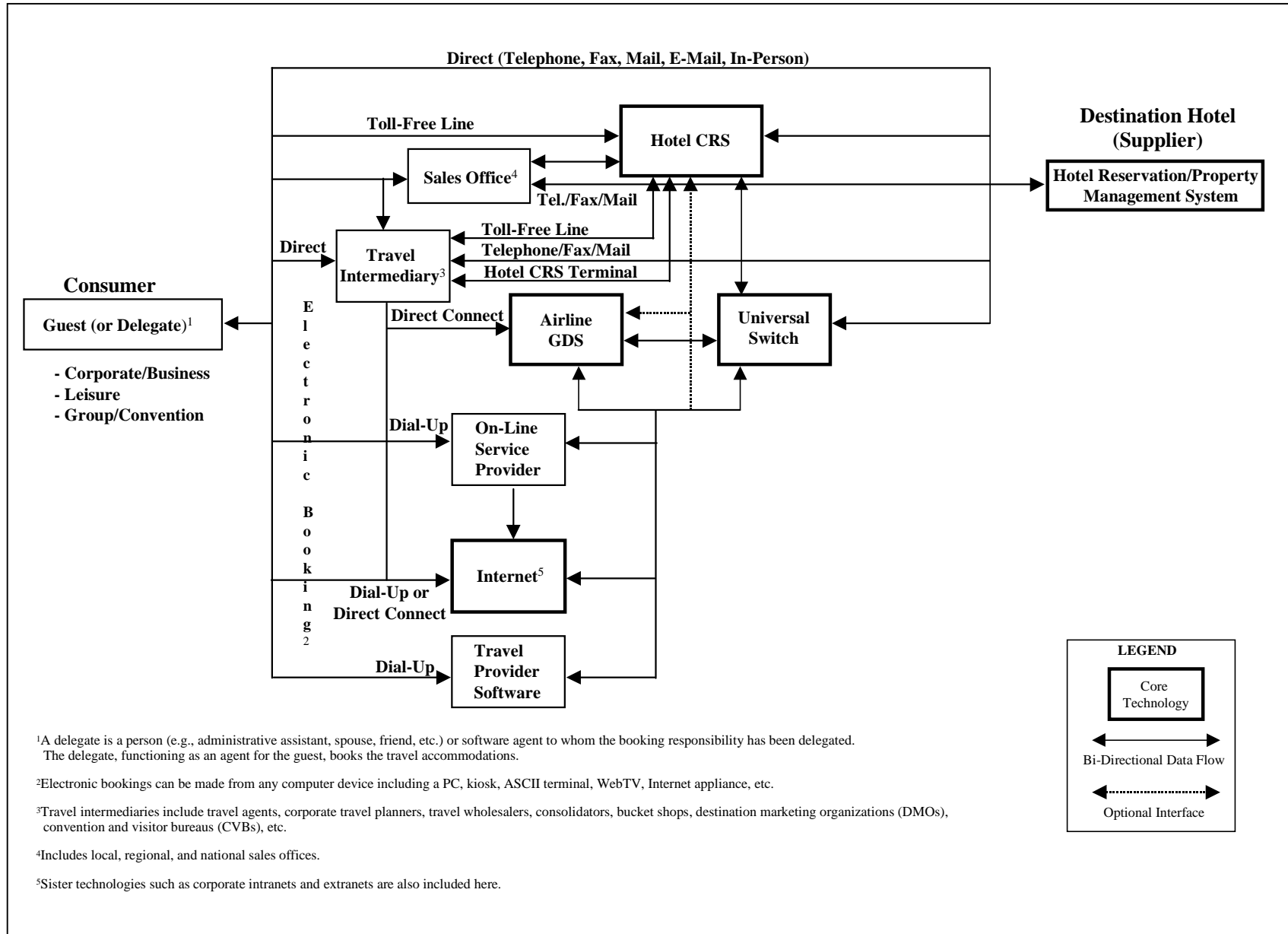


Figure 2-11: Hotel Distribution Channels Schematic



The Hotel Distribution Channel Schematic

The chart shown in Figure 2-11 has many facets. The left-hand side of the chart depicts the consumer (or guest), whereas the right-hand side of the chart illustrates the supplier, the destination hotel. While the consumer in a hospitality setting is typically referred to as a guest, it is important to note that in the case of the reservations booking process, the guest is not necessarily the person making the booking. Oftentimes, this responsibility is delegated to someone close to the guest such as an administrative assistant, a spouse, friend, or colleague, who may or may not be sharing the accommodations. In the not-to-distant future, it is conceivable that this responsibility will be assigned to a software agent.

The purpose of travel and type of travel can vary. Typical classifications are corporate or business travel, leisure travel, and group/convention travel. Also, the person paying for the accommodations can vary. It may be the guest himself/herself; it may be an employer; or it may be some other party such as a client. The bolded boxes around hotel reservation/property management system, hotel CRS, airline GDS, universal switch, and Internet represent the critical technologies, key databases, and access points supporting the distribution process. Generally, every other component illustrated serves as a front-end to one of these core technologies.

It should be noted, however, that the Internet itself is a compilation of a multitude of technologies and services. Consumers can find lodging accommodations via a number of different search strategies: using a search engine, going directly to a hotel company's web site, finding a destination marketing organization online, or booking via one of the many online travel services. The Internet is often a front-end to other systems, namely airline GDSs. This is the case of many of the Internet travel booking sights like Expedia, Travelocity, Preview Travel, Internet Travel Network, etc. Over time, though, this will likely change. Evidence exists today which shows the Internet as the primary booking engine. Such is the case with WORLDRES.com. Also, one should note that the Internet, as depicted here, includes its sister technologies such as corporate intranets and extranets.

All of the lines indicate linkages between one or more of the various entities. The double arrows imply that communications are bi-directional. For example, a guest requests accommodations on a certain date and then receives confirmation as to whether or not his/her requests can be met. Rates and availability (inventory) should be updated and disseminated to all distribution points concurrently. The desire is for instant or real-time communications. Anything short of this results in lower quality guest service and the possibility that a guest may have time to shop elsewhere. Thus, fax, mail, and electronic mail reservations are among a dying breed since they do not offer interactive, real-time communications. Instead, more emphasis is being placed on more interactivity through Internet bookings and travel agents with online access via airline GDSs.

Many of the traditional forms of booking required manual and human intervention, whereas the newer forms are fully automated, with the reservation data being transferred from the point of entry to the hotel PMS without the need for re-keying. This automation improves accuracy and speed while reducing the cost of operation. The most effective channels are those that provide seamless access to a hotel's rates and inventory availability. Anything short of this results in inconsistent information and a greater likelihood of over- or underbooking.

The dotted line between airline GDS (and Internet-related options) and hotel CRS implies that this linkage may not be required, as is the case if a hotel or hotel company relies on one of the universal switches to provide this linkage. This represents significant savings to smaller companies who cannot afford to develop and maintain interfaces to each airline GDS. In the future, it is possible that the airline GDS could disappear from the model altogether if the bypass theory proves viable. There is a current movement in the industry to find ways to extend the distribution network without reliance on the airline GDSs. THISCO is one company aggressively pursuing this mission by establishing direct links with corporate intranets and travel agents. While the long-term ramifications of this are positive to hotels, it is still unclear if the industry can remove the stranglehold that airline GDSs have wielded over the industry for so long, especially since they are at the heart of so many booking services available via the Internet.

It is not necessary that a hotel participate in all of the distribution channels illustrated in Figure 2-10 and Figure 2-11. The decision as to which channel to subscribe is a strategic choice and should be made in the context of the co-alignment principle (see Figure 2-1 on page 44): allocating resources to those channels that will likely yield the highest cash flow per share. This decision should only be made after the organization's distribution channels, sources of business, and marketing mix are fully understood. On-going analysis and audits should be conducted to verify that the chosen strategies still hold true given changes in the marketplace. It is also necessary to evaluate the information being disseminated and the selling strategies being used to determine that they are consistent across distribution channels, accurate, and aligned with the organization's marketing strategy.

Some points for further contemplation with regards to the model in Figure 2-11 include:

- Competitive Advantage - Achieving competitive advantage with distribution channels requires more automated links, links of higher quality, and links that are cheaper to maintain and operate than those for competing hotels. "Shelf space," visibility, and consumer convenience are important dimensions. Additionally, choices are necessary so that customers can select the booking method(s) most accessible and appropriate for their needs and comfort zone.
- Data Ownership and Security - With increased reliance on outside entities to process and transfer key customer information, hotel companies must be willing to share access to what traditionally have been considered proprietary data. Guests, on the other hand, are concerned about privacy and the security of their credit card information. Additionally, more electronic linkages creates greater vulnerability or

risk. Therefore, more emphasis must be placed on creating secured systems with encryption, firewalls, and other technologies. Data at risk include:

- Guest Data and Profiles
 - Hotel Availability, Rates, and Operating Statistics
 - Selling Strategies
 - Credit Card Information
 - Consumer Buying and Spending Habits
-
- Control of Room Inventory and Selling Strategies - As more and more outside entities look to book hotel reservations, control of room inventory and enforcement of selling strategies become more difficult. With “virtual” organizations becoming more commonplace, hotels will need to learn new management techniques, form alliances, and make greater use of information technology to help them maintain control and data integrity without discouraging these outside entities from booking at their hotels, inhibiting the booking process, or adding to the overhead costs. Further, it is likely that these outside entities will require compensation for their services (if they have not already done so) and will attempt to leverage volume to gain higher compensation.
 - Synchronization in Real-Time - The goal of distribution channels is to expand the hotel sales force. This can only be done effectively if every distribution point is sharing the *same* information regarding rates, availability, and restrictions. Telecommunications and database replication and synchronization technology can help to ensure data reliability by providing the same information to multiple distribution points concurrently.
 - Risk of Service Delivery Errors - The complexity of the distribution channel paths, the reliance on external sources, and the distance of these sources from the hotel can increase the likelihood of errors:
 - Inaccurate or Incomplete Information (Rates, Availability, Hotel Information, or Guest Profile)
 - Lack of Knowledge Regarding the Product
 - Reservation “Not In Order” at Time of Check-In
 - Guest (e.g., Frequent Travelers) Not Properly Recognized
 - Over/Underbooking
 - Technology Failures (Downtime)
 - Cost to Maintain Computer-to-Computer Links and Multiple Distribution Channels - Developing and maintaining computerized interfaces to multiple, heterogeneous systems is costly and resource-intensive due to complexity and frequent, systemic

changes. Additionally, the costs associated with the multiple points of distribution and the various technology paths required are eroding a hotel's profit potential. Hotels should:

- Choose which distribution channels are most cost-effective for them to support and focus their resources accordingly.
- Provide incentives to customers and travel agents to direct activity to those channels that are most-cost advantageous and would allow the hotel company to realize the greatest profit potential. Some examples of approaches being tested to influence consumer behavior include:
 - Frequent Traveler Points (e.g., US Airway's Personal TravelWorks, Delta's Web Site)
 - Random Contests (e.g., Radisson's "Look to Book" Program)
 - Discounted Rates or Fares
 - Special Promotions
 - Faster Travel Agent Commissions
 - Disincentives or surcharges for using channels of higher cost (e.g., Delta's experiment with surcharges for reservations not booked via its web site)
- Cost of Travel - With continued emphasis on cutting costs, corporations are increasing their efforts to control corporate travel and entertainment costs. Many organizations are implementing software, using corporate travel planners, or establishing agreements with large travel agencies in hopes of obtaining better rates while enforcing corporate travel policies. These travel entities continue to play an important role in the booking process. Additionally, hotels are increasingly being asked to provide companies with information regarding the spending habits of their employees and electronic expense reports. This adds a new dimension to the bi-directional flow of information between the hotel supplier and the customer (or his/her employer).

Applying the Transactions Cost Framework

The transaction cost analysis paradigm considers conditions under which a function can be performed more efficiently and cost-effectively within a firm (i.e., vertical integration) versus across independent entities (Anderson, 1984). The emphasis is on transaction costs incurred under various governance structures (Rindfleisch and Heide, 1997; Williamson, 1981). The transactions cost framework is useful when evaluating the impact of information technology on an organization's operations (Clemons et al., 1993). The costs assigned to each channel vary and are typically based on pre-negotiated volumes. Some channels require fixed fees in addition to transaction fees. Transaction fees are generally based on net bookings

(i.e., reservations booked less cancellations), but in some rare cases, a transaction may be defined as any database query or inquiry (i.e., availability check or address look-up). Average costs (in US dollars) for a single reservation are as follows:

- Travel Agent or Intermediary Commission: 10% of the total room revenue
- Airline GDS Fee: \$3 to \$4
- Universal Switch: \$.25 to \$.75
- Hotel CRS: \$8 to \$12

These costs quickly accumulate and can represent reportedly as much as 25% or more of a hotel's daily room rate. Consider a simple example in which a hotel room sells for \$150 (US). If the reservation is made through a travel agent accessing an airline GDS which transfers the reservation to the hotel CRS via a universal switch, the cost of the transaction will be \$31.75 (US) or 21% of the room rate. Demonstrably, the profit margin erosion is real. Therefore, it behooves a hotel to direct reservations traffic to those channels that are able to meet its distribution needs but at lower operating costs. Offering special incentives such as price breaks, room upgrades, or frequent travel bonus points can and often does influence consumer behavior.

Any time a cost can be avoided, the bottom line performance can be improved. This is simple organizational economics or transaction cost theory as espoused by Williamson (1986), Becker and Olsen (1995), and Rindfleisch and Heide (1997) which states that economic performance is mostly attributed to the costs associated with exchange transactions. In this context, organizational efficiency is defined by the mode of governance used to support the business transactions of an organization (Williamson, 1981; 1986; Rindfleisch and Heide (1997); in this case, the reservation or booking process. Alternatively stated, organizational economics implies that firm performance is a direct result of the costs associated with each service exchange (Becker and Olsen, 1995). Consequently, organizational efficiency can be determined if the mode of governance is appropriately matched with the service transaction (Becker and Olsen, 1995). Because not all organizations operate on the same level of efficiency, opportunities exist to gain competitive advantage for those hotels or hotel companies that can optimize their distribution channels by reducing overhead.

The reservations booking process is just one type of exchange or transaction in the guest life cycle. The costs in the process are a direct result of the channels and technology used, the relationship a hotel or hotel company has with each channel provider, the support structure of the organization, and the volume of transactions. Using this paradigm, it becomes possible to rethink the booking channels using a new set of lenses. A whole new set of possibilities and implications can result. For example, in the future, an interesting dimension to the yield management equation may emerge: how to yield by distribution channel or by profitability versus yielding by revenue. Which channel or channels of distribution used by guests will depend on a number of factors including, but not limited to, familiarity and comfort level with the channel and service provider, complexity of the reservation, perceived risk, travel

policies imposed by an employer, etc. If hotels can segment their customer base by channels, they can potentially eliminate channels that are unnecessary. They can also work to enhance the functionality of lower-cost channels to meet the needs of their guests.

Bypassing Airline GDSs

Bypassing traditional airline GDSs during the electronic booking process is becoming more appealing due to the cost-savings that can result. The technology linking travelers directly with suppliers without always having to go through a GDS now exists. Feeling pressure, GDS systems like Galileo are reacting to some of the new distribution systems available in today's marketplace. The company admits that it is sensitive to its customers demands for more cost-effective distribution systems and is taking a cautious approach to raise prices in hopes that its customers will not seek other alternatives (Rosen, 1997b). To help boost traffic, Galileo is targeting self-managed frequent travelers by outfitting them with software that provides direct access to its GDS. The software allows users to bypass the Internet, thus avoiding some of the reliability and response time issues typically experienced when surfing the web (Rosen, 1997b).

Lowering Distribution Costs Through the Internet

FedEx (<http://www.fedex.com>) represents one of the best documented examples of how use of the Internet can save money while simultaneously improving customer service. The company estimates that it has saved \$4 million (US) in overhead by using the web to help customers ship and track packages, locate drop boxes, and provide other forms of support (Moeller, 1996). FedEx estimates that there are as many as 400,000 users each month who use the web to track and ship packages rather than contacting FedEx's customer service representatives through a toll-free number. Since each call would cost the company between \$2 and \$5 (US), the cost avoidance is estimated at \$200,000 (US) per month (Moeller, 1996). Customer service representatives have been freed up to work on other tasks or handle more complicated consumer issues. To FedEx, this is just the beginning. The company believes long-term, the savings will be much more significant, not to mention the potential increase in business.

American Express (its system is called Paris), American Airlines, and Alamo Rent A Car are examples of companies deploying voice recognition systems that allow customers to make reservations by speaking in normal conversational tone with "robots." Using this technology, the companies hope to cut transaction costs per reservation in half and boost reservations productivity by as much as five percent without corresponding increases in staffing levels (Thyfault, 1997). The quality of voice recognition systems is improving and the prices of the hardware and software required to support them are declining, making them attractive and viable alternatives for the travel industry and other services such as UPS and Charles Schwab. Several products are currently available on the marketplace from

companies like IBM, Nuance Communications, Dragon Systems, Lernout & Hauspie, Registry Magic, and Vocollect, Inc. (Thyfault, 1997).

Delta Air Lines provides another example of how to lower distribution costs by exploiting Internet-based technologies and by exerting control over the booking channels. In the travel industry, Delta has been leading the pack with its efforts to cut overhead related to distribution and bookings. For example, Delta has been in the forefront of setting travel agent commission caps to reduce the role travel agents (both on- and off-line) play in the distribution process. It is also investing heavily in the Internet and its company web site in a strategic move to try and make this a leading source of on-line bookings. In doing so, Delta hopes to cut overhead and maintain control over the customer relationship rather than relinquish this control to some third party (e.g., a travel agent or other electronic booking source). The airline company pays upwards of \$300 million (US) annually in CRS fees (Wilder, 1997a). While the company does not believe it can avoid all of these costs, it recognizes that if it can shift how some customers make reservations (namely away from travel agents and costly, time-consuming telephone calls), it can substantially reduce its overhead (estimated in millions of dollars) by eliminating or reducing costly transaction fees, commissions, labor, etc. Hence, one can see the attractiveness of Delta's moves and appreciate the reason the company is so aggressive in exploring lower-cost distribution alternatives.

Most recently, in a bold move toward distribution-based price differentiation, Delta experimented with assessing surcharges to customers who used traditional booking channels (e.g., travel agents and toll-free call centers) and third-party booking channels on the Internet. Delta's strategy was an attempt to discourage customers from using more costly channels to book seats, to lock consumers into booking Delta flights, and to eliminate comparison-shopping. Channels and tools that allow consumers to conduct comparison-shopping, which make price the primary differentiator, can put Delta at a disadvantage since it is not always the low-cost provider. Thus, Delta was hoping it could steer traffic to its company web site (<http://www.delta-air.com>) where it could exert more control in the booking process. Naturally, the move was greeted with great market resistance in this consumer-dominated arena and in an age where the consumer is king. This resistance and the fact that none of its competitors matched its risky move (as was done with commission caps) led Delta to eliminate these surcharges, at least for the time being. While it is unclear whether this approach will be revisited or even attempted in the hotel industry any time soon (if ever), it does draw attention to the concept of distribution-based price differentiation, where a provider charges additional fees or implements rate differentials based on distribution channels used. It also underscores the importance of understanding the distribution costs associated with each channel and the distribution share of each channel employed by a company. This visibility should give rise to the importance of developing an overall distribution strategy.

The hotel industry can benefit from electronic commerce and customer service technologies like each of the companies just mentioned. Processing reservations through the Internet can be cheaper than processing those booked through other channels, particularly when a travel agent is involved. According to industry averages, it costs a company \$1 (US) for every

minute of talk/hold-time on a toll-free number (Frook, 1996). According to Thyfault (1997), the average talk-time per reservation is seven minutes. Thus, \$7 (US) are skimmed off the top for each room booked just for the phone call. This does not take into account the cost of information inquiries and cancellations. Add travel agent commissions and labor, and as one can see, the costs quickly grow. If hotel companies can employ technologies to reduce hold time and talk time or shift some of the current volume to the Internet for booking travel, they stand to save a considerable amount of money, changing cost structure and improving profit margins.

For hotels, a reservation made via the telephone costs \$10 (US) on average, whereas a reservation made via TravelWeb may only cost a hotel \$2 (US) (McCartney, 1996). Thus, savings can be significant—even if hotels only shift a small percentage of their reservations from telephone channels to the Internet. Christensen (1997a) suggests that reservations transaction costs should be no more than three percent of revenue. Incentives such as discounts and frequent travel points are being offered by travel companies to help encourage more electronic bookings via channels that are less expensive to operate. By channeling reservations traffic through these more cost-effective channels, hoteliers can reduce the amount they pay in commissions, GDS fees, talk-time, labor, and other transaction-related costs.

It is also important to consider not just the cost reduction opportunities but also the potential for incremental revenue. Many hotel executives interviewed discussed how different their client profiles are from those of typical Internet users. Nevertheless, they are observing a growing trend in rooms booked via the Internet. If these executives truly believe that these bookings are not coming from their existing customer base, one can only arrive at one logical conclusion: the bookings represent incremental room nights from travelers who would alternatively select other products or not travel at all.

In June of 1995, Bass Hotels & Resorts (formerly Holiday Hospitality and Holiday Inns Worldwide) was the first lodging company to implement online Internet booking capabilities via its company web site (<http://www.holiday-inn.com>). The company estimates that it has invested upwards of \$1 million (US) in Internet initiatives, but the booking revenue is still modest in comparison to other distribution channels. Nevertheless, the company views its Internet efforts as a big success, namely because of its role in positioning the company in the forefront of technology in the eyes of its franchisees (Radosevich, 1996; Wilder, 1997c). Long-term, Bass Hotels & Resorts understands that it will be cheaper for a guest to make reservations via the Internet than when they use the toll-free reservations service (Radosevich, 1996).

Outsourcing vs. Insourcing

Another aspect that can be considered when applying organizational economics theory is the on-going debate of outsourcing versus insourcing. Advances in information and communications technology have dramatically altered the cost of coordination and the risk

associated with outsourced functions. As a result of improved technologies and inter-organizational systems, there is a growing trend to rely more on outside entities (either through outsourcing or through strategic alliances) to reduce fixed costs (Stern and Weitz, 1997; Tapscott, 1996; Davidow and Malone, 1992). This, in turn, contributes to observed changes in strategies and structures at both the firm level and industry level, which often evolve to manage these new relationships (Clemons et al., 1993). To make an informed decision regarding insourcing versus outsourcing, the operating costs and transaction costs for each distribution channel (i.e., the economics of both internal operations and interfirm interactions) need to be understood. The goal should be to minimize total cost and maximize resource utilization.

Creating Value

In an era where goods and services become more like commodities, what consumers will value most is the experience associated with these goods and services (Pine and Gilmore, 1998). But just how can companies create these unique experiences, and more importantly, how can they convert them to added value for the firm?

Much has been written in the contemporary press about value creation. According to Slywotzky (1996, p. 4), value stems from a company's business design: "the entire system for delivering utility to customers and earning a profit from that activity." As information technology continues to pervade the industry, attention must be given to the role it plays in shaping a firm's business design and in contributing to the ensuing value creation. This value creation must be addressed from two perspectives: the viewpoint of the guest and the vantage point of the investors (stakeholders). Traditionally, the industry has struggled with assessing the benefits of information technology. As capital requirements for implementing the information technology infrastructure of the future grow, investors and owners will require reliable and valid valuation models. Also, as the pace at which product (hardware and software) upgrades are announced increases, more critical evaluation must be done before authorization and funding will be provided. Absence of such models will likely result in under-investment and hence, inadequate technology. Since these outcomes are unacceptable when trying to prepare organizations and the industry for the new world, this issue of valuation must be addressed. Without further investigation, the question remains: how should investment decisions in information technology be measured and evaluated? Along these lines, one must consider the value and potential of outsourcing. Many industries are turning to outsourcing to fulfill support functions. Hospitality organizations are increasingly looking to outsourcing as a means to control overhead. What remains to be answered are what information systems functions (if any) should be outsourced, and what are the strategic implications? Going forward, what will be the most effective utilization of resources to fulfill a firm's mission and objectives?

There is no question that the requirements for new, better, and more technology raises the level of capital investment required. This, however, is necessary to survive long-term. There is no escaping information technology. It is pervasive and has become a strategic necessity

for competing in a complex, dynamic world and should no longer be considered as “operational overhead” (Grover et al., 1997; Segars and Grover, 1995). Today’s legacy systems lack the flexibility to adapt to changing customer and business needs, and they are unable to process and manipulate the volumes of data required to cater to the “segment of one.”

One of the greatest challenges with the industry’s current technology is its inflexibility. This problem stems from many factors, namely its dependency on legacy systems, cumbersome programming languages, and the inability for applications to effectively communicate and share data with one another. Presently, the industry lacks technology standards that define data requirements and record layouts for passing data between applications. Increased emphasis on open systems and open architectures by hardware and software vendors and hotel industry-defined standards for interfacing unlike systems will close this gap. Improvements will be achieved as the industry migrates to new technologies, but what should these new technologies be? Like all of the issues previously stated, determining future technologies and platforms will capture the attention of researchers and practitioners to create the appropriate technology infrastructure for meeting the needs of tomorrow’s business model.

The pace of change is accelerating, and the model for creating value in the next millennium will be drastically different from the traditional paradigm. Without critically rethinking core competencies, service delivery methods, and guest (customer) interactions, the industry will most certainly be overcome by these new technologies and the guests’ desires to be treated as an individual versus part of a larger segment.

The new source of competitive advantage will be based on intellect rather than assets and capital. While the latter two resources are necessary, they are no longer sufficient in a dynamic, high-tech world where the customer is king (i.e., more demanding, more informed, and value conscious). To survive and thrive in the long run, the hotel of the future will be a learning organization, one that must always reinvent itself to create value and provide the ultimate in individualized service. The dichotomy between the “haves” and the “have-nots” will be exacerbated by the bipolarization between those who know and those who know not. In other words, it is not sufficient to have the latest in tools and technology, and it is not enough to be simply computer literate. In order to prosper, one must know how to effectively use these tools and technologies and exploit their capabilities in such a way that competitors cannot easily duplicate. How a hotel rises to these new challenges and how it reshapes its business model will be the topics of future discussion and research. Ultimately, the challenge will be to creatively implement new technologies to effectively and efficiently treat each consumer as an individual segment (i.e., providing a highly customized, unique experience) while simultaneously creating shareholder value. Information and communications technologies will drive these opportunities—but only if the “right” infrastructure is first established. What is right, of course, will be organization-dependent, but it is clear that the technology architecture in any organization must be flexible and upgradable to meet changing business needs and take advantage of newer technology innovations. To reach this state, a well-thought strategy must be developed; this can only be done if the events shaping the future are identified and understood. Hence, the need to focus on information technology

and the resulting convergence is not only timely but also essential to the industry's future. The timing is now to begin this planning effort if the industry is to proactively manage the changes that will inevitably occur. This requires forward thinking, not just about the technologies themselves, but the types of capabilities they enable. Given the complexities the future will hold, information technology strategy and investment cannot stand still. Organizations cannot rest on their laurels; they must constantly seek ways to innovate and assimilate new technologies to better serve their customers and manage their businesses (Palmer, 1988).

While information technology offers great potential, it is not always the answer to an organization's woes. As Mathe and Dagi (1996) note, technology alone is not a solution, but rather an enabler; it must be well integrated, provide synergies, and support the service vision. This implies that the chosen technologies suit the problem at hand, are compatible with the firm's organizational structure, and can be easily maintained (Mathe and Dagi, 1996).

The perennial question of any business is "How does an organization add value?" Value can be defined from many different perspectives and may result from tangible and intangible factors. Principal stakeholders include shareholders (investors), customers, and employees. Shareholders typically measure value in terms of economic return on their investment based upon some level of perceived risk. For customers, value is assessed in terms of a price-value relationship; that is, how much they received in terms of product and services for the price they paid. For employees, value is measured by salary and by the intrinsic rewards of the job.

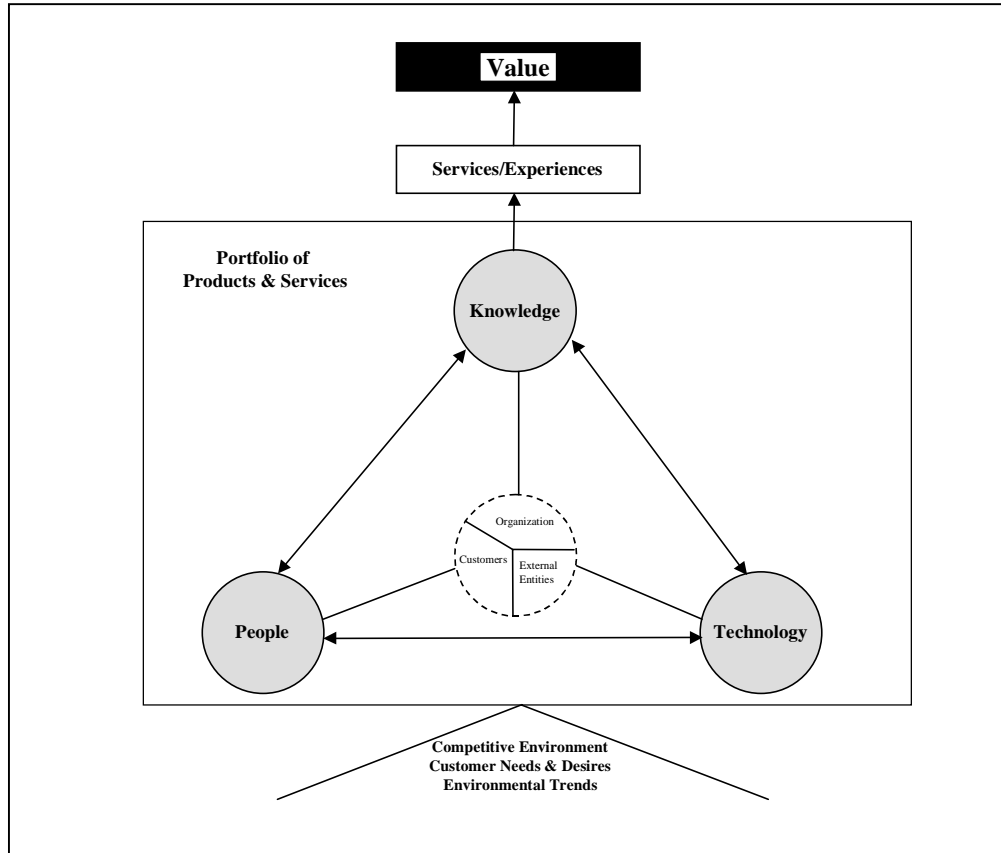
One of the most elusive questions with respect to information technology is "What is its value?" This question is sometimes raised with respect to a hotel GDS and each distribution channel. As the marketplace becomes more competitive, it becomes increasingly difficult to build value, especially when the focus is to do more with less, and to do things faster and cheaper than how they were previously done. Because the dynamics for producing value are changing, a new model is needed to illustrate how value can be created in hotels of tomorrow. Technology will likely be the most critical component of the value-creating model heading into the next millennium (Olsen, 1996).

A Model for Gauging Value

Cline and Blatt (1998) suggest that hotel companies must create a new business model for defining value that accounts for tangible as well as intangible assets, including knowledge, information, and customer relationships. Figure 2-12 provides one view of how organizational value will be created in the hotel of the future. This model advances many of the concepts espoused by Mills (1986), Barrington and Olsen (1987), Davidow and Malone (1992), and Tapscott (1996) and was initially created by the author as a result of the June 1997 *Technology Think Tank* session sponsored by the IH&RA in Singapore. The crux of the model suggests that information technology and human resources, armed with intellect

derived from knowledge and information literacy, will be the new source of value. Leveraging customer information and the customer relationship to create a memorable, emotional experience will be a leading determinant in firm profitability (Cline and Blatt, 1998).

Figure 2-12: Creating Value in the Hotel Organization of the Future



The base of the model illustrates a grounding in the environment in which a hotel competes. In order to successfully compete and prepare for the future, it is essential to understand the environmental events and trends shaping the future, the timing of these events, the causal relationships, and the long-term implications. It is also necessary to have a complete understanding of customer needs and desires and the ability to anticipate future requirements, even if the customers have not already articulated these needs. Finally, it is important to understand the competitive environment, that is the products, services, strategies, and innovations of competing hotels. These three components serve as inputs to the larger model and shape paradigms, products, and services.

The center portion of the model represents the convergence of people, technology, and knowledge. People are the workers and the management of the hotel. The technology represents the computer systems (e.g., GDS, PMS, revenue management, etc.) and communications network. The technology encapsulates the rules, procedures, and knowledge of the organization and distributes it to all those who need access to it. In today's environment, this goes beyond the hotel's workers and the culture of the organization to include the extended enterprise (i.e., strategic partners, outsourced service providers, and participating entities in the global distribution network) and the customers who actively participate in the service delivery process.

The dyadic interactions between hotel employees, customers, the environment, external entities, and technology applications build knowledge through the exchange of information and help create a learning organization. It is this knowledge base that allows the organization to build a portfolio of products and services that can be delivered consistently to the hotel's customers. The role of technology in this portfolio is strategic and fundamental to achieving consistency and sharing of information necessary to deliver these services.

When the guest shares in these services, he/she has experiences, both positive and negative. These experiences are enriched by the interactions with the hotel organization, its staff, its technology and know-how, and those that represent the organization (i.e., external entities) providing peripheral services. It is from these interactions that value will ultimately be judged. If rated favorably, the guest will be likely to return as well as share his/her experiences with others. This will lead to greater guest loyalty, higher occupancies, and higher revenues or economic value.

Value Creation and the GDS

While there are many technologies used by a hotel, none are so vital to the organization's success and inherent ability to create value as the GDS. This system is truly the cornerstone of any organization. It is the primary collection point of all guest information, the primary dissemination and communication vehicle of both guest and hotel information, and the central repository of guest data. The strategic implications of this system are far-reaching given its role in maintaining room inventory control, interfacing with third-party service providers (external entities), and interacting directly with guests or consumers. Without this system, today's hotel would be severely handicapped in its drive to deliver unmatched value. Thus, management commitment must be given to build and maintain an effective GDS to ensure that only the highest levels of value are delivered.

Tying It All Together

To complete this literature review, a wide net was cast to gain as much insight as possible on the topics of IT investment decision-making and prioritization and to subsequently relate these findings to the context of hotel global distribution systems. Literature was studied from

many fields including, but not limited to, strategy, finance, organizational economics, organizational theory, service management, marketing, hospitality, and IT. From this comprehensive literature review, it is clear that IT touches almost every aspect of an organization, making it difficult, if not impossible, to determine the true impacts of IT on the organization. Thus, establishing causal relationships regarding IT usage and overall performance of the organization continues to be a daunting challenge.

While many researchers have attempted to link IT expenditures with firm performance, the results are inconclusive. These linkages are fraught with ambiguity, and at best, only correlation, not causality can be determined. The problems of establishing causal links are further confounded by time delays between cause-and-effect relationships, the fact that many IT projects span multiple budgets, and improperly categorized expenditures. As the costs of IT decline and come within the discretionary spending limits of managers, central reporting and control of IT is lost. Hence, the true impacts are rarely, if ever, known. What is known is that IT changes the stakes of competition and the economics of conducting business in any industry, including the hotel industry. Therefore, a firm cannot afford to overlook IT and its ramifications on its business, view its role passively, or completely delegate IT responsibility and authority away from the executive suite.

This comprehensive literature review presents the state-of-the-art thinking regarding IT investments, decision-making, and prioritization. As one can see, the literature is still in its infancy and lacks robust knowledge and methodologies regarding these complex phenomena. There is only a small body of literature covering these important topics, with little understanding regarding the process that should be followed and the criteria that should be used. In terms of hospitality and GDS, the literature is completely silent on these issues.

With the capital requirements for IT investment on the rise, evaluating IT investments is of critical concern to industry practitioners. Increasingly, the focus and effects of IT span an entire organization. Yet, absence of a mature theoretical base makes it troublesome to develop the much-needed, practical guidelines, methodologies, and evaluative tools that are so desired by industry practitioners. This is both problematic and worrisome with respect to how organizations allocate resources to maximize their returns and firm performance—especially when environmental uncertainty, business turbulence, and technological change are unrelenting. Unquestionably, firms must make well-informed decisions regarding IT and GDS using objective, rigorous methods. Simple and soft approaches like intuition or gut feel, percentage of current IT budget, or parity with competitors (i.e., threshold investment) are insufficient. They may be misleading, and they are increasingly becoming unacceptable forms of justification.

Although there is still little agreement as to what constitutes IT, the general tendency is to approach it from a broad perspective to include all aspects encompassed by IT. IT spending should be considered a capital investment, not a period expense (Applegate et al., 1996; Weill and Broadbent, 1998). There is also support for better tracking of IT spending within firms to alleviate a firm's inability to measure and evaluate the costs and benefits derived from IT. The good news is that these areas are drawing increased attention and research by practitioners and scholars alike, as evidenced by the growing number of publications

covering these topics. This literature review suggests that these topics will be a rich area for study for many years to come for those who heed the call.

In many firms, IT is the fastest growing area of capital investment and often ranks as one of the top contenders for organizational resources and capital (Weill and Olson, 1989; Weill, 1991). While little is known regarding IT investments, prioritization, and decision-making, there is consensus in the literature that IT investments are growing in terms of magnitude, scope, and significance and, therefore, must have complete involvement from senior management. Size, scope, and organizational impact of these investments suggest that these decisions must come under the purview of senior management. No longer can these decisions be delegated to the lower ranks or the technical experts—or, for that matter, ignored altogether. These decisions must be based on a firm's key business drivers, not merely technical elegance (Weill and Broadbent, 1998). Furthermore, it is clear that business strategy and IT strategy must go hand in hand. Because it is costly to invest in IT, firms cannot afford bad, inappropriate, or misguided decisions. Investors and owners simply have little tolerance for forgiveness.

A Multidimensional Perspective and Composite Set of Measures

Interestingly, despite the rapid change of technology and the newer capabilities afforded by technology, the principal reasons for implementing IT have remained relatively stable over time (Grover et al., 1997). Despite this stability, there is no one best solution, process, or set of criteria for evaluating IT investment options because the range of circumstances is so broad (Farbey et al., 1992).

The use of IT throughout a firm should reflect that firm's strategic plan. The methods employed must balance short- and long-term needs with appropriate levels of risk and return using a portfolio approach (Applegate et al., 1996; McFarlan, 1981; Thorp et al., 1998; Weill and Broadbent, 1998; Weill, 1991; Weill and Olson, 1989). The administration of these portfolios requires the use of fundamental management practices and business concepts, with the overall objective focused on creating value for a firm through supporting current strategies and by enabling new ones (Weill and Broadbent, 1998; Thorp et al., 1998). Like any financial investment portfolio, an IT portfolio must be actively managed with continuous monitoring and suitable investment levels to meet a firm's goals and objectives and to create a balanced set of risk-return profiles. Moreover, firms cannot afford to ignore the opportunity costs and strategic implications of failing to accept a given investment opportunity. Complacency is seldom an option since competitors will quickly alter the competitive landscape with their own moves and initiatives and consequently force action by sleeping firms and those attempting to avoid it.

Implicitly, all IT investment decisions are designed to improve strategic value, business performance, and return on investment—unless of course, they are made to comply with regulatory, legal, or other government requirements. Realization of the benefits derived from IT applications comes with time, other changes throughout an organization, and

complementary resources. IT alone does not generate benefits. However, the tools and methods for evaluation and IT appraisals to capture IT's contribution to these benefits are ill-defined and lacking, making it difficult to apply the necessary rigor and analysis for objective, fact-based decisions and allocations of firm resources.

There is also consensus in the literature that no single metric can adequately measure or capture the contributions of IT. Assessing the impact of IT should not rely on univariate metrics but instead must look at a composite of measures using multiple techniques to provide a more holistic assessment. Multiple measures are almost always preferred to a single measure because of the richness that can be captured. Since a single measure cannot sufficiently assess the impact of IT (e.g., costs, benefits, organizational impact, etc.), King and McAulay (1997) suggest the use of multivariate and multi-method measures to capture the diverse needs of multiple stakeholders, to provide criteria that can be rank ordered, and to offer a source of triangulation. To that end, a composite of quantitative and qualitative measures should be used to create a balanced scorecard approach (Semich, 1994; Kaplan and Norton, 1992, 1996; Shein, 1998; Madden, 1998). In the words of Weill and Broadbent (1998, p. 24):

“Managers make decisions about information technology investments based on a *cluster of factors* [italics added], including capabilities required now and in the future, the role of technology in the industry, the level of investment, the clarity with which technology investments are viewed, and the role and history of information technology in the firm.”

Bacon (1992) and Farbey et al. (1992) postulate that the criteria used in evaluating and making IT investment decisions are important because they determine which projects are accepted and the level of funding and resources they receive. Ultimately, they become instrumental in determining and measuring the overall success and effectiveness of the decisions. The assumption is that the criteria used will ensure that only the *right* projects are accepted, while all others are rejected. These authors suggest the following significant implications regarding the criteria used:

- 1) The criteria used (or omitted) and the manner in which it is used (or not used) impact which decisions or projects are funded or rejected (thus, defining the mix of projects adopted) and the pace at which they are adopted.
- 2) The criteria provide justification and sets expectations within the firm for the application, system, or technology.
- 3) The criteria provide a basis for comparison of multiple projects competing for a finite set of resources.
- 4) The criteria impact how a firm attempts to maximize return on investment and any ensuing cost-benefit analysis.
- 5) The criteria used effect how a firm balances multiple stakeholder requirements and needs.

- 6) The criteria provide a set of measures so a firm can monitor and control project and judge its degree of success.
- 7) Evaluation and subsequent measurement and comparison with actual achievements or impact provide a basis for learning which can be factored into future evaluation processes.

The literature review presents a vast array of criteria and techniques that can be used to measure and assess the impact of IT on a firm. There is considerable controversy over the use of accounting and financial measures and methods alone, as they tend to ignore many other facets and intangible benefits. An astute observation made by Diebold (1987) is that if a firm relies solely on accounting and financial criteria, many viable projects and important investments will be overlooked or rejected outright. These measures should not be ignored, and this type of analysis should not be omitted. However, these techniques should be complemented by other approaches to capture a more robust outlook.

In an attempt to create a comprehensive list of constructs, variables, and measures related to IT and hotel GDS, the various approaches have been synthesized. A composite of the criteria and measures suggested by the literature are presented in Table 2-6. Apostolopoulos and Pramataris (1997) and Clemons and Weber (1990) suggest that by employing other evaluation measures to complement traditional accounting and financial approaches, one can moderate the inadequacy of financial criteria. A simple spreadsheet can be used to apply weights to criteria and analyze and rank various alternatives.

Table 2-6 contains a consolidated list of constructs and measures that can be applied to create a multidimensional look and a balance between quantitative and qualitative, tangible and intangible, and direct versus indirect benefits as well as account for financial, functional, technical, and strategic aspects, an idea supported by most authors (e.g., Semich, 1994; Bacon, 1992; Diebold, 1987; Farbey et al., 1992; Grover et al, 1997, 1998; Kaplan and Norton, 1992, 1996; Clemons, 1991; Clemons and Weber, 1990; Sethi and King, 1994; Shein, 1998; Madden, 1998). While many of these criteria represent outcomes and can be used to assess the overall effectiveness of IT within a firm and the impact on firm performance, competitive advantage, etc., they are also relevant in the evaluation and decision-making processes since it is assumed that most IT decisions are based on rational analysis, desired outcomes, and presuppositions regarding the impact of IT or an IT application will likely have on the firm. In many cases, the IT decisions are based on a firm's ability to achieve a set of desired outcomes. The measures presented in Table 2-6 will help a firm in anticipating these outcomes.

Actual application of the measures presented in Table 2-6 should rely on contingency theory (Diebold, 1987; King and McAulay, 1997), whereby the use and weights assigned to each criterion is determined by the organization, the type or purpose of investment, and the context or circumstances in which it is to be applied.

There are also a number of moderating factors that will impact the evaluative process and criteria employed. These include the role of the evaluation; timing; risk; the organizational

environment (e.g., culture, internal politics, competitive position); organizational attributes; the characteristics of the system, application, or technology being evaluated; credibility of the project team and sponsor; and the degree to which cause and effect linkages can be established (Farbey et al, 1992; Weill and Olson, 1989). For example, strategic thrusts (e.g., internally motivated projects versus externally motivated efforts) will require different emphasis and application of evaluation criteria. Projects with a high degree of risk, uncertainty, or ambiguity will likely be subject to risk premiums and require more rigidity than incremental investments or funding for existing applications and technology. Mandated projects, projects deemed essential to maintain competitive parity, and projects with intuitive appeal may require little or no analysis, as the decision may be a forgone conclusion and/or the outcomes may be seemingly obvious. In the words of Farbey et al. (1992, p. 116):

“The organization wishing to sharpen its IT investment decision-making must first recognize that there are evaluation techniques other than ROI. It must then try to find which technique is most suitable for its IT investment.”

As Farbey et al. (1992) so eloquently state, there are multiple approaches to evaluating IT, and each technique is suitable to a set of circumstances. The challenge for any organization is to select the appropriate methodology and criteria given the situation and desired objectives. A firm must balance rigor with efficacy. To assist firms in achieving this balance, Farbey et al. (1992, 1994) present an effectual process that can be followed to determine the contextual setting, capture the relevant characteristics, and match a project with the most appropriate evaluation method.

To paraphrase Diebold (1987, p. 590), one should analyze and quantify all IT projects/investments to the fullest extent possible to abate the level of uncertainty and risk while lessening the leap of faith required by company executives, but one cannot simply rely on a single criterion. The constructs and measures presented in Table 2-6 will provide a basis for determining which criteria are used in practice and how they are used (i.e., to what extent) to influence the decision-making process to select IT investments in a firm’s hotel GDS and to implement new distribution channels.

Table 2-6: Composite of IT Constructs, Variables, and Measures

Construct(s)	Variable(s)	Measure(s)	Examples of Contributory Literature
Strategic Orientation	Low-cost leadership	<ul style="list-style-type: none"> • Efficiency of operations • Competitive pricing • Sensitivity to cost 	Porter (1980, 1985), Parsons (1983), McFarlan (1984), Porter and Millar (1985), Applegate et al. (1996), Grover et al. (1997, 1998)
	Product differentiation	<ul style="list-style-type: none"> • New Products/services • Brand recognition • Advertising expenditures • Innovative marketing 	
	Market (niche) focus	<ul style="list-style-type: none"> • Special geographic markets • Tailoring products/services to special customer needs or interest groups 	
Competitive Forces and the Environment	Potential entrants	<ul style="list-style-type: none"> • Threat of new entrants 	Porter (1980, 1985), Parsons (1983), McFarlan (1984), Porter and Millar (1985), Sethi and King (1994), Applegate et al. (1996), Grover et al. (1997, 1998)
	Buyers	<ul style="list-style-type: none"> • Bargaining power of buyers • Switching costs 	
	Suppliers	<ul style="list-style-type: none"> • Bargaining power of suppliers • Switching costs 	
	Substitutes	<ul style="list-style-type: none"> • Threat of substitute products and services 	
	Rivalry among existing firms	<ul style="list-style-type: none"> • Intensity of competition • Marketing expenditures • Advertising • Price competition • Perception of intensity • Competitor moves 	
Strategy Proactiveness	First mover/early adopter	<ul style="list-style-type: none"> • Positional advantages and timing • Attitudes toward risk • Product introductions • Innovativeness • Strategic thrusts • Planning horizon 	Porter (1980, 1985), Kettinger et al. (1994), Sethi and King (1994)
	Follower		
Firm Performance	Profitability	<ul style="list-style-type: none"> • Revenue and expenses • Net income • Return on assets • Return on equity • Return on sales • Earnings per share • Cash flow per share • Cash flow from operations • Economic value added (EVA) 	King (1983), Chakravarthy (1986), Bakos (1987), Sink and Tuttle (1989), Farbey et al. (1992), Bacon (1992), D'Aveni (1994), Applegate et al. (1996), Bharadwaj and Konsynski (1997), Williamson (1997), Olsen et al. (1998)
	Business value	<ul style="list-style-type: none"> • Tobin's <i>q</i> • Market capitalization 	

Table 2-6: Composite of IT Constructs, Variables, and Measures (Continued)

Construct(s)	Variable(s)	Measure(s)	Examples of Contributory Literature
Critical Success Factors	Measures of success	<ul style="list-style-type: none"> • Success factors/measures • Functional criteria • Technical criteria • Preconditions to satisfy • Timing 	Rockart (1979), Boynton and Zmud (1984), Shank et al. (1985)
Technology Orientation	Strategic/enabling view	<ul style="list-style-type: none"> • Preemptive moves 	Sethi and King (1994), Cho (1996), Weill and Broadbent (1998)
	Support/utility role	<ul style="list-style-type: none"> • Reactionary moves • Necessity 	
	Service provider	<ul style="list-style-type: none"> • Intent to sell services and IT applications • Marketing efforts and expenditures 	
IT Philosophy	Insourcing	<ul style="list-style-type: none"> • Project management • IT staffing levels • Internal initiatives • Technological resources 	Applegate et al. (1996), Weill and Broadbent (1998)
	Outsourcing	<ul style="list-style-type: none"> • Use of consultants and contractors • Reliance on vendors • Percent of IT budget spent on outside services 	
IT Budget	Annual IT budget	<ul style="list-style-type: none"> • Total annual IT budget • IT budget as a percentage of company sales • IT expenses to company expenses ratio 	Mahmood and Mann (1993), Hitt and Brynjolfsson (1996), Needle (1996)
IT Stock	Computer capital	<ul style="list-style-type: none"> • Total value of all computer equipment and software 	Hitt and Brynjolfsson (1996), Hibbard (1998)
	IS labor	<ul style="list-style-type: none"> • Labor costs 	
IT Investment Objectives	Cost containment or internal need	<ul style="list-style-type: none"> • Firm's stated objectives • Performance goals • Strategic alignment 	Neo (1988), Shank and Govindarajan (1992), Venkatraman et al. (1993), Applegate et al. (1996), Reich and Benbasat (1996)
	Revenue generation		
	Service enhancement or customer need		
	Employee productivity		
	Growth		
New product/service development			
IT Investment Priority	Strategic systems	<ul style="list-style-type: none"> • Rankings by top management 	Benjamin et al. (1984), McFarlan (1984), Weill and Olson (1989), Weill (1991), Grover et al. (1997, 1998), Weill and Broadbent (1998)
	Traditional development		
	Decision support systems		
	Infrastructure		
	Business process redesign		
	Maintenance/enhancement		
	Experimental applications		
	Competitive parity		
Regulatory or mandated			

Table 2-6: Composite of IT Constructs, Variables, and Measures (Continued)

Construct(s)	Variable(s)	Measure(s)	Examples of Contributory Literature
Decision-Making Process	Methodology and steps	<ul style="list-style-type: none"> • Need identification • Problem analysis • Analysis of alternatives • Selection 	Applegate (1996), Williamson (1997), Grover et al. (1997, 1998)
	Participants	<ul style="list-style-type: none"> • Sources of inputs • Sources of decision-making • Decision authority 	
Factors Influencing IT Investment Decisions	Diversity of technologies used	<ul style="list-style-type: none"> • IT portfolio of applications and hardware 	Weill and Olson (1989), Clemons and Weber (1990), Farbey et al. (1992), Boynton et al. (1994), Applegate et al. (1996), Williamson (1997), Grover et al. (1997, 1998), Thorp et al. (1998)
	User involvement	<ul style="list-style-type: none"> • User participation and input • Amount of functional overlap between multiple departments 	
	IT steering committee	<ul style="list-style-type: none"> • Existence of a steering committee 	
	IT credibility	<ul style="list-style-type: none"> • Past successes/failures • Reputation and credentials • Ability to deliver 	
	Management knowledge (cognitive base)	<ul style="list-style-type: none"> • Perceived IT competency and proficiency of management • IT Comfort level • Use of and aptitude for IT • Openness to IT (attitude) • IT reporting relationships within the organization • Experience and training 	
	Top management support and buy-in	<ul style="list-style-type: none"> • Endorsement and support from top management • Project sponsor/champion • Project visibility • Management participation • Centralization vs. decentralization • Timing 	
	Organizational factors	<ul style="list-style-type: none"> • Organizational structure • Organizational culture • Centralized vs. decentralized control • Internal politics • Attitudes towards risk • Organizational policies and procedures • Chain/brand affiliation 	

Table 2-6: Composite of IT Constructs, Variables, and Measures (Continued)

Construct(s)	Variable(s)	Measure(s)	Examples of Contributory Literature
Market Power	Scope	<ul style="list-style-type: none"> • Firm's total assets • Firm's total sales • Marketing budget 	Chakravarthy (1986), Bakos (1987), Weill and Olson (1989), Clemons and Row (1991a), Bacon (1992), Kettinger et al. (1994), Sethi and King (1994), Segars and Grover (1995), Mata et al. (1995), Cho (1996)
	Internal capital	<ul style="list-style-type: none"> • Current ratio • Times interest earned • Equity to debt • Cost of capital • Budgetary constraints 	
	Slack resources	<ul style="list-style-type: none"> • Cash flow per investment • Working capital • Return on sales 	
	Market position	<ul style="list-style-type: none"> • Market share • Relative profitability • Revenue growth rates • Unit growth rates • Market share growth rates • Unique product features • Switching costs • Positional advantages • Cost advantages • Chain affiliation/brand • Strategic alliances • Buying power • Firm's strengths and weaknesses 	
	Firm resources and capabilities	<ul style="list-style-type: none"> • People • Capital • Company assets • Core competencies • Portfolio of products and services • Competitive methods • Work processes • IT portfolio and infrastructure 	
	Sustainability	<ul style="list-style-type: none"> • Growth rates • Barriers to entry • Threat of substitutes • Credibility of retaliation • Rate of innovation • Lead time • Inimitability • Learning curve • Idiosyncratic resources • Information asymmetries • Patents 	

Table 2-6: Composite of IT Constructs, Variables, and Measures (Continued)

Construct(s)	Variable(s)	Measure(s)	Examples of Contributory Literature
Synergy	Alignment with the business	<ul style="list-style-type: none"> • Alignment with business objectives and strategy • Alignment with marketing objectives and strategy • Alignment with IT strategy and architecture • Foundation factors • Leverage from firm resources, strengths, and core competencies • Technology-task congruence • Cross-functional application 	Kantrow (1980), Benjamin et al. (1984), Copeland and McKenney (1988), Venkatraman et al. (1993), Kettinger et al. (1994), Sethi and King (1994), Reich and Benbasat (1996), Williamson (1997), Grover et al. (1997, 1998)
Risk	Risk factors	<ul style="list-style-type: none"> • Sensitivity/risk analysis • Probability project will be completed • Probability desired benefits will be achieved • Project size • Project structure • Experience with the technology • Technical risk • Functional risk • Internal political risk • External environmental risk • Systemic risk • Opportunity cost • Risk premium and hurdle rates 	McFarlan (1981), Clemons and Weber (1990), Bacon (1992), Applegate et al. (1996)
Productivity	Output and Yield	<ul style="list-style-type: none"> • System-wide occupancy • Room-nights generated • Room revenue generated • Revenue per available room • Revenue per occupied room • Profit per available room • Profit per occupied room • Average daily rate • Total factor productivity 	Chakravarthy (1986), Sink and Tuttle (1989), Hitt and Brynjolfsson (1996); Brynjolfsson and Hitt (1996), David et al. (1996), Connolly et al. (1997)

Table 2-6: Composite of IT Constructs, Variables, and Measures (Continued)

Construct(s)	Variable(s)	Measure(s)	Examples of Contributory Literature
Productivity (Continued)	Conversion	<ul style="list-style-type: none"> • Conversion rate • Number of times sold • Reservations per available room • Net bookings • Cancellations • No-show rate • Look-to-book ratio • Time in channel (talk time, time on web page) • Hold time • Dropped calls • Actual bookings vs. total possible bookings • Actual revenue vs. total possible revenue 	
Efficiency	Production economics	<ul style="list-style-type: none"> • Economies of scale • Economies of scope • Geographic scope • Economies of specialization • Exposure effectiveness (cost versus reach) 	Porter (1980, 1985), Williamson (1981, 1986), Bakos and Treacy (1986), Bakos (1987), Neo (1988), Sink and Tuttle (1989), Clemons et al. (1992, 1993), Kettinger (1994), Sethi and King (1994), Segars and Grover (1995), Applegate et al. (1996); Rindfleisch and Heide (1997)
	Internal efficiency	<ul style="list-style-type: none"> • Transaction costs (cost per transaction) • Coordination costs • Reservations processed per second • Number of times room sold to result in booking • Cost per user • Cost efficiency • Rack efficiency • Profit margin • Contribution margin • Turndowns • Walked guests • Days to arrival (lead time of bookings) 	

Table 2-6: Composite of IT Constructs, Variables, and Measures (Continued)

Construct(s)	Variable(s)	Measure(s)	Examples of Contributory Literature
GDS	Distribution channels	<ul style="list-style-type: none"> • List of channels used by a company • Channel costs • Initial investment cost per channel • Implementation costs • Maintenance and support costs per channel • Annual participation fees • Volume and usage activity • Sources of business (bookings) • Onward distribution • Channel churn • Turndowns (denials and regrets) • Usable denied revenue • Geographic reach • Incremental bookings 	Moore and Selling (1977), Strategic Consulting Group, 1992, Emmer et al. (1993), Schulz (1994), Semich (1994), Connolly and Moore (1995), Coyne (1995), Radosevich (1996), Apostolopoulos and Pramataris (1997), Hildebrand (1997), Connolly et al. (1997), Dombey (1997), Shapiro (1997a), Violino (1997), Cline and Blatt (1998), Hibbard (1998), Olsen et al. (1998), Orkin (1998)
	GDS strategy	<ul style="list-style-type: none"> • Existence of a GDS strategy 	
	Future outlook	<ul style="list-style-type: none"> • New developments planned or in process • New developments under consideration • List of issues pertaining to IT and GDS • Forecast for IT & GDS • Distribution alternatives 	
	IT architecture	<ul style="list-style-type: none"> • Technical environment (e.g., hardware, software, communications protocols) 	
	Transaction costs (cost per reservation)	<ul style="list-style-type: none"> • Talk time • Hold time • Commissions • Switch fees • GDS fees • Hotel CRS fees • Other 	
	Resource inputs	<ul style="list-style-type: none"> • Staffing (labor) • Initial investment • New development costs • Maintenance and support • Overhead 	

Table 2-6: Composite of IT Constructs, Variables, and Measures (Continued)

Construct(s)	Variable(s)	Measure(s)	Examples of Contributory Literature
GDS (Continued)	Interfaces	<ul style="list-style-type: none"> • Number of interfaces • Types of interfaces • Interface development costs • Cost to maintain and support each interface 	
	Functionality and system capabilities	<ul style="list-style-type: none"> • Differentiation capabilities • Unique attributes • Services provided • Functional requirements • Technical requirements • System strengths and weaknesses 	
	Tangible cost-benefit analysis	<ul style="list-style-type: none"> • Return on investment/net present value calculation • Return on invested capital • Adjusted present value • Internal rate of return • Payback • Total cost of ownership 	
	Intangible benefits analysis	<ul style="list-style-type: none"> • List of qualitative benefits • Anecdotal evidence 	
	Intangible risk analysis	<ul style="list-style-type: none"> • List of sources of risk • Anecdotal evidence • Forecasting error • Implications of not investing 	
	Customer loyalty	<ul style="list-style-type: none"> • Repeat business • Repeat channel usage • Perceived value/satisfaction ratings • Search-related costs • Customer sensitivity to technology 	
	Speed	<ul style="list-style-type: none"> • Response time • Average time in queues 	
	Accuracy	<ul style="list-style-type: none"> • Quality and reliability of information • Service complaints • Reliability • Customer feedback • Satisfaction ratings 	

Table 2-6: Composite of IT Constructs, Variables, and Measures (Continued)

Construct(s)	Variable(s)	Measure(s)	Examples of Contributory Literature
GDS (Continued)	Convenience	<ul style="list-style-type: none"> • Number of choices or alternatives available for service delivery • Ease of use • Availability of services • Access to services • Degree of customization • Perceived hassles 	
	Security	<ul style="list-style-type: none"> • Measures taken to ensure privacy and security 	
	Tangibles	<ul style="list-style-type: none"> • Presentation of content • Content available 	
	Assurance	<ul style="list-style-type: none"> • Ability to instill consumer confidence 	
	System capacity	<ul style="list-style-type: none"> • System throughput • Response time • Storage capacity • Number of users • Number of locations supported • Number of countries supported • Number of currencies supported • Number of hotels capable of being supported • Number of room types that can be supported • Number of rate types that can be supported • Number of rate categories that can be supported • Peak volumes • Frequency of updates 	
Value	<ul style="list-style-type: none"> • Net worth of GDS • Economic useful life expectancy • Price-performance 		

Research Models

There is little agreement as to whether or not a model constitutes theory (Sutton and Staw, 1995). Nonetheless, it represents an appropriate, logical starting point and often makes a valuable and necessary contribution to the theory-building process, even if the model itself is not considered theory (Bagozzi, 1980; Whetton, 1989; Sutton and Staw, 1995; and Weick, 1989; 1995). A model provides a researcher with a conceptual framework or roadmap of the territory being investigated; it also sets boundaries around what will and will not be included in the study (Miles and Huberman, 1984; Huberman and Miles, 1994). To subsequent researchers, a research model specifies the limitations of the theory (Bacharach, 1989) and illustrates the context in which the research was conducted so that it can be replicated or adapted for application in another context (Yin, 1994).

A model is a useful tool for conceptualizing and explaining abstract material, illustrating causal relationships and interaction among variables, and identifying moderating variables. In the process, however, it is likely that a researcher must compromise between simplicity, accuracy, and generality because it is not always possible to graphically depict all of the concept relationships that exist with any given phenomenon (Weick, 1979). The sections that follow introduce the research models that provide the theoretical grounding for this study.

The Co-Alignment Principle Revisited

This research effort attempts to provide an appropriate balance between simplicity, accuracy, and generality by grounding the research models in sound theory based on a thorough review of the literature and by building the models in piecemeal so as not to overwhelm or confuse the reader. One will recall from Chapter One that the theoretical underpinning of this study, drawn from the field of strategy, is the co-alignment principle, first depicted in Figure 1-6 on page 34. A more explicit application of the co-alignment principle in the context of a hotel GDS was later depicted in Figure 2-1 on page 44. Now, in Figure 2-13, a more complete account is presented.

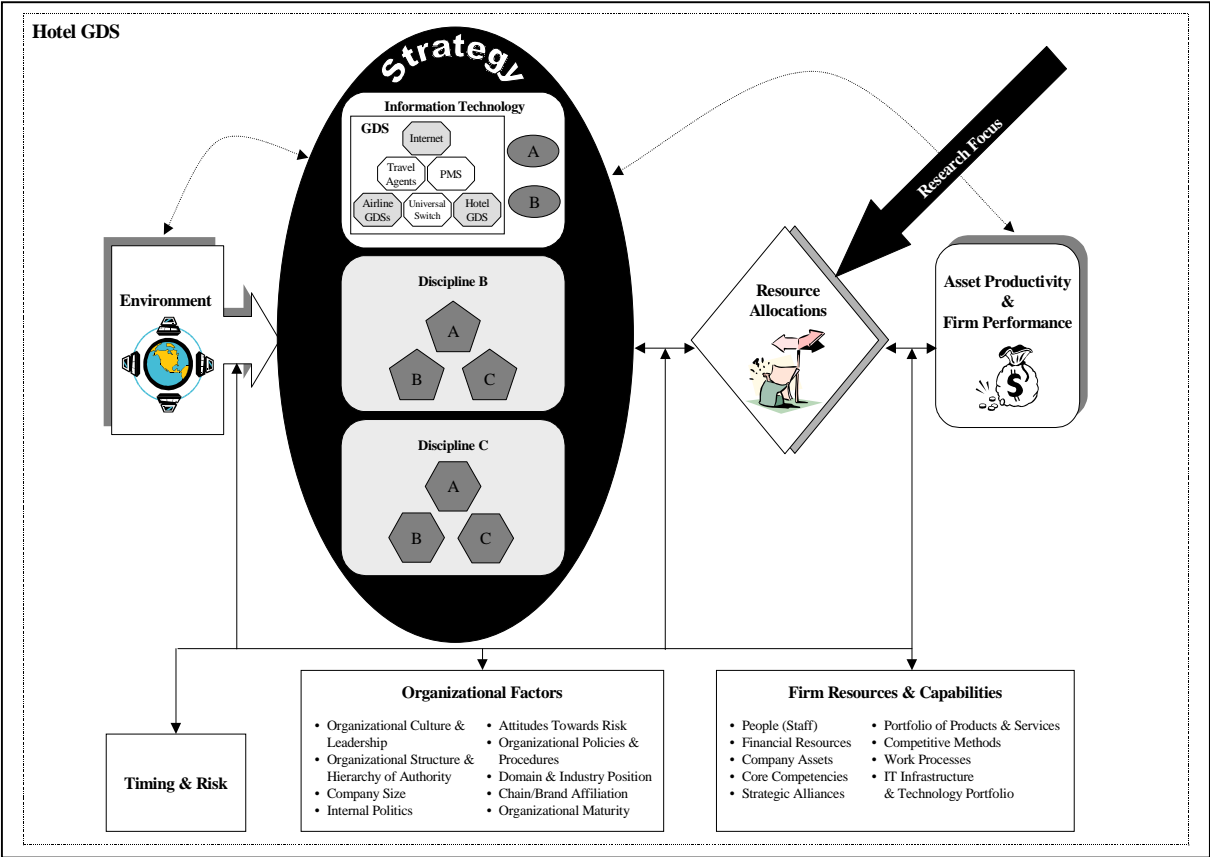
As in the previous depictions of the co-alignment model, Figure 2-13 illustrates the causal linkages, widely held under the normative view of strategy, between a firm's environment, its strategy, resource allocations, and finally, asset productivity and firm performance (Chandler, 1962; Thompson, 1967; Bourgeois, 1980; Venkatraman and Presecott, 1990; Venkatraman et al., 1993; Murthy, 1994; Olsen et al., 1998). This graphic is presented in the context of a hotel firm's GDS. The theoretical premise of this model as it applies to this study is best stated by Bacon (1992, p. 337):

“Improvements in IST [information systems and technology] capital investment decisions should lead to more effective and efficient use of IST resources. The expectation is that there will be an improved targeting and

more strategic use of IST resources with resulting positive impact, either directly or indirectly, on the overall profitability of the organization.”

All strategists stress the need for and importance of well-defined, clearly articulated strategies. Well-aligned firms are posited to outperform firms not in alignment. This alignment implies not only that a firm’s strategy is in sync with its environment and that its resource allocations are consistent with the defined strategies of the firm but also that the strategies of the firm (i.e., those for each functional discipline) are consistent and in alignment with one another. Corporate strategy provides an umbrella to which business-level and functional-level strategies must relate. To that end, each discipline (e.g., finance, marketing, operations, human resources, IT) typically has its own strategy. If these strategies are not consistent with one another, a firm will not succeed in achieving the full benefits. Therefore, these strategies must be complementary in nature with the appropriate level of support.

Figure 2-13: Elaboration of the Co-Alignment Principle



Alternatively stated, a firm’s strategy is comprised of various competitive methods chosen by the firm to capitalize on opportunities available in the task and remote environments while

thwarting any potential threats (Dill, 1958; Duncan, 1972; Olsen, 1980; Olsen et al., 1998). In the case at hand, information technology represents one of those competitive methods. Within each competitive method is a portfolio of products and services (illustrated by GDS and the letters A, B, and C in Figure 2-13) that enables a firm to fulfill its competitive methods to carry out the designated strategy; thereby achieving competitive advantage and hopefully, higher levels of firm performance. In this study, the prevailing environmental events impacting a hotel GDS are new developments and trends in information technology and capacity control issues (Olsen, 1996), which were described earlier (see Figure 2-1 on page 44). A hotel GDS represents one of many products and services contained in a hotel firm's IT portfolio, and within the realm of GDS are the various distribution channels used by the hotel firm. These channels all come under the context of GDS strategy. Because of the role of a hotel GDS, a hotel firm must maintain a concurrent focus on strategic value and internal efficiency when developing its GDS strategy. From the model, one can surmise that the number and quality of GDS links and the effectiveness of a hotel firm to manage the cost-benefit relationships of these channels will confer competitive advantage, which will be reflected in the firm's overall performance. Because a GDS crosses the domains of IT, marketing, and operations, any strategies posed for IT must not only support but also demonstrate consistency and balance with the strategies of each of these functional disciplines and with the overarching corporate-level strategies of the hotel firm. In the words of Weill and Broadbent (1998, p. 41):

“In a firm with a well-aligned information technology portfolio, the right amount is invested in information technology; the mix of investments is appropriate for the firm's strategy; the information technology investments are successfully converted into business value; and the information technology portfolio facilitates the family of current strategies likely to be implemented within the firm's strategic intent.”

The co-alignment principle suggests that the strategic context (specified by a firm's strategy) will be defined as the result of opportunities, threats, and constraints posed by a firm's environment. This strategic context will then drive IT strategy, which will subsequently prescribe a firm's IT portfolio. This strategy formulation model implies that effective IT strategy and resource allocations will culminate with well-deployed technologies and applications (in this case, a hotel GDS). In turn, the benefits of these will be reflected by positive firm performance. Better alignment of these constructs is expected to lead to better firm performance, relative to industry competitors. Interestingly, the firm's information systems are responsible for reporting changes in firm performance and the impacts felt from IT; this is just another way in which IT can influence strategy (Weill and Broadbent, 1998).

Theory notwithstanding, it is important to reiterate that IT itself is seldom the source of competitive advantage since it can be easily acquired and copied. Rather, it is how IT is implemented and used within a firm that leads to competitive advantage. The specific competitive advantages derived will be based on how a firm chooses to allocate its resources to implement information technology, its overall effectiveness in doing so (e.g., its ability to cost-effectively harness the capabilities provided by the information technology tools and applications), and, of course, the portfolio of distribution channels itself. Hence, information

technology, coupled with how a company implements and manages these channels will serve as competitive methods leading to advantages or disadvantages in the marketplace. Based on the productivity and potential of each asset or distribution channel, hotels will determine how best to allocate resources in efforts to drive firm profitability and market share, the ultimate measures of competitive advantage.

The recursive relationships depicted are important but often overlooked in the literature. Argyris and Schön (1978), Argyris (1991, 1993, 1994), and Sink and Tuttle (1989) stress the importance of a feedback loop in any process. The strategy formulation process is no different in this regard. Neo (1988) suggests that the normative, unidirectional thinking is inadequate at explicating the dynamic and dyadic relationships involved between constructs. More importantly, Antonucci and Tucker (1998) report that firm performance does, in fact, drive strategy and resource allocation decisions. While they concede that this may not be the theoretical ideal touted by most scholars, it does, nonetheless, reflect a degree of reality that cannot and should not be overlooked. Positive firm performance will reinforce firm strategies and resource allocations. Conversely, dissatisfying or negative results will constitute management intervention and prompt action, coming in the form of strategy adjustments and reallocation (most likely reduction) of firm resources.

The recursive relationship between strategy and environment is suggested by leading contemporary management theorists such as Hamel and Prahalad (1994a) and D'Aveni (1994). In their views, the only way to achieve competitive advantage in today's dynamic, complex, and hypercompetitive marketplace is to alter industry structure. This alternative thinking suggests that firms can and should change the environments within which they operate, just as environments can stimulate changes within a firm as suggested by systems theory.

These recursive linkages are an important part of organizational learning (Argyris and Schön, 1978; Argyris, 1991, 1993, 1994; Sink and Tuttle, 1989). As Farbey et al. (1992) point out, ex post evaluation is often forgotten, and when this happens, organizational learning fails to take place. This means that flawed assumptions, forecasting errors, and the gap between expected outcomes and actual outcomes, realized strategy versus intended strategy (Mintzberg, 1978) is never fully understood. To avoid these pitfalls from occurring, attention must be called to these reverse linkages. Only then will managers be able to learn from their mistakes, share their experiences, and improve the process for future application.

Because these recursive relationships are deemed important, reflect an aspect of truth, and add to the accuracy and explanatory power of the model, their inclusion is warranted. Thus, the model has been drawn accordingly to reflect their influence.

Moderating Variables

To date, causal linkages between IT and firm performance have been difficult to prove due to the many moderating variables illustrated in Figure 2-13 and described in this section.

Because no author has been able to successfully refute and subsequently reject the co-alignment principle, the theory must still be considered valid. Ergo, it is still assumed that effective deployment of IT will lead to positive results in firm performance, albeit empirical studies on this topic provide mixed results (see Brynjolfsson and Hitt, 1996; Hitt and Brynjolfsson, 1996; Kettinger et al., 1994; Mahmood and Mann, 1993; Weill, 1991; Weill and Olson, 1989).

Moderating the linkages depicted in the co-alignment model are several variables, namely, timing and risk, organizational factors, and firm resources and capabilities. These variables are discussed in turn below.

Timing and Risk

Much of a firm's strategic alignment has to do with timing, risk (both perceived and actual) and the life cycle stages (i.e., maturity levels) of both the organization and its technology (including both current and potential technology of the firm). The literature suggests that there must be congruence between technology, the organization, its environment, and the tasks for which the technology is to be applied if maximum effectiveness and benefits are to be realized. Timing and degree of risk can greatly influence a firm's strategic choice, resource allocations, and ultimately firm performance, since all strategies, decisions, and evaluations are relevant in a certain contextual element of time and are determined by many organizational, environmental, and technological factors considered during this given point in time. If executives in an organization feel that timing for a particular strategy or project is wrong or too risky, they will likely defer investing in that strategy or project. Since the environment and competitors do not stand still, all strategic thrusts are relative and moderated by time, risk, conditions and constraints in the firm's external environment, and the moves and countermoves of competitors—all at the point when decisions are evaluated, made, and executed.

For an example of how time and risk moderate the application of technology, one can study the use of ATMs in the hotel industry. From the mid-1980s, some may remember the abysmal failures experienced by early adopters of ATM technology (e.g., Hyatt Hotels) for self-service check-in and check-out. Many hotels took a risk and tried to capitalize on a technology long before it was proven or accepted by consumers. The results were costly investments that were later abandoned. Today, more than a decade later, these same devices are being reintroduced by many hotel companies with greater acceptance and success. Examples of usage extend various segments of the industry to include such companies as Choice's MainStay Suites (extended stay), Cendant's Wingate Inns (mid-priced) and Hilton International (full service). The banking industry experienced similar results when it first introduced PC-banking. Today, however, PC-banking is making a resurgence and appears to be the wave of the future, threatening the need for and existence of local branch offices.

Why is it that these new implementations are successful when their predecessor trials were flops? The answer is simple: timing. Timing affects the application of IT and the ensuing value (Grover et al, 1997; Hopper, 1990; Post et al., 1995). Since the earlier trials, banks have aggressively promoted the usage of ATMs for money withdrawals, account inquiries, and deposits. Today, usage of such devices is commonplace, well accepted with little perceived risk, and often the preferred form of service delivery. Over time, the cost of technology has declined, making the use of ATM technology more attractive and affordable. Finally, rising costs of labor and shortages in the industry's labor pool drive new IT applications.

In another, more visible case of how time and risk influences strategy and resource allocations, one need only look to American Airlines and its use of its SABRE GDS. Hopper (1990) discusses the evolution of SABRE and how its use and strategic value changed with time, the organizational evolution of American Airlines, and the developments of technology. When first introduced, the role of SABRE was to provide relief and efficiencies to the then-arduous tasks of reservations taking and processing. At its inception, the primary roles of SABRE were transaction processing and inventory control. Over time, the system's reach, functionality, and strategic purpose changed considerably. The system quickly gained significant market share in travel distribution. Before long, SABRE became a revenue-producing machine, generating more revenue than the airline's primary business, the sale of airline seats. Today, SABRE, now an independent entity but with significant ownership by AMR (American Airlines' parent company), is a powerful distribution channel, electronic travel supermarket, and reservations service provider for the travel industry. It is one of the largest, privately owned, real-time computer networks in the world. It provides access and services to over 130,000 travel agents, most major travel suppliers, and Internet users worldwide.

The illustrative point is that when SABRE was first conceived, no one had ever anticipated its strategic importance, the competitive advantage American Airlines came to realize, and the overall potential of the system. American Airlines took a risk in embarking on the SABRE project. With time, the system has evolved, adapting to competitive threats and organizational needs to become the powerhouse that it is today. As the system evolved, its role and ensuing value changed, thus illustrating the importance and significance time can have on strategy, resource allocations, and ultimately, firm performance. Strategies and resource allocations will often depend upon a firm's planning horizon, the window of opportunity in which to act, and the firm's ability to forecast future events and requirements.

Not all firms are as fortunate as AMR, and not all technology applications have the same affect as SABRE. For example, early adopters of hotel property management systems (PMS) realized strategic advantage through improved services and guest recognition, better room inventory and financial management controls, and enhanced reporting and analysis. Over time, however, a PMS has become a standard operating tool for most hotels. Functionality between systems converged, giving hotel firms relatively little strategic advantage. Today, a PMS is a critical component of a hotel firm's IT infrastructure, but its emphasis is primarily transaction-based, not strategic value.

These are just a few examples to illustrate the moderating affects of time on technology strategy, resource allocations, and implementation. Because of this important relationship, the variable of timing is incorporated into the co-alignment model illustrated in Figure 2-13.

Organizational Factors

Organizational factors represent another source of moderating variables. Chandler (1962), Thompson (1967), Venkatraman et al. (1993), and others have long postulated the relationship between strategy and organizational structure. Normative theory in strategy development suggests that strategy should dictate structure. In practice, however, this is not always the case. At times, firms base their strategies on the constraints and limitations of existing structure. Organizational culture, leadership, size, hierarchy, policies, procedures, and maturity (i.e., life cycle stages) are all tied to an organization's structure and, in some way, either favorably or unfavorably, impact the strategies chosen or not chosen by a firm. Chain/brand affiliation and industry position are also influence firm strategy and play an important role in the context of a hotel GDS, namely in the determination of targeted markets, distribution channels, and service levels. Each of these variables affect how work is carried out within an organization and the priorities set for an organization. They contribute to an organization's attitudes towards risk and its internal politics, which subsequently influence resource allocation decisions (Clemons and Weber, 1990; Farbey et al, 1992; Weill and Olson, 1989).

Firm Resources and Capabilities

The final category of moderating variables is firm resources and capabilities. These include visible as well as tacit factors. Clemons and Row (1991a), Cho (1996), and Mata et al. (1995) illustrate the importance of a firm's resources, capabilities, and core competencies in determining competitive advantage. These researchers posit that it is a firm's idiosyncratic and tacit resources that lead to inimitability and hence, a prolonged or sustained advantage over rivals.

It is a firm's resources and capabilities that make it possible for that firm to execute its strategies and realize benefits. Resources include people, capital, and technology which are combined and often augmented through strategic alliances to create the firm's core competencies, competitive methods, and portfolio of products and services. The skills, capabilities, expertise, reputation (i.e., credibility), and individual and collective experiences of a firm's workforce can impact the strategies undertaken and the corresponding resource allocations, even though cognitive strategic theory suggests that strategy should be defined based on environmental opportunities and threats without regard to a firm's existing resources and capabilities.

Conventional thinking suggests that as part of implementation and execution of a strategy, a firm should acquire the necessary resources and skills if it does not already have them.

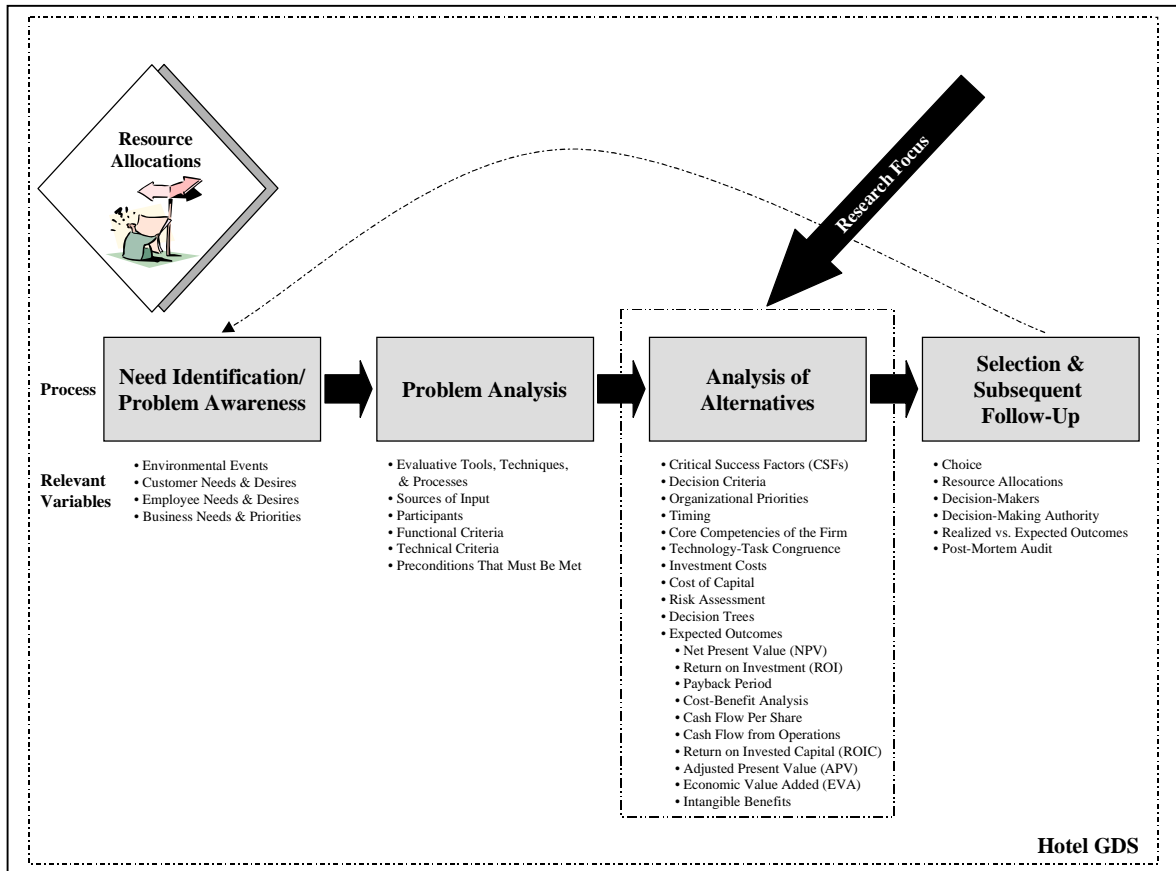
However, in practice, this is not always the case. Similarly, a firm's financial resources and access to capital may create or restrict strategic choices. Common considerations will be who will provide the necessary funding and whether or not a firm is financially able to undertake a given strategy, investment decision, or IT project. Finally, a firm's IT portfolio and infrastructure also has bearing on the firm's strategies and resource allocation decisions. For example, in the context of a hotel GDS, a firm's IT architecture becomes a critical enabling link to provide many of the requisite linkages and the functionality discussed earlier to provide acceptable service levels and access to current information.

Understanding the Resource Allocation Process

The model portrayed in Figure 2-13 presents a macro-level view of this research effort. It elaborates on the theoretical underpinning of this study, the co-alignment principle. The actual focus of this research study, as indicated in the illustration, is the resource allocation process, with specific emphasis on how firms evaluate and select IT investments or projects and the criteria used in the evaluation process. This study is about gaining an understanding regarding how hotel firms allocate resources in the context of their GDS. It is a descriptive study that seeks explanation and understanding rather than causal linkages or relationships.

To expound on the resource allocation process, it is necessary to drill down to a lower level of detail to explore the dynamics at work. Figure 2-14 amplifies this process and presents a model that is used to operationalize this study. As the model in Figure 2-14 illustrates, the decision-making process regarding a hotel firm's resources can be explained in a series of sequential steps, starting with the identification of a problem or need and concluding with a post-decision evaluation. Each step in the process is depicted together with its relevant. These variables surface from the literature and come from the composite of measures listed in Table 2-6, which begins on page 56. As Bacon (1992) suggests, the process involves formal and informal organizational dynamics and addresses the question of how IT investment decisions are made, whereas the criteria focus on the financial and non-financial justification used during the proposal, evaluation, decision-making, and post-mortem analysis stages and explain why decisions are made. The specific aspects of this model are briefly discussed in the sections that follow.

Figure 2-14: Amplification of the Resource Allocation Process



Need Identification/Problem Awareness

The first step in the process is to identify a need or opportunity for the firm. All decisions must begin with a problem awareness phase where the problem to be solved or the need to be met is identified and agreed upon by members of the firm. These needs or opportunities stem from environmental events and customer, employee, and business needs/desires.

Problem Analysis

The second step in the decision-making process is the problem analysis phase. During this stage, a hotel firm analyzes the problem at hand; develops a set of functional, technical, and organizational criteria that must be met; determines the sources of input and the participants

comprising the analysis team; and defines and selects the appropriate evaluative tools, techniques, and processes that will be used.

Analysis of Alternatives

The third stage, the analysis of alternatives, applies the tools, criteria, and processes specified in the preceding step. As previously discussed, the evaluation and decision criteria play an important role in the selection of investments or projects and the subsequent allocation of resources (see Bacon, 1992; Farbey et al., 1992). During this phase, each alternative is considered in relation to a hotel firm's core competencies and compared to the firm's critical success factors, decision criteria, and past history with respect to the technology or application under consideration. The fit between the technology and its application are also assessed. Finally, projected costs, benefits, and risk are analyzed and studied within a certain context of time, namely the firm's planning horizon and the specific timing of the analysis (i.e., when the analysis is conducted).

Selection and Subsequent Follow-up

Finally, step four yields the selection of choices and the actual resource allocations. Selections and resource allocations are ultimately made by the appropriate decision-makers in the organization based upon the level of authority bestowed on them and the domain in which the decision spans. After the selection has been made, it is then necessary to evaluate the appropriateness and effectiveness of the decision to ensure that a firm's resources and assets are being used in the most productive manner possible to maximize shareholder wealth and firm value. The expectation is that a firm will track the benefits realized from its IT and the overall impact of its decisions on the firm. This analysis is necessary to track how close a firm's realized strategy came to its intended strategy (Mintzberg, 1978) and how wide the gap is between expected benefits and actual benefits (Farbey et al., 1992; Weill, 1991).

This ex post evaluation process also provides a meaningful source of feedback for process improvement and organizational learning, as previously discussed (Argyris and Schön, 1978; Argyris, 1991, 1993, 1994; Farbey et al., 1992; Sink and Tuttle, 1989). If necessary, management intervention occurs and adjustments are made as deemed appropriate. In some cases, this may require project abandonment, sending the project team back to the drawing board. In other situations, the actions taken will be less drastic and essentially involve tweaking the strategy and redistribution of firm resources. In any event, the process is considered cyclical since a firm will constantly be on the look out for new opportunities, problems, and organizational needs; hence the recursive relationship is drawn between the last step and the first step of the decision-making process.

As in the previous model, the resource allocation process is framed within the context of a hotel GDS so that the process of resource allocations to a hotel firm's GDS can be better understood. As Figure 2-14 illustrates, the emphasis and focus of this research is further

narrowed to step three, the analysis of alternatives phase. The objective of this study is to determine how hotel firms evaluate IT projects and distribution channels within the domain of its GDS. Specifically, this study addresses the criteria and evaluative processes used to determine how firm resources should be allocated to support the GDS.

Summary

Researching the possibilities of using IT in the hotel industry is a complex and complicated task. There are many possibilities in terms of developing service efficiencies, reducing overhead, differentiating services, and buffering the core to reduce variation, but there is not a large body of literature to support this. Many reputable service firms are successful in part due to their implementations of IT applications. There is no reason to assume that these same successes cannot be achieved within the hotel industry.

To better understand the possibilities for employing IT and the issues surrounding these situations, one must select an appropriate starting point. This study suggests that one appropriate starting point is the use of an industrialized view of service while focusing on specific service encounters, namely the reservations booking process. Research has shown that guests value some services more than others and that in some cases, particularly with peripheral services, there is a zone of indifference where guests have a greater degree of tolerance in the service levels they expect and are willing to accept. By exploring the customer-service provider dyad (whether it be through people or machines), segmenting customers into like groups, and applying a systems context to the reservations booking process, one can better understand how IT might impact and improve the core service, the hotel stay. In a complex and diverse world, it is safe to say that there is not a “one-size-fits-all” solution. However, there should be enough similarities such that a hotel can build a repertoire of service delivery strategies and apply contingency theory to determine the most appropriate or preferred method of delivery given certain conditions or cues.

CHAPTER THREE: METHODOLOGY

Introduction

Chapter One presented an overview of this study by defining the stage, context, and need for such research. This chapter also enumerated the following four primary research questions (each with subquestions) that guided this effort. For the convenience of the reader, the primary research questions are repeated here.

- 1) How do corporate-level hotel executives make investment decisions and establish IT priorities within the context of a hotel GDS?
- 2) What is the future outlook of hotel GDS?
- 3) How is the success of IT investments in a hotel's GDS measured?
- 4) How is the net worth of a hotel GDS calculated or determined?

Chapter Two discussed the theoretical underpinnings, framework, and justification for this study. A complete review and synthesis of the relevant literature led to the identification of the constructs and variables related to this study (see Table 2-6, starting on page 166). Using these constructs and variables, it was possible to build the research models (see Figure 2-13 and Figure 2-14 on pages 176 and 183, respectively). The purpose of this chapter is to describe the research methodology and design used to complete this study. This is an important chapter that often distinguishes a well-designed study from a poorly crafted one.

All scientific research begins with a topic and question of interest (Janesick, 1994). According to Kerlinger (1986), the research design represents and articulates the researcher's plan and the structure of investigation that will be followed when seeking answers to the research questions posed. Its role is to provide answers to the research questions and to control variance (Kerlinger, 1986, p. 280). Supporting this thinking, Yin (1994, p. 18) defines the research design as "the logic that links the data to be collected (and the conclusions to be drawn) to the initial questions of a study." Simply stated, the research design serves as a blueprint that outlines the overall research program and guides the investigator in collecting, analyzing, and interpreting observations (Kerlinger, 1986; Yin, 1994). Hence, the purpose of this chapter is to present the research blueprint that not only guided this author in his study but will also serve as a beacon (much like a recipe) to subsequent investigators wishing to replicate, reference, or expound upon this study.

Because the research questions driving this study are of a contemporary nature, focus on issues related to "how" to build a better understanding of the IT/GDS investment decision-making and prioritization processes used by hotel companies, and require study in a

contextual setting (i.e., the organizational environments in which the decisions occur), the case study approach is the best method of inquiry and, therefore, the methodological choice for this research study. According to the guidelines defined by Yin (1994, p. 20), there are five critical components comprising the case study research design. These include 1) a study's research question(s), 2) the research proposition(s), 3) the unit(s) of analysis, 4) the logic linking data to the proposition(s), and 5) the criteria for interpreting the findings. As indicated above, the research questions and units of analysis for this study were first specified in Chapter One. The research models guiding this study were introduced in Chapter Two (see Figure 2-13 and Figure 2-14 on pages 176 and 183, respectively). Due to the exploratory nature of this research, there are no a priori theoretical research propositions. Therefore, this chapter will place greater emphasis on Yin's fifth component of the research design, the criteria for interpreting the findings, than each of the four preceding elements.

Research Design

Effective research must balance relevance with rigor (Benbasat and Zmud, 1999; Malhotra and Grover, 1998; DiMaggio, 1995; Weick, 1989, 1995). To obtain valid and meaningful results from research, it is critical to employ and appropriately implement the most suitable method(s) for the topic of study. The research methodology cannot be chosen arbitrarily. Instead, the research methodology is determined first, by the research questions that will drive the inquiry and second, by the current state of knowledge reported in the literature (Field and Morse, 1991; Morse, 1994; Janesick, 1994).

Despite the growing importance of information technology and global distribution systems in the hospitality industry, the literature covering these topics is relatively limited. Due to the contemporary nature of this study, there is little by way of precedence and tools to study the phenomenon in question using empirical, quantitative methods. Regarding research on IT, Myers (1997, p. 241) writes: "As the focus of information systems shifts from technological to managerial and organizational issues, qualitative research methods become increasingly useful." Yin (1994) suggests that when research questions focus on exploratory issues like how, when, or explanatory questions and when the research focus is on a contemporary problem as opposed to one of historical nature, application of the case study method is appropriate.

An exploratory study is a necessary first step in understanding any complex phenomenon. In this regard, this study is no different. Moreover, the study of strategy and the application of IT require the evaluation of data and qualitative criteria that are usually not available in the literature. The discussion in Chapter Two illustrates the literary void regarding this topic. Accordingly, this study employs exploratory techniques associated with qualitative research aimed at quality and depth of evidence rather than coverage to unveil the factors surrounding IT and its strategic use in hotel global distribution channels.

Quantitative Versus Qualitative Studies

There is great polemical debate regarding the scholarly nature (i.e., scientific rigor), the contributions, and the differences between quantitative and qualitative research (Kerlinger, 1986; Lee, 1989; Yin, 1994; Denzin and Lincoln, 1994; Babbie, 1995). The prevailing school of thought suggests that qualitative research is more aptly applied in situations involving theory building, not theory testing (Sutton and Staw, 1995), though there are times when qualitative techniques are appropriate for theory testing (Yin, 1994). With qualitative research, the aim is generally to explain or describe a pattern of relationships (Huberman and Miles, 1994). The data typically come in the form of words, not numbers, and the evaluation of qualitative data tends to be more subjective than for quantitative studies because the researcher attempts to establish themes, patterns, and categories from the data based on his/her understanding and interpretations.

Many traditional scientists argue that a quantitative approach to research is superior to a qualitative one because the use of statistics (inferential and descriptive), experimental design, and surveys are perceived to provide more scientific rigor and objectivity and, therefore, support actual theory testing. The resulting products are said to have greater validity, generalizability, and replicability and, hence, provide greater theoretical contributions. Additionally, a commonly held position is that scientific maturity of a field can only be achieved through empirical quantification (Lee, Barua, and Whinston, 1997; Guba and Lincoln, 1994; Bakos and Treacy, 1986). Thus, to some, a field is legitimized only after building a rich body of knowledge grounded in an abundance of quantitative empiricism.

Quantitative Methods

Quantitative methods are often thought to be synonymous with “hard science” (e.g., physics and chemistry) whereas qualitative methods have been reserved for the “soft sciences” (e.g., social sciences and humanities) (Guba and Lincoln, 1994). According to Kerlinger (1986) and Yin (1994), qualitative research represents the weaker sibling. This stereotyping has led to unjust criticism and an inferiority complex, the view that qualitative research is a lesser science. This stigma has created resistance in the academic community and discouraged some from pursuing this type of research for fear that their work would not be taken seriously or would be considered unscientific. Because of the perceived lack of academic rigor, qualitative research is sometimes considered easier than quantitative research. However, this is not the case. If anything, qualitative research can be more difficult to carry out in the face of so much animadversion, not to mention the many obstacles that must be overcome in gaining acceptability within one’s own field.

Qualitative Methods

Qualitative research is an umbrella term (Guba and Lincoln, 1994). It does not belong to any single discipline, nor does it have a distinct set of methods to call its own. Qualitative research is used by many disciplines and borrows research methods from a variety of fields. It is an “interdisciplinary, transdisciplinary, and sometimes counterdisciplinary field,” with a multiparadigmatic view (Denzin and Lincoln, 1994, p. 3). It is multimethod in focus and is used to study things in their natural settings by employing a number of empirical materials (e.g., interviews, documents, observations) and by attempting to interpret phenomena in terms of the meanings people bring to them (Denzin and Lincoln, 1994, p. 2). The multiple methodologies can be thought of as a bricolage, and the researcher as a bricoleur (Denzin and Lincoln, 1994, p. 2). The use of multiple methods, empirical materials, perspectives, and participants in a single study enables the researcher to develop rigor, richness (through breadth and depth), and triangulation to any inquiry (Denzin, 1978; Denzin and Lincoln, 1994; Flick, 1992; Janesick, 1994; Stake, 1994). The resulting product provides a more holistic view and understanding of the phenomenon at hand (Morse, 1994).

The debate between qualitative and quantitative research is well-summarized by Denzin and Lincoln, 1994, p. 4):

“The word qualitative implies an emphasis on processes and meanings that are not rigorously examined, or measured (if measured at all), in terms of quantity, amount, intensity, or frequency. Qualitative researchers stress the socially constructed nature of reality, the intimate relationship between the researcher and what is studied, and the situational constraints that shape inquiry. Such researchers emphasize the value-laden nature of inquiry. They seek answers to questions that stress how social experience is created and given meaning. In contrast, quantitative studies emphasize the causal relationships between variables, not processes. Inquiry is purported to be within a value-free framework.”

Quantitative and Qualitative Methods Existing Harmoniously

One must remember that no one type of research is more generally superior to another. The appropriateness and fit will depend on the research questions, problem statement, and context. The research method(s) chosen must be based on the research problem and context, not on any apparent ease of use or perceived workload required by the technique(s) selected. In other words, the methodological choice *follows* the research question and problem context, not vice versa.

Although not totally eliminated, the disdain associated with qualitative research is waning. In recent years, the amount of criticism towards quantitative methods has grown (Van Maanen, Dabbs, and Faulkner, 1982; Guba and Lincoln, 1994; Weick, 1989, 1995). Critics note that precise quantitative approaches often miss other relevant variables or lines of

inquiry, inadvertently strip meaning from the context in which the observations were taken (i.e., data collection), and occasionally create a poor fit between hypotheses and the study's sample (Guba and Lincoln, 1994). Today, a more modern school of thought suggests that qualitative research methods are appropriate and, at times, more effective when attempting to study and explain a given phenomenon.

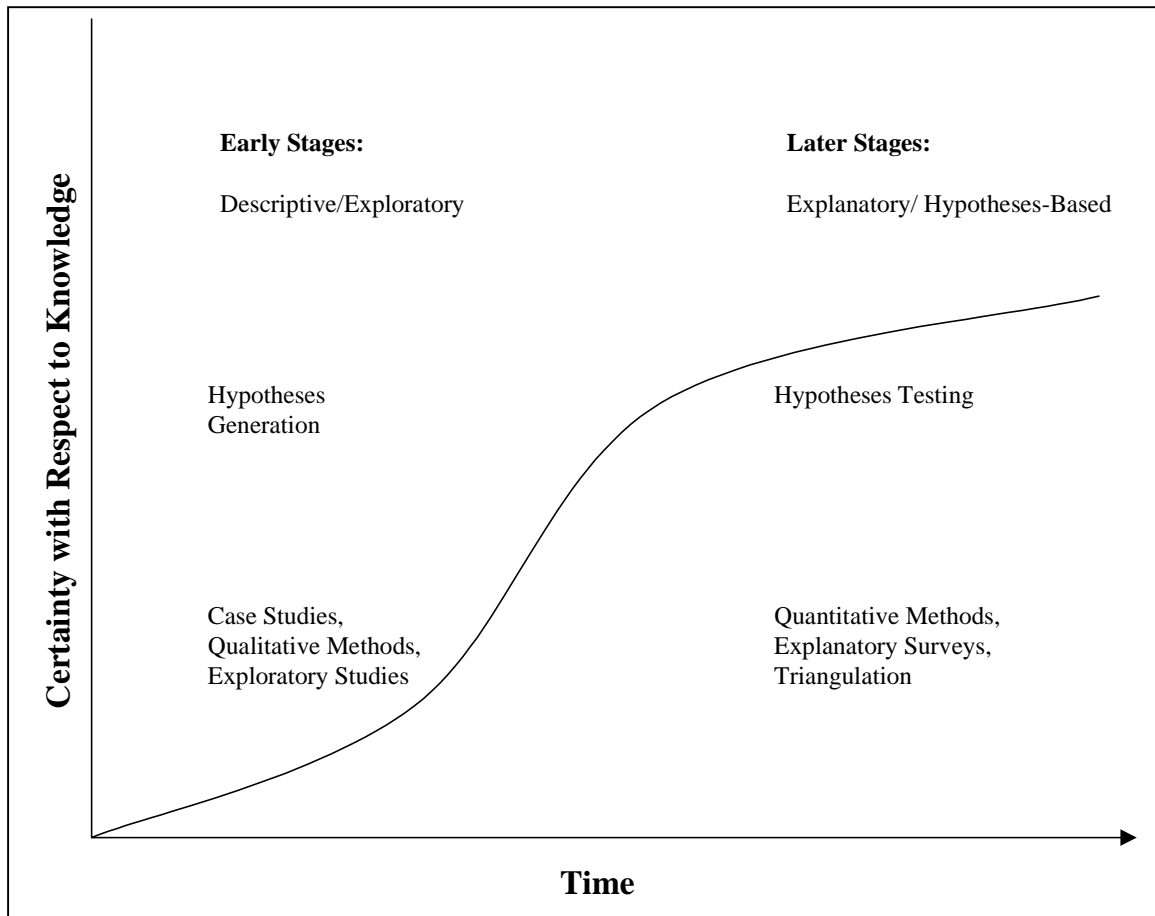
In the field of IT, idiographic research strategies are gaining in popularity and are often preferred over nomothetic research strategies (Franz and Robey, 1984; Benbasat, Goldstein, and Mead, 1987). Using the former, the researcher focuses on a single event or phenomenon, attempting to understand it in its context or natural setting. The latter, on the other hand, is more concerned with the procedures and methods of exact science in order to establish general laws or theories.

As more scientists use qualitative methods and see and learn the value of each type of research based on their own experiences and those of other researchers, there is a growing realization that both quantitative and qualitative research methods can coexist and complement one another throughout the research process. Mintzberg (1979, p. 587) sums up the synergistic relationship between quantitative and qualitative research in the following manner:

“For while systematic data create the foundation for our theories, it is the anecdotal data that enable us to do the building. Theory building seems to require rich description, the richness that comes from anecdote. We uncover all kinds of relationships in our hard data, but it is only through the use of this soft data that we are able to explain them.”

Figure 3-1 provides a graphic illustration of how both qualitative and quantitative research methods can coexist and complement one another. In general, qualitative methods are better suited for descriptive and exploratory studies and help build an understanding and develop an initial theoretical foundation for a given phenomenon of interest. As the knowledge base pertaining to a particular phenomenon grows from exploratory and descriptive research, the research process will mature, enabling more empirical quantification and hypotheses testing that lead to the establishment of causal relationships and explanatory studies.

Figure 3-1: The Research Maturity Cycle



Source: Malhotra and Grover (1998, p. 410).

In some research, both quantitative and qualitative methods are employed to develop a more complete understanding and to create a source of triangulation. In other studies, using multiple techniques may be too great of an undertaking for a single effort. Thus, the research process should be viewed as a continuum or building process that takes place over time and involves multiple studies from different researchers. When quantitative and qualitative methods are used in conjunction in this manner, the overall theory developed will be stronger and more robust than it would otherwise be if only a single approach is used. As illustrated in Figure 3-1, each type of research plays both an important and necessary role in theory development, the common goal of all research (Dubin, 1978; Bagozzi, 1980; Kerlinger, 1986; Eisenhardt, 1989; Whetton, 1989; Babbie, 1995; Sutton and Staw, 1995; and Weick, 1995; Malhotra and Grover, 1998).

The Case Study Method

Malhotra and Grover (1998) write that in the field of business (and especially in the area of information systems and technology), there is growing pressure to produce “relevant” research. Consequently, there is a growing tendency towards field-based research so that data may be collected in the business and social contexts in which the practices being investigated occur. The field has much to offer the research community by way of teachings from the trials, tribulations, and blunders that are encountered every day by those in the field, the discovery of which can only be made using qualitative approaches that immerse the researcher into the setting to study the full context (Benbasat et al., 1987). This naturalistic approach to inquiry is important to theory development and is the epitome of qualitative research and the case study method.

The case study method is but one example of qualitative research. It has a long history of criticism, mistaken identity, and misconceptions, but when used *correctly* and under the *right* set of circumstances, it provides rich, insightful analysis and contributions to theory development (Yin, 1994). Because it blends inductive and deductive thinking, case study research has the potential of introducing novel concepts and paradigms, which are essential to the advancement of theory (Eisenhardt, 1989). It is, therefore, a useful and, at times, indispensable tool in the theory development process (Benbasat et al., 1987; Eisenhardt, 1989; Lee, 1989; Yin, 1994).

Defining the Case Study Method

Case study research can be used for many purposes, namely to explore, describe, illustrate, and explain different phenomena. Although the case study is often used in conjunction with other research techniques to complement and triangulate the findings, it should not be mistakenly identified as a subset of another method. It is its own method that can stand alone on its own merits (Yin, 1994).

According to Benbasat et al. (1987), there is no universal definition of a case study. Schramm (1971), as cited by Yin (1994, p. 12), describes case study research in the following way:

“The essence of a case study, the central tendency among all types of case study, is that it tries to illuminate a *decision* or set of decisions: why they were taken, how they were implemented, and with what result.”

According to Yin (1994), the definition of a case study typically reflects the topic to which it is applied. To be more precise, Yin (1994, p. 13) proposes the following, more complete definition for case study research:

- 1) A case study is an empirical inquiry that
 - investigates a contemporary phenomenon within its real-life context, especially when
 - the boundaries between phenomenon and context are not clearly evident.
- 2) The case study inquiry
 - copes with the technically distinctive situation in which there will be many more variables of interest than data points, and as one result
 - relies on multiple sources of evidence, with data needing to converge in a triangulation fashion, and as another result
 - benefits from the prior development of theoretical propositions to guide data collection and analysis.

Widespread Use of the Case Study Method

The case study method is one of many widely-used empirical, qualitative research techniques and boasts a strong tradition in the field of information technology (Lee, 1989; Benbasat et al., 1987). It is a befitting method to capturing and documenting the knowledge and experiences of industry practitioners (Benbasat et al., 1987). It is also strong in its heuristic value.

To illustrate the popularity and acceptability of case study research in the field of IT, some examples include Cho (1996) in the lodging industry; Clemons and Weber (1991) in the banking industry; Banker; Kauffman, and Morey (1990) in the fast food industry; Palmer (1988) in the tour operator arena; Copeland and McKenney (1988) in the airline industry; Clemons and Row (1988a, 1988b, 1991b) in financial management, drug manufacturing, and travel agencies; Neo (1988) in service firms; and Bourgeois and Eisenhardt (1988) in the microcomputer industry. Case studies spanning multiple industries addressing firm investment in IT are presented by King and McAulay (1997), Nixon (1995), Brady et al. (1992), Farbey et al. (1992), and Weill and Olson (1989). The contributions of these studies and the many others that have used the case study method are testimony and proof of the valuable role this research technique plays in the process of theory development.

Criteria and Justification for Choosing the Case Study Method

It is widely recognized that each type of research strategy has strengths and weaknesses and that no single research strategy is singularly superior to any other (Benbasat, et al., 1987; Yin, 1994). What determine the “best” method are the research problem and context and the fit between these and the methodology chosen. Multiple methods of gathering empirical

evidence exist and can often be used interchangeably or in conjunction with one another. To maximize the benefits obtained from a particular research strategy, it is imperative that the principal investigator understand the techniques employed, their strengths and limitations, and the purposes of their use.

The selection of qualitative methods in general and the case study approach in particular should not be viewed as a departure from the goals of good scientific inquiry, but rather, as one approach to investigate, understand, and unveil truths surrounding a given phenomenon that will serve to advance theory development and the bodies of knowledge. Yin (1994, p. xiii) notes that the case study method has been unfairly labeled “the weak sibling among social science methods,” and the resulting research findings are unjustly criticized as lacking precision (i.e., quantification), objectivity, and scientific rigor. Despite such adversity, case studies have a long-standing tradition of making valuable contributions to theory development and the bodies of literature in the social sciences in general and in the field of IT in particular.

When selecting a research strategy, there are three conditions that must be considered (Yin, 1994, p. 1):

- 1) The type of research question
- 2) The control an investigator has over actual behavioral events
- 3) The focus on contemporary versus historical phenomenon

Expanding this list, Benbasat et al., (1987) provide a list of ontological, epistemological, and methodological considerations that should be taken into account when selecting the case study method (see Table 3-1). According to Benbasat et al. (1987) and Yin (1994), the form (i.e., wording) of the research questions provides an important clue regarding the appropriate research strategy that should be used. The case study is an appropriate and justifiable methodological choice when the research questions emphasize on issues of how or why, when the researcher has little control over events, and when the focus is on gaining understanding of a contemporary phenomenon within a real-life context (i.e., its natural setting). The case study method is an effective research tool in exploratory and descriptive studies, as is the case for the present study.

In review of the research questions for this study and the criteria set forth by Yin (1994) and Benbasat et al. (1987), as illustrated in Table 3-1, the case study method proves to be the most appropriate methodological choice and is, therefore, justified for this research. The primary aim of this research is exploratory and descriptive. With questions of how and what, this study seeks to gain understanding regarding IT investment decisions in a hotel GDS so as to build a theoretical base that will guide more quantifiable, empirical studies that will follow.

Table 3-1: Key Characteristics of Case Studies

1. Phenomenon is examined in a natural setting.
2. Data are collected by multiple means.
3. One or few entities (person, group, or organization) are examined.
4. The complexity of the unit is studied intensively.
5. Case studies are more suitable for the exploration, classification and hypothesis development stages of the knowledge building process; the investigator should have a receptive attitude towards exploration.
6. No experimental controls or manipulation are involved.
7. The investigator may not specify the set of independent and dependent variables in advance.
8. The results derived depend heavily on the integrative powers of the investigator.
9. Changes in site selection and data collection methods could take place as the investigator develops new hypotheses.
10. Case research is useful in the study of “why” and “how” questions because these deal with operational links to be traced over time rather than with frequency or incidence.
11. The focus is on contemporary events.

Source: Benbasat et al. (1987, p. 371).

Single- Versus Multiple-Case Studies

Single- and multiple-case studies are two variants of the case study design, with the present study representing the latter. The decision as to which type to employ is decided during the research design phase, well before the commencement of the data collection process.

The Single-Case Study

Case studies can focus on the study of a single case or use a collection of cases to study a certain phenomenon. In the former, the case itself is the topic of interest (Stake, 1994). Yin (1994) suggests three primary reasons for the selection of a single case as the subject of inquiry, and by definition, each of these reasons typically implies the selection of only one case. First, a single case is chosen because it represents a unique or extreme example of some phenomenon worthy of study and of interest to the researcher. Second, the single case of interest may represent a critical case for testing well-formulated theory to see if it can be upheld or if it should be refuted. Finally, a single-case study approach is appropriate when the selected case serves a revelatory purpose; that is, the case provides the researcher with a

contextual setting to observe and analyze phenomenon that would otherwise be inaccessible to scientific inquiry.

Yin (1994) adds that a single-case study may also be appropriate as an exploratory tool or as a pilot test for a multiple-case study. In this situation, unlike the previous three examples provided by Yin (1994), the single-case study does not stand on its own as a complete study. Instead, it is one component of a much grander effort.

Yin (1994) cautions that in a single-case study, there is the potential that after in-depth study, the chosen case may not prove to be the case it was thought to be at the onset of the study. The use of a multiple-case design mitigates this risk.

The Multiple-Case Study

The methodological framework and procedures for a multiple-case study are virtually identical to those followed in a single-case research (Yin, 1994). A study involving multiple cases (often called comparative cases or a collective case study) can provide more robust insight than a single-case study and are preferable to a single case in descriptive studies. Each case can be viewed and studied alone (i.e., within-case analysis), and then, cross-case comparisons/contrasts (i.e., analyses between cases) can be made to provide richer detail and insights regarding the subject matter under investigation (Benbasat et al., 1987; Eisenhardt, 1989; Stake, 1994). This cross-case comparison allows the researcher to observe patterns and to discern idiosyncratic differences from one case to the next so as to unveil the true relationships among the variables under study. The use of multiple cases in a study also lends greater credence to the results and findings through a higher order of external validity than do those of a single-case study (Kerlinger, 1986; Yin, 1994; Babbie, 1995). For these reasons, the multiple-case study design was chosen for this research effort. Additionally, there was little justification for a single-case study, since from an a priori perspective, no one case stood out as unique or revelatory and since this study did not involve hypotheses testing. Finally, there was a sufficient base of literature to support going beyond a single case.

Guidelines for Selecting Cases in a Multiple-Case Study

In case study research, the sampling of cases from the chosen population (i.e., sampling logic) is atypical and inappropriate (Eisenhardt, 1989; Stake, 1994; Yin, 1994). The selection of cases is deliberate. Using the case study method, one selects the cases of study based on theoretical, not statistical rationale (Glaser and Strauss, 1967; Eisenhardt, 1989; Stake, 1994; Yin, 1994). Cases must be selected carefully such that each case provides a specific purpose and makes a significant contribution to the overall study at hand (Stake, 1994; Yin, 1994), and when using the multiple-case study approach, the researcher should follow cross-experiment rather than intra-experiment design and logic (Yin, 1994). Yin (1994) repeatedly stresses that multiple cases should be treated in the same manner that a scientist would treat multiple experiments; that is with the intent to follow replication logic.

Several considerations for the selection of cases are presented by Punch, 1994; Stake, 1994; and Yin, 1994. These include the exemplary nature of the cases, cases that can make significant contributions to the study at hand, convenience and access to the participants and companies under investigation, geographic proximity, resource constraints, cost, ability to support theoretical and literal replication, etc. Regardless of the criteria used, the selected cases must support 1) literal replication (i.e., predict similar results) and 2) theoretical replication (i.e., produce contrasting results under predictable circumstances (Yin, 1994, p. 46).

A strong theoretical framework is essential when establishing replication logic (literal and/or theoretical). Propositions that clearly articulate the conditions or context in which a particular phenomenon is found provide a basis for literal replication, whereas propositions that state when the phenomenon is likely not to occur or be found provide a source of theoretical replication (Yin, 1994). Contrary results require modifying the existing propositions and, quite possibly, the theory itself. These changes will then require retesting with other cases, much like researchers handle contradictions in experimental results.

Case Selection for This Study

The number of cases deemed necessary and sufficient for a multiple-case study design cannot be determined using sampling logic as is done in survey or experimental research (Eisenhardt, 1989; Yin, 1994; Babbie, 1995). Ideally, the number of cases used in a study should be determined when theoretical saturation occurs (i.e., the point at which incremental learning becomes minimal), but in reality, the researcher must take into account practical matters such as time and money (Eisenhardt, 1989). In many instances, it is not uncommon for the researcher to specify in advance the number of cases that will be used. Thus, in case study research, the number of cases is often arbitrary and depends on the desired degree of certainty and the number of case replications, both literal and theoretical (Yin, 1994). The number is typically based on researcher discretion and input from colleagues. In general, the more cases used in a study, the higher the degree of certainty (i.e., support for the theoretical propositions), and hence, external validity, that a researcher can attain.

Fewer cases are required when external conditions pose little threat in producing variation to the phenomenon under consideration (Yin, 1994). Because all cases for this research effort come from the hospitality industry and are, therefore, subject to and faced with the same external issues and constraints, a smaller number of cases (i.e., three) is deemed sufficient and appropriate to compare and contrast findings and establish replication (Yin, 1994).

For this research, three multinational hotel companies with headquarters in the United States were selected. These companies offer lodging accommodations in multiple sectors, from high-end, full-service hotels to extended-stay and economy/budget hotels. The three participating companies were selected based on their leadership positions in the industry, their size and geographic presence, their exemplary use of IT; their significant investments in

IT, and convenience (i.e., easy access and a willingness on the part of each company to allow representatives to be interviewed and share information and documents for this study). Each of the three companies participating in this study enjoys a history of leadership in the industry itself, as well as in the use of both IT and GDS. At one time or another, they have pioneered initiatives that led to significant industry advancement in the areas of IT and GDS. These companies continue to demonstrate a pioneering spirit and attract industry press for their many accomplishments and successes. Based on the criteria cited above, a panel of experts, and secondary sources (e.g., the trade press) validated the selection of the participating companies.

To the extent possible, the three companies selected for this study represented a homogenous sample in terms of their size and attributes (e.g., product offerings, geographic presence, franchising, etc.). The mix of companies provided rich insight with the ability to bring out similarities and differences to meet the needs of literal and theoretical replication.

The targeted interview participants hold corporate-level positions. These people were sought as a matter of design since a hotel GDS is a corporate asset, and decisions related to GDS, channels of participation, and technology used are made at the corporate level.

Units of Analysis

As defined in Chapter One, the units of analysis, the subjects of this research study, are the investment in technology within a hotel's global distribution system and the process used to evaluate IT investment decisions related to a firm's GDS. The context of this study is the hotel GDS in large, multinational hotel companies, as viewed from a corporate perspective. Specifically, this study addresses the resource allocation process and choices made by corporate-level hotel executives in the quest to ascertain (through the hotel GDS) the highest possible returns in their firm's cash flow per share, a profitability measure.

The Research Process Followed for This Study

It should be noted that the case study method, like any other research strategy, is a way of investigating a topic and collecting empirical evidence by following a predefined set of procedures using a well-defined research plan and executing these procedures in a programmatic and systematic manner (Yin, 1994).

The case study begins with a definition of the problem(s) or issue(s) to be studied (i.e., the research questions) and the development of the case study design; it does not begin with the collection of the case study data, as many people falsely assume (Yin, 1994). The procedures followed for this study can be found in Table 3-2.

Table 3-2: The Research Process

Step 1:	Define Research Topic of Question of Interest
Step 2:	Conduct Preliminary Literature Review and Create Initial Research Questions
Step 3:	Conduct Independent Review by Panel of Experts
Step 4:	Complete Detailed Literature Review
Step 5:	Define Theoretical Underpinnings
Step 6:	Formalize Research Questions
Step 7:	Determine Unit(s) of Analysis
Step 8:	Define Constructs, Variables, and Measures
Step 9:	Develop Research Model
Step 10:	Conduct Independent Review by Panel of Experts
Step 11:	Define and Document Research Design and Methodological Choice
Step 12:	Create Data Collection Instruments/Guides and Table Shells
Step 13:	Conduct Independent Review by Panel of Experts
Step 14:	Select Cases and Gain Entry into the Field (Letters of Introduction, Agreement to Participate, Schedule)
Step 15:	Conduct First (Pilot) Case and Pretest
Step 16:	Report Initial Findings
Step 17:	Invite Key Informant Review
Step 18:	Revise Research Findings (Where Necessary)
Step 19:	Make Modifications to Research Design (as Needed)
Step 20:	Conduct Independent Review by Panel of Experts
Step 21:	Execute Case Studies
Step 22:	Write Individual Case Study Reports
Step 23:	Invite Key Informant Review
Step 24:	Revise Research Findings (Where Necessary)
Step 25:	Conduct Cross-Case Analyses
Step 26:	Modify Theory and Develop Theoretical Propositions
Step 27:	Determine Policy Implications
Step 28:	Prepare Case Study Report
Step 29:	Conduct Independent Review by Panel of Experts
Step 30:	Present, Publish, and Distribute Final Report

Sources: Adapted from Yin (1994, p. 49); Eisenhardt (1989, p. 533), and Morse (1994).

Pilot Study and Pretest

One of the advantages of the case study method is its iterative and interactive design. Alterations and fine-tuning can be made throughout a study to reflect new knowledge/understanding so long as they are well documented and consistent with the study's overall objectives (Eisenhardt, 1989; Yin, 1994). Janesick (1994) and Yin (1994) encourage the researcher to perform a pilot study when using qualitative methods as a means to test the research design, the data collection procedures and logistics, and certain interview questions. The pilot study is useful in clarifying areas that may not have been fully defined, validating the research methodology, testing the overall logic of the research design, and fine-tuning the data collection procedures. Any shortcomings can be addressed and corrected before a significant amount of effort and resources are expended. Using this approach, the researcher can strengthen his/her overall study, improve reliability and validity, and save time and rework by knowing that the research design and data collection procedures are sound.

Because of time and resource constraints, this study used a modified pilot study approach. As previously indicated, this study relied upon input from executives and managers of three multinational hotel companies. Three companies (cases) were selected for the purposes of robustness and replication. The first company visited (Company A) served a twofold purpose. First, it provided a vehicle for conducting a simplified pilot study and pretest, and second, it functioned as a participating case by contributing comparison data to enrich the overall study. After visiting the company, interviewing management, and writing the initial field report, the case study design and data collection instruments/guides were reviewed and tweaked as needed. For robustness, the results of the pilot test were included with those of the other two cases. While including the results of the pilot test with the overall analyses and findings may differ from the normative role of a pilot test, such a departure was deemed within the acceptable boundaries of the case study method due to its inherent qualities, namely its interactive, flexible design. It was also necessary given the resource constraints faced by the researcher. Moreover, since this inclusion strengthened the data analysis phase with more cross-case analyses and comparisons and since it provided more opportunities to achieve replication, the decision was made to incorporate rather than omit the case during the analysis phase. In summary, the benefits from its inclusion outweighed any trade-offs, and with the proper treatment and management of this case and any data collected from it (as described in this chapter), the integrity of this study was upheld as assessed in terms of its reliability and validity.

Advantages of the Case Study Method

The case study method is a rich, investigatory approach with five primary advantages over other research techniques. These include:

- 1) A holistic approach to studying events in their natural setting
- 2) A tool strong in heuristic value
- 3) A highly interactive and flexible design
- 4) The use of multiple sources of evidence and techniques
- 5) A variety of uses and application

Each of these advantages is discussed briefly below.

A Holistic Approach to Studying Events in Their Natural Setting

Perhaps the most significant advantage of the case study method is that it allows the investigator to study phenomenon in its natural setting in order to retain “the holistic and meaningful characteristics of real life events” (Yin, 1994, p. 3) which are important when studying organizational and managerial processes. The process of accepting or declining IT investment decisions falls into this category. Unlike traditional experiments, case studies do not try to separate a given phenomenon from its contextual setting to single out a small, select set of variables (Kerlinger, 1986; Denzin and Lincoln, 1994; Yin, 1994; Babbie, 1995). With case study, the contextual setting is considered relevant and is, therefore, deliberately included in the study to provide a holistic view. This allows the researcher to observe and ascertain important data that would otherwise go undetected using traditional surveys and experimental research designs.

A Tool Strong in Heuristic Value

The case study method is strong in heuristic value. Exploratory and descriptive case studies can lead to important discoveries and to a better understanding of complex topics. Hidden or latent variables, unforeseen relationships, and concepts that might otherwise go unnoticed often become apparent when using this method of inquiry. The resulting products contribute meaningful insights and build a knowledge base that provide direction and guide future research endeavors, making the case study method an invaluable research technique.

A Highly Interactive and Flexible Design

The case study method is highly interactive and flexible in terms of its research design. In other words, the case study method is an iterative process. As such, the researcher can make modifications to and fine-tune the research design and data collection instruments (e.g., adding new or deleting questions) while the research effort is underway and as new knowledge becomes available (Eisenhardt, 1989; Yin, 1994). These adjustments allow the

researcher to explore emerging themes, take advantage of opportunities that may arise in a given case situation, and ultimately improve the study's validity and reliability (Eisenhardt, 1989; Huberman and Miles, 1994). While some scholars may question the legitimacy of modifying the data collection process or instruments while in midstream, Eisenhardt (1989) emphatically supports this behavior because it is an essential feature of the case study method that allows the researcher to develop better and more in-depth comprehension of each case. In her words:

“The goal is not to produce summary statistics about a set of observations. Thus, if a new data collection opportunity arises or if a new line of thinking emerges during the research, it makes sense to take advantage by altering data collection, if such an alteration is likely to better ground the theory or to provide new theoretical insight. This flexibility is not a license to be unsystematic. Rather, this flexibility is controlled opportunism in which researchers take advantage of the uniqueness of a specific case and the emergence of new themes to improve resultant theory” (Eisenhardt, 1989, p. 539).

As noted above by Eisenhardt (1989), changes to the research design while the research effort is underway are acceptable so long as they are well documented and consistent with the purpose and objectives of the study (see also Yin, 1994). Wholesale changes to the research design require that the study be restarted from the very beginning.

The Use of Multiple Sources of Evidence and Techniques

Another advantage and unique strength of the case study method reported by Yin (1994) is its ability to incorporate a number of types and sources of evidence, including interviews, observations, and documents. The case study method can also concurrently use multiple research techniques, including qualitative and quantitative methods. The use of multiple sources of evidence and multiple techniques provides a means by which the researcher can corroborate or triangulate his/her findings, and thus achieve higher levels of validity and reliability—and ultimately, establish greater credibility. Multiple sources of evidence and multiple techniques also expand the range of inquiry and insight shed onto the issues being studied, making the resulting product richer and more robust.

A Variety of Uses and Application

A fourth advantage of the case study method is its richness in terms of use and application. Case studies can be used for descriptive, exploratory, illustrative, and explanatory purposes. In addition, case studies can be useful teaching aids and tools for testing hypotheses and theories. A common misconception regarding the case study method is that it should be used solely for exploratory or descriptive studies (Yin, 1994). This false pretense stems from scholars' attempts to array research strategies in a hierarchical fashion, much in the manner

Malhotra and Grover (1998) have done (see Figure 3-1 on page 191). Although the use of the case method is more commonly associated with exploratory and descriptive studies, there are times when the case method can be used as an effective tool for explanatory research and hypotheses testing. Case studies are often complemented by quantitative analysis and, at times, rely solely on quantitative data. While this study is not a quantitative or explanatory study and does not involve hypotheses testing, the reader, nonetheless, should be made aware of these opportunities, applications, and the overall robustness of this technique. Because of its multiple uses, the case study method is an invaluable and indispensable tool in the theory building process (Benbasat et al., 1987; Eisenhardt, 1989; Lee, 1989; Yin, 1994).

Limitations to the Case Study Method

No research design or methodology is perfect. Each has its strengths and weaknesses, and the case study method is no exception. Yin (1994) describes four shortcomings associated with the case study method:

- 1) Perceived lack of rigor
- 2) Subjectivity
- 3) Little basis for scientific generalization
- 4) Time-consuming effort and voluminous, unreadable documents

Each of these limitations is discussed, in turn, below. By acknowledging these limitations, this study can be interpreted in the appropriate context and improved upon in subsequent research studies (Boynton et al., 1994).

Perceived Lack of Rigor

Reliability and validity checks provide the necessary checks to ensure that scientific rigor has been maintained throughout the entire research project (Morse, 1994). To overcome the perceived lack of rigor, Yin (1994) defines a case study protocol which should be followed to ensure that the research inquiry follows a disciplined set of procedures. This study heeded Yin's call to develop a well-defined research design, which is described throughout this chapter. The research process followed for this study builds on the steps for the case study method suggested by Yin (1994) and is depicted in Table 3-2 on page 199. The steps outlined reveal a detailed, methodical, and disciplined approach.

Additionally, (Yin, 1994) notes that well-documented research questions reduce the chances that the researcher will shift the theoretical concerns and/or objectives of the study, which would introduce a form of bias in the study's findings and conclusions.

Finally, Lee (1989) makes a compelling argument that the case study method, when applied appropriately, adheres to the scientific method and academic rigor required of all good research and theory development. He reminds researchers that all research requires the ability to make logical deductions. The validity of these deductions is then based on formal logic, which may or may not involve mathematics. Mathematics is a subset of formal logic, and not vice versa. As such, logical deductions can be made in case study research using verbal propositions. According to Lee (1989), these deductions are only deprived of the convenience of the rules of algebra, not the rules of formal logic. Thus, it will be the formal logic used by the principal investigator(s) that determine the validity and applicability of the research findings. Because of its exploratory and descriptive nature, Lee (1989) also suggests that case study research should be viewed as a means to an end, rather than the end itself, a theme illustrated in the work of Malhotra and Grover (1998) depicted earlier in Figure 3-1 on page 191.

Subjectivity

Janesick (1994, p. 216) defines validity in qualitative methods with respect to the description and explanation provided by the researcher and how well the explanation suits the given description. In addressing the criticism of subjectivity in qualitative methods, Denzin and Lincoln (1994) and Brinberg and McGrath (1985) state that there is no such thing as “value-free science.” All research is an interactive process which is shaped by the researcher’s background and experience, personality, paradigms, gender, social class, ethnicity, etc. It is important for all researchers, regardless of field, discipline, or type of research techniques used, to recognize this astute observation made by Denzin and Lincoln. The role of the researcher is to limit, to the extent possible, these influences and any biases that might result, regardless of research technique(s) used. This is accomplished by detaching himself/herself from any particular values or special interests of organized groups in hopes of gaining a true, objective, and complete understanding of a given phenomenon (Vidich and Lyman, 1994).

All research, regardless of type or methods used, should be conducted with discipline and precision to the extent one is able; that is, in a systematic and programmatic manner (Malhotra and Grover, 1998; Babbie, 1995; Hunter, Schmidt, and Jackson, 1983). To paraphrase Vidich and Lyman (1994, p. 24), objectivity is not necessarily achieved by the research method itself, but rather in how the research problem is framed, by the discipline employed by the researcher, and by the researcher’s willingness to pursue that problem wherever the data and his/her hunches may lead.

Denzin and Lincoln (1994) concede that qualitative research does pose challenges to traditional criteria for evaluating and interpreting research, namely validity, generalizability, and reliability. Guba and Lincoln (1981) suggest that more fitting terms might be credibility, fittingness, and auditability, respectively. To satisfy these criteria, Yin (1994) suggests several appropriate techniques (e.g., triangulation, the use of experts, multiple sources of evidence, the case study protocol, etc.) that address each of these points.

In this study, the issue of subjectivity was addressed in several ways. First, triangulation was used to establish a higher order of face validity and reliability. The many sources of triangulation employed in this study included the use of multiple sources of evidence (e.g., interviews, company documents, secondary sources of information), multiple participants within each case, representation from multiple disciplines (e.g., IT, marketing, finance, and operations) and multiple cases (replication). Combined, these methods build robustness and add to a study's overall credibility (Babbie, 1995; Yin, 1994; Kerlinger, 1986; Brinberg and McGrath, 1985). A second approach to addressing the issue of subjectivity was to invite key participants to review the preliminary findings to ensure accuracy and consistency with what was said or provided as input and subsequently interpreted by the researcher. Third, a series of independent reviews by a panel of experts was used to provide an objective and fresh set of eyes. Finally, maintaining short (as opposed to extended) site visits allowed the researcher to maintain a fresh, objective, and etic (i.e., outsider) perspective without getting involved as part of the setting or the daily operations of the business (Morse, 1994).

Little Basis for Scientific Generalization

The limitations concerning scientific generalization when using the case study method is a valid concern and a common criticism of this research method, for in the words of Stake (1994, p. 245), "The purpose of case study is not to represent the world, but to represent the case."

To appease the concerns surrounding scientific generalization, Kuhn (1970), Dubin (1978), Yin (1994), Weick (1995), and others remind researchers that scientific facts and theory development are seldom based on a single experiment. Instead, theory is developed over time based upon a series of experiments by multiple researchers who replicate the same phenomenon but under different conditions. Yin (1994) states that multiple-case studies, or the use of several case examples in a single study, can provide sources of replication. These multiple cases should be treated as multiple experiments.

One must remember, too, that the role of exploratory/descriptive case studies is not generalizability but rather understandability, and any generalizing that takes place is in reference to the theoretical propositions, not to a population (Stake, 1994; Yin, 1994). Case studies are a means to an end, not the end itself (Campbell, 1975; Lee, 1989). The conclusions of this type of research are suggestive, not definitive (Babbie, 1995) and should, therefore, be used as *one small step* towards grand generalization (Campbell, 1975). Dubin (1978) and Weick (1989, 1995) stress that exploratory and descriptive research such as this study are invaluable to the theory development process because they contribute many of the fundamental building blocks that become the cornerstone on which good theory is ultimately built. In the words of Yin (1994, p. 10), "The investigator's goal is to expand and generalize theories (analytic generalization) and not to enumerate frequencies (statistical generation)."

Yin (1994) asserts that it is inappropriate to consider cases as “sampling units.” Multiple cases should be treated as the equivalent of multiple experiments following replication logic rather than as multiple respondents in a survey or multiple subjects in an experiment necessary for sampling logic (Hersen and Barlow, 1976; Yin, 1994). If the findings of two or more cases converge and support the same theory, replication has been achieved.

Sampling logic, used in survey and experimental research, assumes that a pool of respondents (or subjects) is a representative group of a much larger population and that the findings of the smaller group (the sample) can be applied to the entire population for which that sample represents through the use of statistical procedures and inferential statistics (Yin, 1994). However, according to Yin (1994), in qualitative case studies, the use of sampling logic or statistical generalization is impractical and has no place in case study research. The number of variables necessary to consider the context and the phenomenon of interest would be prohibitively large, as would the number of cases required to achieve statistical significance (Yin, 1994). Therefore, the use of replication logic is more fitting, where each individual case illustrates how and why the research propositions were observed or absent and where cross-case comparisons illustrate the extent to which replication logic was achieved (Yin, 1994).

Time-Consuming Effort and Voluminous, Unreadable Documents

Lastly, the concern that case studies are time-consuming to conduct and produce volumes of unreadable documents is misguided and is based mostly on the use of the case study method when combined with ethnographies, which involve substantial time in the field to gain detailed observations and evidence. Certainly, these need not be the case and are not representative of the studies previously cited. The amount of time required will depend upon several factors, including the research problem and context, the complexity of the research design, number of cases studied, availability of participants, size of the resource team, etc. Case studies, as demonstrated by the present and prior studies, can be completed in a reasonable time frame with short (one- to three-day) site visits for personal interviews and observations, telephone interviews, and other forms of correspondence (letters, facsimiles, electronic mail).

It is true that qualitative research does produce large quantities of data which can be daunting and overwhelming to the researcher. However, the use of structured, multivariate techniques suggested by Carney (1972), Miles and Huberman (1984), and Huberman and Miles (1994) provide easy-to-follow methods for managing, tracking, and analyzing the collected data. By adhering to their systematic data storage, retrieval, and analysis techniques, data management becomes very doable.

Lengthy narrative can be avoided by making effective use of summary matrices, tables, charts, and figures. These techniques, combined with concept mapping, content analysis, thematic analysis, and pattern matching provide excellent means for data reduction, as suggested by Carney (1972), Miles and Huberman (1984), and Huberman and Miles (1994).

Data Gathering

Advance preparation for the data collection phase is essential to the overall integrity of a study (Yin, 1994). If data gathering is not done well, an entire study could be compromised and its results and conclusions declared null and void. Mintzberg (1979, p. 585) so aptly stated:

“No matter how small our sample or what our interest, we have always tried to go into organizations with a well-defined focus—to collect specific kinds of data systematically.”

The objectives of the data collection process are to obtain a rich set of data surrounding the phenomenon in question, to capture the contextual complexity, and to corroborate or triangulate one’s findings (Benbasat et al., 1987). A common technique used to help organize and focus the researcher in the manner implied by Mintzberg is to use empty table shells (Miles and Huberman, 1984; Huberman and Miles, 1994; Yin, 1994). Empty table shells, when used as templates, provide a sense of structure and are useful for identifying the data sought. They also serve as a useful tool for organizing and storing data and for ensuring that the data collected across cases (i.e., companies and interview participants) are consistent and complete. Finally, these table shells provide an effective vehicle for analyzing data within and between cases.

Yin (1994) reminds researchers that every source of evidence comes with limitations. For example, inherent weaknesses of interviews include response bias, inaccuracies due to poor recall by the participant, reflexivity (i.e., the interviewee says what he/she thinks the researcher wants to hear), and bias due to questions used and how they are constructed. Potential limitations associated with documents and archival records include problems in accessibility, author biases, and selectivity biases if the documents or records are incomplete. Using multiple sources of evidence, as was done in this study, to establish triangulation reduces these limitations. This study also took precautions by using a panel of expert reviewers to review interview questions, by using the first case study as a pilot test and pretest, and by promising confidentiality to gain access to documents and proprietary information.

Compared to survey research and laboratory experiments, data collection in case studies is less routine and involves a higher degree of researcher discretion (Yin, 1994). In qualitative research, the researcher becomes the research instrument (Janesick, 1994; Punch, 1994). In other words, perception is based upon the researcher’s personality and his/her interaction with the participants of the study. As such, the researcher must possess certain traits and skills, as defined by Yin (1994, p. 56). These include:

- An inquisitive nature.
- The ability to ask intelligent questions and interpret the answers.

- Good listening and recording skills, without attachment to preconceptions, values, judgement, or prejudices.
- The ability to detach himself/herself from the situation and maintain objectivity.
- Complete knowledge of the subject matter and related issues under study.
- The ability to adapt and be flexible.
- A keen attention to detail.
- An astute, insightful, outgoing, and reflective personality.
- Good analytical skills, with the ability to amass, reduce, and present large volumes of qualitative data while preserving their meaning.
- The ability to communicate well, both written and oral.

The sources of evidence used in this case study include interviews with representatives of each company from multiple disciplines (including IT, marketing, finance, and operations). As indicated by Table 3-3, interview data were supplemented, complemented, and corroborated with the use of other sources of evidence, including internal company documents, company web sites, archival records, observations made during each site visit, and information from secondary sources (e.g., the trade press).

Table 3-3: Documentation Collection Guide for Secondary Sources of Information

Category/Area	Document	Company A	Company B	Company C
Strategic	Business Plan			
	Company Mission Statement			
	Critical Success Factors			
Financial	Annual Report			
	10K Report and Quarterly Filings			
	Budgetary Policies and Guidelines			
IT	IT Plan			
	IT Budget			
	IT Mission Statement			
	IT Policies			
	IT Schematics/Diagrams			
	Technology Analysis/Evaluation Criteria			
	Evaluation Analyses/Reports			
Marketing	Marketing Plan			
	Marketing Mission Statement			
	Marketing Budget			
	GDS Studies, Reports, or Past Evaluations			
	GDS Analysis/Evaluation Criteria			
Operational	GDS Productivity and Usage Reports			
Administrative	Organizational Charts			
	Job Descriptions			
	Company Policies			
	Status Reports			
	Meeting Agendas and Minutes to Meetings			
	Working Papers			
	Internal Memoranda, Letters, and Other Communiqués			
	Press Releases			
	Internal Newsletters			
Internet	Company Web Pages			
Secondary Sources	Articles in the Trade Press and News Media			

Gaining Access to the Field

A hidden assumption when using the case study method is the willingness of companies to participate candidly (Benbasat et al., 1987). Gaining access to the three companies was essential to completing this study. Without their participation, support, and openness, this study could not have been completed.

Access to each of the companies was gained through the help of colleagues and contacts within each of the three companies studied. Colleagues provided the initial contact and introduction. After which, a letter of introduction (see Appendix B) containing an overview and summary of this research effort and its objectives was sent by mail to the person

designated as the primary contact within each company. After sufficient time had passed for the letter and study materials to arrive, a follow-up telephone call was made. During this time, the specific arrangements for each site visit were made, and the dates of visitation were scheduled. Site visits lasted from one to three days. Shortly before each site visit was to take place, another telephone call was made to the primary contact at each company to review the procedures and finalize the arrangements, including those company representatives who were to participate in the interviewing process.

To encourage candor and to protect each company's and interviewee's identity, a promise of confidentiality was made. Each company's identity was concealed by renaming the companies Company A, Company B, and Company C, respectively, and the identity of each of the informants (interviewees) was protected by referring to each by title only (e.g., CIO, VP of Marketing, etc.). This promise put people at ease, helped gain access to sensitive information, and served to ensure that no proprietary information would be revealed to competitors.

In appreciation for participation in this study, complimentary copies of the study's results and findings were made available to each company and the interview participants.

Interviews

In case studies, the interview can be used as the principal instrument for data collection, or it can be used in conjunction with other data collection techniques. In this study, the interview was the primary data collection technique, supplemented by the collection of company documents, archival documents, secondary information, analysis of company web sites, and observations made during each company site visit (see Table 3-3). Kerlinger (1986, p. 439) refers to the interview technique as one of the most common forms of obtaining information from people, but only recently has it become recognized as a tool for systematic, scientific inquiry. The interview is an attractive technique because of its practicality, simplicity, and two-way interaction. Moreover, it has important qualities that objective tests and scales and behavioral observations cannot match, namely, flexibility, adaptability to individual situations, interaction (which allows for clarifying points and probing discussions), and the ability to obtain a wealth of information (Kerlinger, 1986, p. 440). The richness provided by each interview for a study such as this one is well worth the time investment that this technique requires.

Interview Participants and Logistics

The interviews for this study tapped multiple perspectives of the firm (including IT, marketing, finance, and operations). The targeted number of interviews was five to seven individuals per company, depending on resource availability, who represented a mix of the disciplines mentioned. This mix of people and disciplines provided both data and

interdisciplinary triangulation while adding to the robustness of the events and context being studied (i.e., the IT decision-making process in support of the firm's GDS).

Interviews for this study were conducted face-to-face and one-on-one, typically lasted from one to two hours, and were conducted at each company's headquarters location. Copious notes were taken during each interview, and after each day of interviewing and after the completion of each site visit, a detailed set of field notes was prepared. So as to put the informant at ease, interviews were not taped or video recorded. Any follow-up that was required was done by other means of correspondence, mainly telephone contact and electronic mail. The targeted interview participants for this study were executive-, senior-, and mid-level management in marketing, IT, operations, and financial capacities within each company's lodging organization.

Preparation and Questions

Successful use of the interview technique requires a great deal of preparation by the researcher. Interview questions serve as an agenda and help remind the researcher of the information that should be collected and its relevance to the study (Yin, 1994). In other words, they help the researcher focus and stay on track as per the suggestion by Mintzberg (1979) noted previously. Interview questions should be carefully crafted to ensure that they are not leading and that they are clear, concise, relevant to the research problem and objectives of the study, and appropriate (Kerlinger, 1986).

There are three common types of interviews: structured, unstructured, and open-ended (Kerlinger, 1986; Fontana and Frey, 1994). This study used a hybrid known as semi-structured interviews. This approach was selected because it provided an appropriate balance of each of the three types of interviews and offered the most advantages to this study. This approach allowed some structure and guidance (through predefined questions) to keep the researcher focused and on track but allowed flexibility to pursue divergent evidence or other interesting and related issues not previously considered in the research design. Additionally, open-ended questions encouraged discussion, provided a frame of reference, and established depth without steering responses. A summary of the interview questions can be found in Table 3-4. For a complete listing of the interview questions used in this study, please refer to Appendix C.

Table 3-4: Summary of Interview Questions

Topic	Sample Questions
Interview Participant	<ul style="list-style-type: none"> ▪ Information regarding positions held, responsibilities, length of service with the company, etc. ▪ Attitudes towards and use of IT ▪ Decision-making authority with respect to IT and GDS
Company Information	<ul style="list-style-type: none"> ▪ Information regarding company size, financials, market share, geographic scope, etc. ▪ Lodging segments in which the company competes ▪ Mix of franchised to company-managed properties ▪ Organizational culture and structure
Company Strategy	<ul style="list-style-type: none"> ▪ Strategic orientation and mission statement ▪ Corporate strategy and strategic alignment with marketing and IT ▪ Critical success factors ▪ Competitive methods ▪ Planning horizon ▪ Attitudes towards risk and innovation ▪ Company's cost of capital
Market Power	<ul style="list-style-type: none"> ▪ Company's core competencies ▪ Sources of competitive advantage and methods used for sustaining these competitive advantages
External Environment	<ul style="list-style-type: none"> ▪ Strengths, weaknesses, opportunities, and threats
Information Technology within the Company	<ul style="list-style-type: none"> ▪ Use of IT in the organization ▪ Size of IT budget and staff ▪ Value of company's IT portfolio ▪ Forces driving and restricting the company's use of IT
Roles of and Attitudes Towards IT	<ul style="list-style-type: none"> ▪ Role of IT within the organization ▪ IT strategy ▪ How IT supports the company's strategy and mission statement ▪ Management of IT in the company ▪ Highest-ranking IT official and IT reporting relationships within the company ▪ Use of IT throughout the firm and by top executives ▪ IT department's track record: credibility, skills, and knowledge with respect to IT development, implementation, and usage
IT Priorities and Objectives	<ul style="list-style-type: none"> ▪ Catalysts for IT usage ▪ Presence of an IT steering committee ▪ Direction provided by company's top executives ▪ IT priorities and objectives ▪ Emphasis and focus of IT applications and usage

Table 3-4: Summary of Interview Questions (Continued)

Topic	Sample Questions
IT Decision-Making Process	<ul style="list-style-type: none"> ▪ Company’s definition of IT ▪ Processes, methods, and criteria used to estimate project benefits and to select or reject IT/GDS projects ▪ Strengths and weaknesses of the evaluation and decision-making processes ▪ Critical success factors for the company’s GDS ▪ Influencing factors ▪ Sources of input ▪ Participants and level of participation within the organization ▪ Costs of inaction ▪ Risks, returns, criteria, and methods used to calculate projected cash flows for each type of IT investment ▪ Treatment of IT and GDS investments compared to other capital investments made by the company ▪ Abandonment decision process, criteria, and methods
Risk	<ul style="list-style-type: none"> ▪ Assessment and impact of risk ▪ How risk is defined with respect to IT and GDS applications and decisions ▪ Hurdle rates used when evaluating IT/GDS investment decisions
GDS	<ul style="list-style-type: none"> ▪ GDS architecture, functionality, interfaces, and distribution channels ▪ GDS capacity and system limitations ▪ GDS customers ▪ Revenue generated by GDS ▪ Costs of distribution channels and interfaces ▪ Productivity statistics ▪ GDS spending patterns
Value	<ul style="list-style-type: none"> ▪ Benefit-tracking systems and methods ▪ Post-implementation follow-up and comparisons of actual versus projected impacts/benefits ▪ Net worth of company’s GDS ▪ Impact of IT investments on company’s stock price, earnings per share, and cash flow per share
Future Outlook of GDS	<ul style="list-style-type: none"> ▪ Emerging trends, technologies, and directions for IT and GDS ▪ Planned or current developments related to the company’s GDS ▪ Future outlook ▪ Technology leaders and role models

Overcoming Limitations

Phillips (1981) identifies the key informant method, the interviewing of individuals who possess special qualifications and knowledge pertinent to the study, as an effective means for collecting data. The criteria in selecting these individuals include 1) that the individual holds a position or serves in a capacity that makes him/her knowledgeable about the topic being studied and 2) the individual must be able and willing to participate in the study and communicate with the researcher (Campbell, 1955). When using key informants, however, Phillips (1981) cautions researchers about key informant bias, a common criticism of the interview technique when it is used to ask company representatives about their firm and its environment. The interviewee's position in the firm and his/her personal characteristics represent a potential source of bias. However, a long-standing precedence by Campbell (1955) shows that key informants can and do provide highly accurate and insightful data when they are fluent about an issue and are able to communicate directly with the social scientist. To mitigate potential informant biases and error, Phillips (1981) recommends the use of direct, specific, and simple questions.

The interview questions used in this study were developed to meet these criteria, and thus, minimize key informant bias. Managers, close to IT and hotel GDS issues (i.e., those who deal with them regularly and have access to the pertinent information), were selected as participants in this study since they are in the best possible position to provide answers. In addition, the pilot study and pretest discussed earlier as well as a review of the interview questions by a panel of experts served to ensure the clarity and appropriateness of each question used. Also, the use of multiple informants or interviews from multiple departments within each company further reduced any negative effects from key informant biases. Finally, the use of multiple sources of evidence to corroborate findings from each of the interviews lessened the probability that the study's results were unduly influenced by key informant bias.

Criteria for Data Adequacy

The term data adequacy, when applied to qualitative methods, refers to the amount of data collected, not the number of subjects as is used in a quantitative paradigm (Morse, 1994). In an ideal sense, according to Morse (1994, p. 230), adequacy is attained when enough data have been collected to explain or account for any variation and when saturation has occurred (i.e., the point at which learning is diminished). This study achieved data adequacy by interviewing multiple members of the management team serving various capacities in each of the three cases and through the collection of company documents and secondary information until each of the research questions was answered and a consensus was established within each company.

Data Appropriateness

Morse (1994, p. 230) defines data appropriateness as the “selection of information according to the theoretical needs of the study and the emerging model.” Sampling is intentional, not random and is done until replication has been achieved from multiple sources. As stated previously, in this study, three cases were used, a limit that was predefined at the onset of the study. The data collection consisted of interviews, documents, secondary information, and observations made during each site visit.

Data Analysis

In case study research, like all qualitative methods, the data analysis commences almost immediately after the researcher has begun to collect data and continues through the entire data collection phase and beyond (Morse, 1994). Using this concurrent approach, the data analysis can guide the data collection in a manner consistent with theoretical sampling. This will also focus the researcher and serve to limit the amount of excess or unnecessary data that is collected (Morse, 1994).

High-quality data analysis will result when the researcher relies on all available, relevant information, considers alternative explanations and rival theories, focuses on the most significant aspect(s) of the case study, and builds on his/her prior experience and expert knowledge (Yin, 1994).

Steps in the Data Analysis Phase

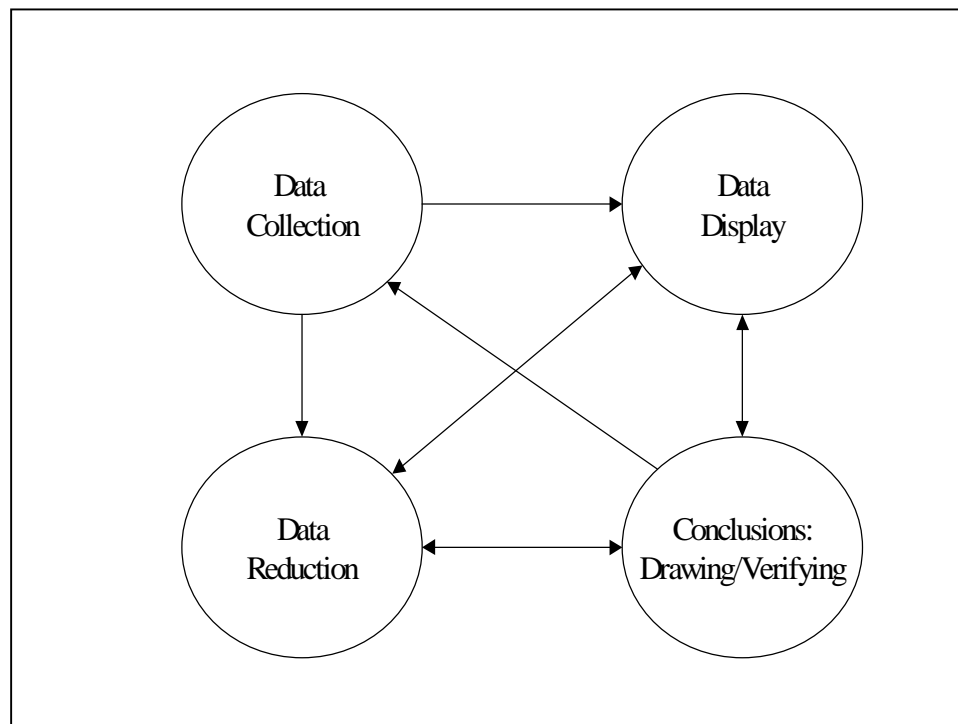
The data analysis for case study research involves studying, categorizing, tabulating, and otherwise recombining evidence to ascertain meaning related to the study’s initial objectives and research questions (Miles and Huberman, 1984; Huberman and Miles, 1994; Eisenhardt, 1989; Yin, 1994).

Without question, the process of management, analysis, and subsequent interpretation of empirical qualitative data is a large and complex undertaking. In the words of Eisenhardt (1989, p.539): “Analyzing data is the heart of building theory from case studies, but it is both the most difficult and the least codified part of the process.”

The data analysis stage, as illustrated in Figure 3-2, consists of three important processes: data reduction, data display, and conclusion drawing and verification (Miles and Huberman, 1984; Huberman and Miles, 1994). Just as in the data collection phase, the study’s research questions guide the case study analysis phase. This phase is highly iterative (as one can see from Figure 3-2) and requires “playing with the data” (Yin, 1994, p. 106) and constant, comparative methods (Glaser and Strauss, 1967). Critical to the success of this phase is the researcher’s ability to store and retrieve data in a systematic manner. Careful

manipulation of the case study data is important to ensure that all data are treated equally and without bias while preserving their original meaning and context (Yin, 1994). The goals of this process are 1) to produce convincing conclusions and 2) to eliminate alternative explanations (Kerlinger, 1986; Eisenhardt, 1989; Yin, 1994). Throughout this section are several examples of tools and methods used to analyze the data in a disciplined fashion so as to meet these objectives.

Figure 3-2: Components of Data Analysis: Interactive Model



Source: Huberman and Miles (1994, p. 429).

Data Reduction

Because case study questions are typically open-ended, they have the tendency to generate large quantities of data (Eisenhardt, 1989). Data reduction is a necessary step for protecting the researcher from data overload and for ensuring that important data are not lost or overlooked. It refers to the process of focusing, simplifying, condensing, and structuring the data into manageable units so that analysis can be conducted. This process helps the researcher to recognize emerging patterns, themes, and categories (Miles and Huberman, 1984; Huberman and Miles, 1994). When performing data reduction, the researcher must maintain the data's original meaning and context and provide a system for

cross-referencing and data verification. Common techniques of data reduction include summary narratives, tables, bullet points or lists, diagrams, and concept maps.

Table 3-5 provides an example of how question responses were recorded and summarized for each interview participant by dimension (in this case, risk) using a simple matrix. The responses were further summarized and reported by discipline in Table 3-6. Next, tentative conclusions were drawn to form a grand summary, which appears in Table 3-7. Combined, these three tables reflect the logic and level of analyses conducted throughout this study for each of the interview questions and illustrate the data reduction and synthesis processes followed.

**Table 3-5: Question Responses and Summary Statements for One Dimension (Risk)
for All Management Participants from Company A**

Question	IT Executive-1	IT Executive-2	Marketing Executive-1	Marketing Executive-2	Finance Executive-1	Finance Executive-2	Operations Executive -1	Operations Executive -2	Summary
Does your company use a formal process for evaluating risk associated with IT or other capital investments? If so, can you please describe?									
With respect to IT and GDS, how does your company define and measure risk?									
Do you consider investment in IT to be risky? If so, why? What do you perceive to be the risks?									

**Table 3-5: Question Responses and Summary Statements for One Dimension (Risk)
for All Management Participants from Company A (Continued)**

Question	IT Executive-1	IT Executive-2	Marketing Executive-1	Marketing Executive-2	Finance Executive-1	Finance Executive-2	Operations Executive -1	Operations Executive -2	Summary
Are different hurdle rates used for IT decisions based on perceived risk?									
Are there different considerations, criteria, and participants based on the amount of the investment, the level of perceived risk, or the scope of the investment? If so, could you please elaborate?									

Table 3-6: Summary Statements for One Dimension (Risk) by Discipline for Company A

Question	IT	Marketing	Finance	Operations	Summary
Does your company use a formal process for evaluating risk associated with IT or other capital investments? If so, can you please describe?					
With respect to IT and GDS, how does your company define and measure risk?					
Do you consider investment in IT to be risky? If so, why? What do you perceive to be the risks?					
Are different hurdle rates used for IT decisions based on perceived risk?					
Are there different considerations, criteria, and participants based on the amount of the investment, the level of perceived risk, or the scope of the investment? If so, could you please elaborate?					

Table 3-7: Grand Summary for One Dimension (Risk) for Company A

Element of Risk	Description
Risk Assessment	
Definition of Risk	
Level of Risk in IT Projects	
Use of Risk Premiums	
Analysis and Treatment of IT Projects	

Data Display

Data display refers to how the data are presented and communicated. Here again, the researcher must make every conscious effort to preserve the data's original meaning and context. The data should be presented in such a way so as to enable the researcher and others to view the data clearly and concisely and to make informed conclusions from what is presented. The data display is an instrumental part of the data analysis phase and is useful for both within-case and between-case analyses. A cyclical relationship exists between the data display and the data analysis processes. The data displays often suggest additional analysis, which, in turn, leads to more data displays (Miles and Huberman, 1984; Huberman and Miles, 1994). Here, too, the researcher may use tables, charts, lists, etc. to present the data.

Another useful tool for data display is a force field analysis. Simply defined, this analysis technique addresses the forces for and against something, and in this case, IT. When used in this study (see Table 3-8), the force field analysis provided an effective means to document and communicate factors driving IT usage in each company and the supporting characteristics of each organization and their environments that allow for the use of IT. It also served to identify any negative attributes that posed threats or obstacles to the use of IT in the firm, which, in effect restricting its use or widespread adoption.

Table 3-8: IT Force Field Analysis

	Forces Driving and Supporting IT Usage	Obstacles Limiting or Preventing IT Usage
Company A		
Company B		
Company C		

Conclusion Drawing and Verification

The final process in the data analysis stage involves conclusion drawing and verification. Here, the researcher draws meaning or interprets the data displays while protecting himself/herself from threats of analytic validity (Miles and Huberman, 1984; Huberman and Miles, 1994). The range of techniques used for conclusion drawing and verification is varied but often involves comparison/contrast analysis, metaphors, pattern matching, thematic analysis, clustering, and the creation of categories or dimensions. The iterative nature of data analysis protects the researcher from first impression biases. For verification, the researcher uses triangulation with other sources of evidence, looks for negative cases, investigates inconsistencies and unsubstantiated evidence, and attempts to define alternative theories or explanations.

In this study, lists of emerging themes and focus for each company by discipline were developed and compared, as depicted in Table 3-9. Comparisons within and between companies provided a means of triangulation and validation.

Table 3-9: Thematic Analysis of Organizational Focus and Priorities for IT

Discipline	Company A	Company B	Company C
Marketing			
Information Technology			
Finance			
Operations			

Table analysis was also used in this study to guide the narrative discussion and stimulate thinking when assessing relationships among variables. For example, Table 3-10 focuses the researcher’s attention on the impact of various organizational variables and their effects on the evaluation and decision-making processes, which are discussed in detail using a narrative format in the next chapter. When the relationships suggested by this table are compared with other forms of analysis conducted for this study (for example, the paired-case comparisons resulting from the process depicted in Figure 3-3, the force field analysis in Table 3-8, the thematic analysis in Table 3-9, the comparison of IT projects by classification in Table 3-11, the comparative overview of the three companies studied in Table 3-12, and the comparison of the IT investment decision-making process across companies in Table 3-13), the analysis and the resulting conclusions can be triangulated.

Table 3-10: Assessing the Impact of Organizational Variables on the IT/GDS Evaluation and Decision-Making Processes

Organizational Variables	IT/GDS Evaluation and Decision-Making Process Variables					
	Level of Analysis	Methods Used	Time to Conduct Analysis	Role of Quantitative Data	Role of Qualitative Data	Degree of Formalness and Structure
Strategic Orientation						
Corporate Strategy						
Attitudes Towards Risk and Innovation						
Attitudes Towards and Use of Technology in the Firm						
Organizational Culture and Environment						
Organizational Structure						
Role of IT in the Firm						
Insourcing vs. Outsourcing						
Type of IT Investment						
Clarity of Project Goals and Objectives						
Certainty of Benefits from Project						
Tangibility of Evaluation Criteria						

**Table 3-10: Assessing the Impact of Organizational Variables on the IT/GDS Evaluation and Decision-Making Processes
(Continued)**

Organizational Variables	IT/GDS Evaluation and Decision-Making Process Variables					Degree of Formalness and Structure
	Level of Analysis	Methods Used	Time to Conduct Analysis	Role of Quantitative Data	Role of Qualitative Data	
Estimated Project Cost						
Perceived Risk of Project						
IT Staff's Credibility and Track Record						
Availability of Capital						
Presence of an IT Steering Committee						
Product Champion						
Participants in the Evaluation and Decision-Making Process						
Presence of an IT Benefit-Tracking System						
Current IT Portfolio						
Synergy with Other Projects						
Influence from Competitive Environment						
Capitalized vs. Expensed Project						

Methods of Analysis

In qualitative research, the researcher uses inductive analysis where he/she develops themes, patterns, and categories from the data by locating key phrases or statements that speak to the phenomenon in question (Janesick, 1994). Unfortunately, the techniques and strategies for analyzing case study evidence are not as well defined as those used in other [quantitative] research techniques. Janesick (1994) suggests the best way to interpret the data is to hold it up to a series of inspections using various analytical techniques and synthesis (Janesick, 1994). While there is neither one best method to analyzing qualitative data or a “cookbook” set of procedures for conducting such analyses (Yin, 1994, p. 125), many authors provide suggestions and guidelines based on techniques they have found successful in their past research.

For example, Carney (1972), Miles and Huberman (1984), and Huberman and Miles (1994) present simple yet disciplined and widely accepted ways in which qualitative data can be organized, analyzed, reduced, and interpreted. These include the use of charts, graphs, tables, chronologies, decision trees, flow charts, concept maps, pattern matching, content analysis, and summary matrices.

Building on these works, Yin (1994) suggests the following commonly used data analysis techniques in conjunction with the case study method:

- Pattern-Matching – Involves the mapping of observed patterns with predicted or theoretical patterns. When matches are made, internal validity is enhanced.
- Explanation-Building – Builds explanations about the case. This is a special type of pattern-matching that is most commonly used in explanatory cases. By explaining the phenomenon, the researcher is establishing causal links about that phenomenon.
- Time-Series Analysis – Establishes a chronology of events to show the sequential flow of activities over time.
- Program Logic – Combines pattern-matching and time-series analysis for studying a complex chain of events. This technique is commonly used in explanatory and exploratory case studies when trying to establish cause-and-effect relationships.

There seems to be consensus that the analysis of qualitative, empirical data requires constant comparisons and the use of multivariate techniques to bring structure to the data. There is also general agreement that the data analysis strategies should be defined well before the data collection process commences. Using disciplined procedures, the researcher should balance description with interpretation (Janesick, 1994; Patton, 1990; Denzin, 1989). Data analyses should occur until a point of saturation is reached (Eisenhardt, 1989).

Examples of how matrices were used in this study to conduct constant comparisons among the data collected can be found in Table 3-11, Table 3-12, and Table 3-13 respectively. Each analysis provided a means to gain new insights and a more complete understanding of the evaluation and decision-making processes. For example, Table 3-11 illustrates how the evaluation and decision-making processes change based on the type of IT investment (e.g., strategic, informational, transactional, experimental, etc.). Table 3-12 compares companies based on several dimensions such as strategy, focus, strengths, and weaknesses, to name a few, and Table 3-13 compares the IT investment decision-making process across the three companies studied.

Table 3-11: Comparison of IT Projects by Classification

Type of IT/GDS Investment	Driving Stimuli	Risk-Return Characteristics	Criteria for Evaluation	Evaluation Techniques
Strategic				
Infrastructure				
Informational/ Decision Support				
Transactional				
Business Process Redesign				
Maintenance/ Support				
Threshold/ Competitive Parity				
Regulatory/ Mandated				
Experimental				

Table 3-12: Comparative Overview of the Three Companies Studied

	Company A	Company B	Company C
Present State			
Strategy			
Focus			
Action			
Strategic Priorities			
IT Priorities and Business Strategy Drivers			
Major Strengths			
Major Weaknesses			

Table 3-13: Comparing the IT Investment Decision-Making Process Across Companies

	Company A	Company B	Company C
Planning Horizon			
Budget Cycle			
Documentation			
Lead Role			
Supporting Role			
Project Classifications			
Hurdle Rate			
Measures			
Focus			
Decision Criteria			
Key Players			
Critical Success Factors			
Steering Committee			
Approval Levels			

Within-Case Analysis

One type of data analysis when using the multiple-case study approach is within-case analysis. This is an important process due to the volumes of data collected from each case that could otherwise overwhelm the researcher (Eisenhardt, 1989). Within-case analysis requires detailed case reports from each site. While there is no standard format for these reports or the analysis that takes place, they tend to be descriptive in nature to help the researcher become well versed in each case (Eisenhardt, 1989). With this approach, the researcher can identify patterns for each individual case which can then be compared to the other cases during the cross-case analyses.

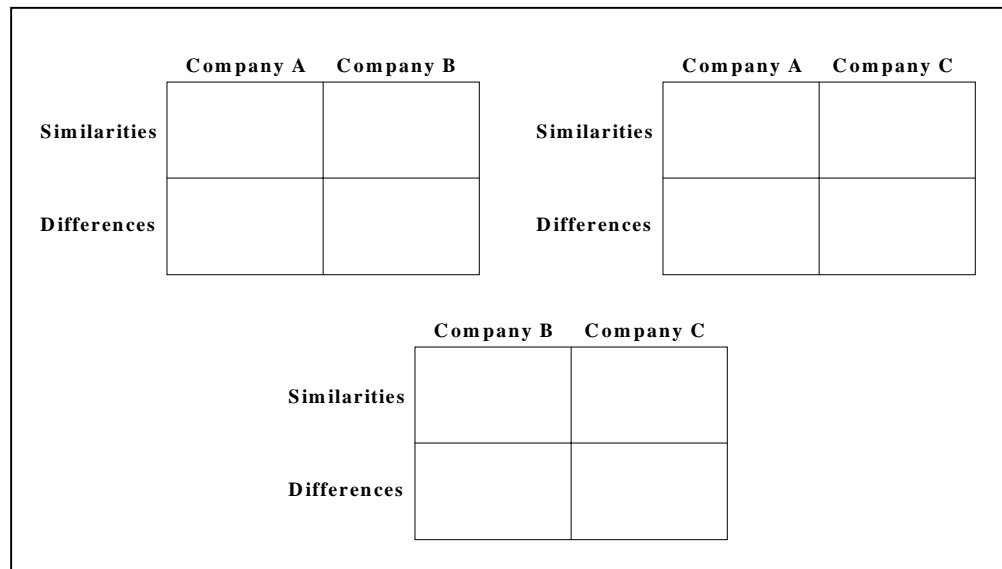
Between-Case Analysis

The goal of between-case (or cross-case) analysis is to expand the inquiry and to force the researcher to delve deeper into the cases so as to develop a more complete and robust understanding of the phenomenon in question, rather than simply surface-level meaning (Eisenhardt, 1989). Cross-case analyses extend the search for patterns to each of the cases involved. These analyses are strengthened by studying the data in divergent ways and applying as many different lenses as possible to analyze the collected data in a structured manner (Eisenhardt, 1989).

Eisenhardt (1989) suggests three useful techniques when conducting cross-case analyses. These include the development of categories or dimensions, the pairing of cases, and the separation of data by data sources.

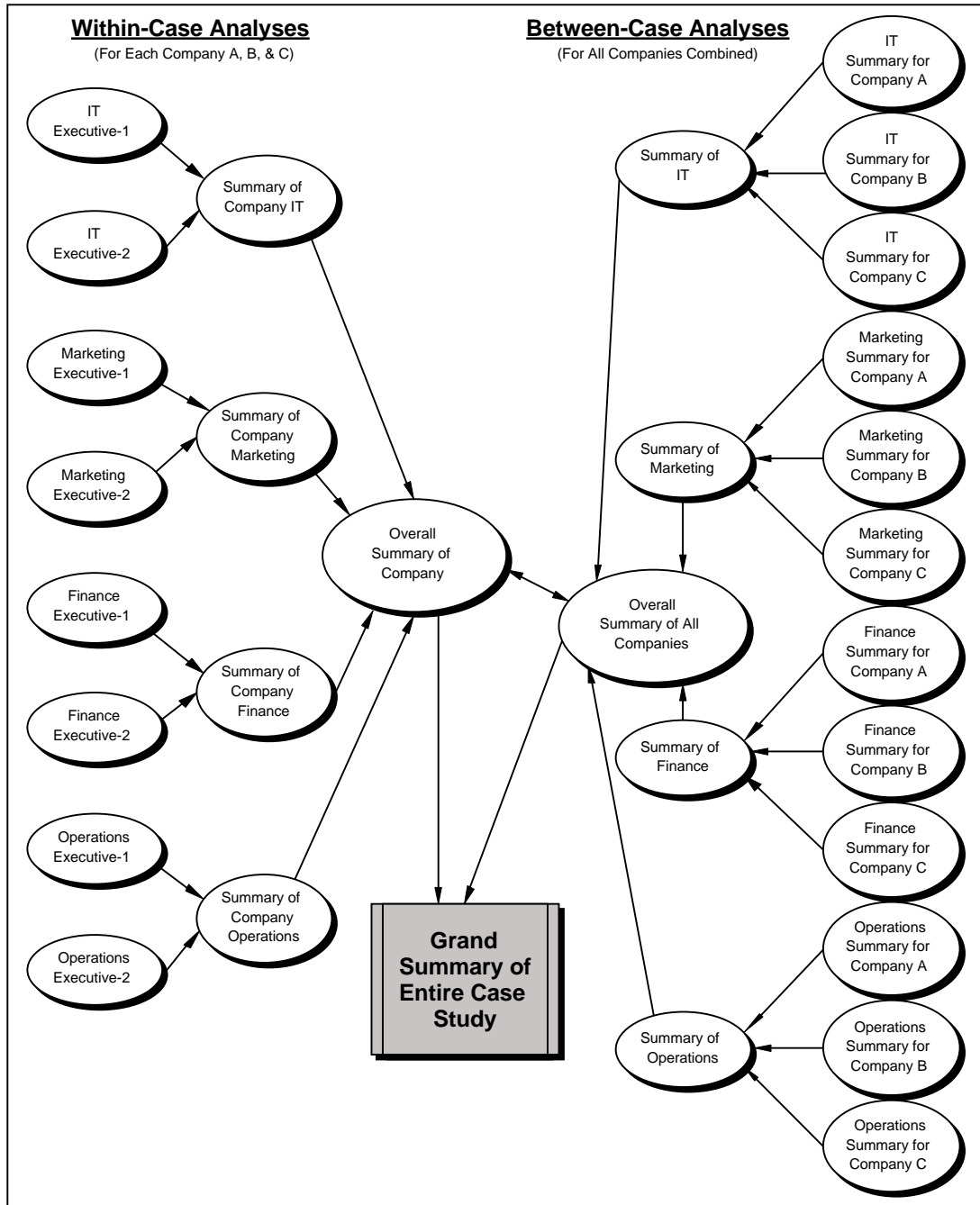
- Categories or Dimensions – Help to identify within-group similarities and between-group differences.
- Paired Cases – Forces the researcher to look for subtle similarities and differences that could otherwise go unnoticed by developing lists of similarities and differences between each pair of cases. For an illustrative example of the process used for conducting paired-case analyses, please refer to Figure 3-3.
- Separation of Data by Data Source – Divides the data by source type so one can profit from the unique insights possible from each data source and then attempt to triangulate the findings from other sources or evidence. Confirmation by other sources will lend greater credence to the finding whereas conflicting evidence represents opportunities for additional inquiry. If an incongruity occurs and cannot be explained, it may represent a spurious result, a random pattern, or biased thinking in the analysis which should be explored further (Eisenhardt, 1989).

Figure 3-3: Cross-Case Analyses: Paired-Case Comparisons



From the within-case and between-case analyses, various themes, patterns, concepts, relationships, and overall impressions will emerge (Eisenhardt, 1989). At this point, the findings can then be compared to the extant literature for agreement or validation. The logic depicting the flow and operationalization of these analyses can be found in Figure 3-4. This figure and the discussion in this chapter illustrate the building process associated with both this research design and the data analysis phase. Following this type of approach allows the researcher to strengthen validity and reliability in his/her work.

Figure 3-4: Data Analysis Logic



Narrative

Yin (1994) suggests the use of narrative as a helpful technique for data analysis. Using this approach, the researcher asks a series of open-ended questions and then answers them based on the evidence and sources of information available. In case study research, Yin (1994, p. 71) recommends the following five levels of inquiry and ensuing analysis:

- Level 1:** Questions asked of the specific interviewees.
- Level 2:** Questions asked of the individual case.
- Level 3:** Questions asked of the findings across multiple cases.
- Level 4:** Questions asked of an entire study.
- Level 5:** Normative questions about policy recommendations and conclusions.

The operationalization of Yin's five levels for this study is defined in Table 3-14. After completing the analyses outlined in this chapter and the five levels of inquiry suggested above by Yin (1994), it was time once again to revisit the research models that guided this research effort, assess their validity based on the findings of this study, and where necessary, make revisions to reflect the new knowledge gained.

Table 3-14: Five Levels of Inquiry and Analysis

Level	Description	Operationalized Questions
1	Questions asked of the specific interviewees.	<ol style="list-style-type: none"> 1) What are the key points/findings from this interview? 2) Are there any recurring themes or patterns that became apparent during or after the interview? 3) What statements made during the interview are of particular interest to the researcher and this study? 4) What, if anything, comes to the researcher as a surprise? Why? 5) Does this interview suggest any divergent or discrepant facts or information based on other interviews or evidence collected up to this point? If so, what are they, and how can they be explained? 6) What areas require further probing? 7) Is the researcher satisfied that the information collected is complete? Are there any outstanding or follow-up items? If so, what are they? 8) What can be learned from this interview that should be considered and incorporated in subsequent interviews?
2	Questions asked of the individual case.	<ol style="list-style-type: none"> 1) What is significant about this case and why? 2) What are the key findings from this case and the main contributions it makes to this study? 3) What common themes and patterns emerge from this case? 4) Are the findings from multiple sources of evidence and interviews consistent with one another? 5) What divergent data exists, and how can they be explained? 6) What areas require further probing? 7) Are the data sufficient and complete for this case? If not, what holes exist, and how can they be filled? 8) Does this case provide support for the a priori research models? If so, how? If not, why? 9) Do the findings make sense (i.e., are they rational)?
3	Questions asked of the findings across multiple cases.	<ol style="list-style-type: none"> 1) Which case(s) stand out as exemplar? Why? 2) What similarities and differences exist between each case? 3) How can these similarities and differences be explained? 4) What themes and patterns emerge? 5) What categories or dimensions can be created? 6) Do the cases illustrate that replication has occurred? If so, how and where? If not, why? 7) What divergent data exist? What explanations exist to account for these discrepancies? 8) Do these cases provide support for the a priori research models? If so, how? If not, why?

Table 3-14: Five Levels of Inquiry and Analysis
(Continued)

Level	Description	Operationalized Questions
4	Questions asked of an entire study.	<ol style="list-style-type: none"> 1) What are the key findings of this study? 2) Do these findings make sense (i.e., are they rational)? 3) How do these findings compare to the extant literature? 4) How do these findings compare to the a priori research models? 5) What rival theories and alternative explanations should be considered?
5	Normative questions about policy recommendations and conclusions.	<ol style="list-style-type: none"> 1) What conclusions can be drawn from this study's findings, and what is the significance of these conclusions? 2) What practical implications does this study reveal? Based on these findings, what policy recommendations can be made to practicing hoteliers? 3) What changes, if any, are required to the a priori research models? 4) Can tentative theory be developed? If so, what is it? 5) Can new theoretical propositions and/or testable hypotheses be developed? If so, what are they? 6) What are the primary contributions of this study? 7) To what degree can these findings and conclusions be generalized? 8) What are the limitations and shortcomings of this study? 9) How can this study be improved in the future? 10) What recommendations can be made to future researchers regarding this study? 11) What opportunities exist for future research? Where should it be headed (i.e., what should be the priorities and future research agenda)?

Tests for Design Quality

Compared to other research methods, the case study method is less defined. It lacks a robust knowledge base and a well-developed set of literature that support other research methods and guide/define their use through established rules and procedures (Yin, 1994). The case study approach offers greater flexibility and allows for more researcher discretion than many other techniques. While to some extent, this may be perceived as an advantage of the case study method, a researcher must be caution when making judgement decisions in the research design and execution phases of the study. To the extent possible, the researcher must exercise and document sound, logical explanations when the literature is unable to provide the necessary justification for these design choices.

There are four tests commonly used to assess the overall design quality of any research effort, irrespective of the research methods employed in the execution of the study. These include construct validity, internal validity, external validity, and reliability (Brinberg and McGrath, 1985; Kerlinger, 1986; Yin, 1994; Babbie, 1995). Definitions of these four aspects of design quality and their treatment in this study can be found in Table 3-15 and the narrative that follows. While many of the concerns associated with each of these tests have been previously discussed in the section describing the limitations of the case study method, they are important enough that they warrant repetition and explicit attention as to their treatment in this study.

Table 3-15: Four Tests for Design Quality

Design Criterion	Definition	Treatment in This Study
Construct Validity	Establishes correct operational measures for concepts under study.	<ul style="list-style-type: none"> • Literature review (see Table 2-6, starting on page 166) • Research Models (see Figure 2-13 and Figure 2-14 on pages 176 and 183, respectively) • Multiple sources of evidence (e.g., interviews, observations, company documents, archival data, company web sites, secondary sources) • Development of a chain of evidence • Chronology of events • Review of draft report by key informants • Pattern matching
Internal Validity	Establishes a causal relationship, whereby certain conditions are shown to lead to other conditions, as distinguished from spurious relationships.	<ul style="list-style-type: none"> • Not applicable in exploratory and descriptive case studies; only applies to explanatory or causal cases
External Validity (Generalizability)	Establishes the domain to which a study's findings can be adapted or generalized.	<ul style="list-style-type: none"> • Replication logic using multiple cases • Consideration of rival theories
Reliability	Demonstrates that the operations of a study (i.e., the data collection procedures) can be repeated and will yield the same results or findings.	<ul style="list-style-type: none"> • Triangulation <ul style="list-style-type: none"> ▪ Multiple sources of evidence (e.g., interviews, observations, company documents, archival data, company web sites, secondary sources) ▪ Multiple interviews within each case ▪ Multiple cases ▪ Interdisciplinary grounding and focus (see literature review and interviews) • Reviews by a panel of experts • Review of draft report by key informants • Case study database and detailed field notes • Use of a case study protocol (see Table 3-2 on page 199) • Documentation/audit trail/chain of evidence • Use of first case as a pilot case to pretest research design and data collection instruments/guides

Source: Adapted from Yin (1994, p. 33).

Construct Validity

The overarching concept of validity is to ensure that a study reflects the true meaning of the concepts under investigation. Validity is synonymous with truth, strength, and value (Brinberg and McGrath, 1985, p. 13). There should be a high degree of congruence between what is being measured and the instruments and variables used to measure them to ensure that the essence of reality is accurately captured, interpreted, and reported.

Simply defined, construct validity refers to the extent to which an operational-level variable being measured represents a conceptual-level variable of interest. Construct validity is an umbrella term that comprises many different kinds of validity, including convergent and discriminant validity (i.e., how similar a construct or measure is to itself but how it differs from others), content validity (i.e., how well a construct or measure covers the range of meanings included in the concept, and face validity (i.e., how reasonable or believable a construct or measure is when taken at face value) (Brinberg and McGrath, 1985; Kerlinger, 1986; Yin, 1994; Babbie, 1995; Dröge, 1997).

Establishing construct validity is often a great challenge in case study research. Many previous researchers have incorrectly relied on subjective judgements to collect data. To avoid this pitfall, Yin (1994) advises researchers using the case study method to select the specific constructs of interest and applicability to the study's objectives and to demonstrate that the chosen constructs do, indeed, reflect the particular phenomenon under investigation. Operationalizing the constructs, as was done in Table 2-6 (which starts on page 166) and illustrating relationships in a model (see the research models Figure 2-13 and Figure 2-14 on pages 176 and 183, respectively) are an important steps in establishing construct validity. Drawing upon the literature to support each of the constructs identified and their operationalization also enhances construct validity. In this regard, Table 2-6, Figure 2-13, and Figure 2-14 demonstrate how construct validity has been met within this study.

Additionally, Yin (1994) suggests three commonly used tactics for increasing construct validity included 1) multiple sources of evidence to demonstrate convergent lines of inquiry (triangulation); 2) the establishment of a chain of evidence to link questions asked, data collected, and any conclusions drawn; and 3) the review of preliminary findings by key participants or informants. Each of these techniques was employed throughout this study, thereby building a higher order of construct validity.

As noted by Yin (1994), triangulation is a common means to satisfy the conditions of construct validity. Denzin (1978) and Patton (1987) introduced four types of triangulation which were later expanded by Janesick (1994) to include a fifth kind. These include:

- 1) Data Triangulation – The use of multiple sources of evidence in a study.
- 2) Investigator Triangulation – The use of multiple researchers and/or evaluators.

- 3) Theory Triangulation – The use of multiple perspectives or rival theories to explain and interpret a set of data.
- 4) Methodological Triangulation – The use of multiple methods in a study to investigate the same problem.
- 5) Interdisciplinary Triangulation – The use of multiple disciplines to inform a research process.

In this study, two aspects of triangulation were employed: data triangulation and interdisciplinary triangulation. Data triangulation was established by using multiple sources of evidence (i.e., interviews, company documents, company web sites, archival documents, observations, and secondary sources) and by conducting multiple interviews per company (case). Interdisciplinary triangulation was achieved during the literature review stage by drawing upon the works of many different disciplines, including strategy, finance, organizational economics, organizational theory, service management, hospitality, and information technology. It was also used during the interview stage by selecting participants from multiple disciplines (e.g., IT, marketing, finance, and operations) within each company.

Internal Validity

Internal validity only applies to causal or explanatory research (Yin, 1994). Its role is to ensure that any threats to validity have been identified so as to protect any interpretations or explanations from spurious effects, including confounding or latent variables (Brinberg and McGrath, 1985; Kerlinger, 1986; Yin, 1994; Babbie, 1995). In other words, internal validity addresses the measures used in the study and their ability to measure or predict what they are intended to measure or predict and that there are no outside forces or hidden variable influencing the findings. Concern regarding internal validity is also raised when inferences are made when an event cannot be directly observed. Typical approaches to address internal validity, as suggested by Yin (1994) are pattern-matching, explanation-building, and time-series analysis.

Because this research effort is exploratory and descriptive and not casual or explanatory, the issue of internal validity is not relevant and, therefore, requires no further discussion.

External Validity (Generalizability)

The tests for external validity (or generalizability) attempt to address the researcher's ability to generalize the findings from his/her study beyond the case(s) used in the study. In other words, external validity defines the boundaries or domain for which the findings can be interpreted and applied (Brinberg and McGrath, 1985; Kerlinger, 1986; Yin, 1994; Babbie, 1995). Establishing a high degree of external validity helps to build credibility with the study and its findings.

External validity is a common obstacle and the primary weakness in conducting case study research. Yin (1994) repeatedly attributes the difficulties associated with establishing external validity to the improper focus critics place on statistical generalization commonly associated with survey research and experimental research. Instead, Yin (1994) states that in case studies, the emphasis should be more appropriately directed to establishing analytic generalization (i.e., generalizing a set of findings to theoretical propositions or some broader theory). As Yin (1994) astutely observes, no set of cases—no matter how large or how representative they may be of the larger population—can completely satisfy the concern of statistical generalization, and consideration of statistical generalization alone would preclude the empirical investigation of many important topics. Therefore, when using the case study method, one should refrain from this type of generalization when all possible and use a great deal of caution all other times. To reiterate a point made earlier, all conclusions regarding generalizations to a wider population other than the original sample should be treated as suggestive rather than definitive (Babbie, 1995). It is these suggestions that can then form the basis of new propositions or hypotheses for more advanced, quantitative investigation and empirical testing.

A theory must be carefully tested through replication before generalizations can be made. In case study research, the use of replication logic with multiple cases is analogous to the logic underlying a scientist's use of multiple experiments, which allows generalizability from one experiment to another. Divergent findings raise new issues and insights and allow the researcher to develop alternative theories or explanations which must be considered. By accounting for any discrepancies that may arise, external validity can be improved.

With this exploratory/descriptive research, the emphasis is placed on seeking understanding, not generalizability. As such, the goal of generalizability is with respect to the theoretical propositions, not to a larger population (Yin, 1994). The latter is reserved for subsequent research and testing based on the theoretical findings of the former. In this study, external validity is established and generalizability is achieved through the use of multiple (three) cases.

At the outset of this research effort, the boundaries and context of this study were established. The units of analysis and the research models (see Figure 2-13 and Figure 2-14 on pages 176 and 183, respectively) clearly and narrowly defined the scope of this study to be IT investment decisions related to a hotel GDS. The case participants (i.e., multinational hotel corporations) further defined the purview of the study. While it is possible that the findings from this study can extend beyond the context stated here (i.e., to include other decisions, IT or otherwise, and to have applicability to other organizations and industries), there is no basis in this study to support these types of adaptation or extension. Since this study makes no pretense to support these types of generalizations, any attempt to do so is done at the reader's own discretion and peril.

Reliability

Reliability addresses issues of confirmability and dependability (Miles and Huberman, 1984; Huberman and Miles, 1994; Lincoln and Guba, 1985). Benbasat et al. (1987) suggest that a case study's reliability can be improved by providing a clear description of the data sources and how they contribute to the study's findings and conclusions. The objective of reliability tests is to ensure that subsequent researchers, using the same cases and following the procedures described in this chapter, will realize the same findings and conclusions found in this study, as presented in the remaining two chapters. Essentially, tests for reliability ensure replication by others by addressing dependability of the study and its findings (Kerlinger, 1986; Yin, 1994; Babbie, 1995). Reliability attempts to remove all (or at least minimize to the extent possible) error, biases, and subjectivity.

Morse (1994) and Yin (1994) advise the case study researcher that the best method to ensure a high degree of reliability, or what Huberman and Miles (1994, p. 439) term "transparency of method," is to conduct the study as though it and the researcher will be audited by a third-party who will attempt to reconstruct the process. Employing this degree of discipline and precision will enhance the studies overall reliability.

Yin (1994) suggests that reliability can be improved by following a case study protocol, which requires extensive documentation, field notes, and audit trails. Reliability is also enhanced when the researcher operationalizes and documents as many steps as possible, a primary purpose of this chapter. Another technique to improve a study's reliability is to employ triangulation of methods and evidence, as described under construct validity. The convergence of findings helps to build both credibility and robustness, whereas the divergence of findings helps to raise "red flags," new opportunities for investigation and inquisition, and alternative explanations or rival theories.

This study used a case study database to maintain field notes, company documents, archival documents, secondary data, and working papers. It provided a useful tool for organizing the researcher, for providing a reference point to which the researcher can refer throughout the analysis stage of the process, and for preserving the integrity and meaning of the data/evidence collected. This reduced reliance on the researcher's recall and captured evidence as it was first observed or collected. Because the database provided a referenced set of documentation and evidence, it preserved the researcher's memory and the evidence on which the study's findings were based. Thus, internal reliability was enhanced.

To reduce researcher subjectivity and to validate logic and completeness, a panel of experts (Morse, 1994) was used in this study. This panel of experts reviewed the progress of this effort at periodic milestones, as depicted in Table 3-2 (see page 199), to verify and validate the research design, interview questions, data collection schemas, data analysis, and conclusions. Additionally, a draft case report was circulated among key interview participants for their review and comment to ensure accuracy of reporting and interpretation (Janesick, 1994; Morse, 1994; Yin, 1994).

A final method employed to reduce internal reliability errors was to use the first case as a pilot case, in which the research design and data collection instruments/guides were pretested. The feedback from this trial was then reflected in the revised research design presented in this chapter.

Summary

This chapter presented the research design, methodology, and data collection and analysis tools used in this study. The methodological choice, the multiple-case study design, was a justifiable decision, despite some of its limitations as noted in this chapter. Given the current state of knowledge captured in the literature review for this study, the case study method was the best approach to exploring the how and what questions regarding the decision-making process related to IT and a hotel GDS that were the very essence of this study. Moreover, it supported data collection in their natural setting so as to capture the complexities, state-of-the-art procedures, organizational dynamics, and people involved in the decision-making process. The application of the case study method allowed the researcher to establish a high degree of practical significance in an area where few prior studies exist. The tests for design quality described the procedures taken to ensure the integrity, reliability, and validity of this study while minimizing bias, subjectivity, and errors associated with the case study technique. The resulting product should create a foundation of knowledge for which future empirical, quantitative studies can be based to test theory and hypotheses.

CHAPTER FOUR: RESULTS

Introduction

This chapter provides an in-depth look into three large, multinational hospitality firms based on the methodology presented in the previous chapter. It explores their organizations, strategies, and uses of information technology in the context of hotel global distribution systems from a corporate perspective. The specific focus is on the decision-making process for funding new IT initiatives, providing greater insight on how decisions are evaluated, what factors are considered, and how resources are allocated in each of the three companies studied.

The findings presented here are the results of interviews with representatives from each company and an analysis of secondary information provided by each company and gathered during the literature review. The secondary information, consisting of financial statements, organizational charts, press releases, trade journal articles, web postings, etc., was used to supplement and validate participants' responses to the interview questions. A summary of the available secondary sources of information used in this study can be found in Table 4-1. Due to concerns for privacy and safeguarding of strategic information, companies restricted access to some of the requested documents.

This chapter begins with the treatment and analysis of each company individually. It then addresses each company collectively, providing inter-company comparisons, analysis, and synthesis with respect to the four research questions posed by this study. It concludes with a summary of the findings and answers to the four primary research questions of this study.

Table 4-1: Documentation Collection Guide for Secondary Sources of Information

Category/Area	Document	Company A	Company B	Company C
Strategic	Business Plan	NA	NA	NA
	Company Mission Statement	✓	✓	✓
	Critical Success Factors	✓	✓	✓
Financial	Annual Report	✓	✓	✓
	10K Report and Quarterly Filings	✓	✓	✓
	Budgetary Policies and Guidelines	NA	NA	NA
IT	IT Plan	NA	✓	NA
	IT Budget	NA	✓	NA
	IT Mission Statement	✓	✓	✓
	IT Policies	NA	NA	✓
	IT Schematics/Diagrams	✓	✓	✓
	Technology Analysis/Evaluation Criteria	NA	✓	✓
	Evaluation Analyses/Reports	NA	✓	NA
Marketing	Marketing Plan	NA	NA	NA
	Marketing Mission Statement	NA	NA	NA
	Marketing Budget	NA	NA	NA
	GDS Studies, Reports, or Past Evaluations	NA	NA	NA
	GDS Analysis/Evaluation Criteria	NA	NA	NA
Operational	GDS Productivity and Usage Reports	NA	NA	✓
Administrative	Organizational Charts	✓	✓	✓
	Job Descriptions	NA	✓	NA
	Company Policies	NA	NA	NA
	Status Reports	NA	✓	NA
	Meeting Agendas and Minutes to Meetings	✓	✓	NA
	Working Papers	NA	✓	NA
	Internal Memoranda, Letters, and Other Communiqués	✓	✓	✓
	Press Releases	✓	✓	✓
Internal Newsletters	NA	✓	✓	
Internet	Company Web Pages	✓	✓	✓
Secondary Sources	Articles in the Trade Press and News Media	✓	✓	✓

NA = Not Available

Company A

Brief Profile of Company A

Company A is a large, multinational hospitality organization with brand representation across the industry spectrum. Presently, the company is one of the largest and most global in the industry, and each year, its hotels and resorts play host to over 150 million guests. Its more

than 2,500 hotels, the majority of which are franchised, account for more than 400,000 rooms and enjoy a presence in more than 90 countries. In 1998, the company earned \$261 million (US) in operating profit and achieved chain-wide occupancy slightly greater than the industry average.

Long considered an industry pioneer and leading hotel franchisor, Company A is a staple in the industry, distinguished by its brand identity, market presence, reservations systems technology, and guest loyalty programs. Over the years, Company A held leadership positions with respect to IT and the industry but slipped in recent years. It is now refocusing its efforts to regain its lead with a major turnaround effort to reinvent itself and its image. With the completion of a major acquisition; the launch of a new product line; the installation of a new management team; and a refocusing effort geared towards strengthening product quality, consistency, and brand image, the company now seems well positioned to be a major contender in the lodging industry for years to come.

The following statistics illustrate the magnitude of operations of Company A:

- Company A has multiple reservations call centers worldwide that process over 35 million calls per year.
- The company's web sites collectively process as many as 6 million hits per day.
- The number of corporate sales calls placed each year exceeds 14.4 million.
- The number of enrolled members in the company's frequent travel programs exceeds 7.6 million people.

Guest Commitment, Emphasis on Quality Top Company A's List of Priorities

The company's focus on and commitment to the guest is articulated in its mission statement: "...making all guests welcome and happy, recognizing individual preferences and encouraging loyalty." To this end, Company A aspires to be the *best* of breed in each of the lodging segments in which it competes. The company defines *best* in the following terms:

- Quality of product
- Quality of service
- Consistency
- Price/value relationship

The emphasis on guest preference and loyalty has resulted in the creation of a portfolio of brands designed to meet the unique needs of the various segments of international travelers. The company's overarching strategy is to make its portfolio of hotels the guest's preferred choice so that the company becomes the world's leading and most preferred hotel company.

It is anticipated that achieving this goal will lead to financial returns for franchisees, and hence, make Company A's brands their preferred choice. This, in turn, will allow Company A opportunities to increase its distribution through global expansion that will ultimately lead to increased financial returns to the company, the brand owners.

To achieve this mission, Company A has established quality improvement and brand identity as its top strategic priorities for the ensuing years, followed by growth and global expansion. Collectively, the company's goals can be expressed by its newly embraced theme "Driving Revenue, Driving Results." Its commitment to meeting its desired objectives is evident in the company's new make-over and recent launch of a \$3 billion (US) capital improvement and modernization campaign to strengthen the quality, consistency, and branding of its existing properties. In addition, Company A plans to add as many as 1,000 new properties worldwide over the next five years.

Company A's Core Competencies

Company A's core competencies are in the areas of brand recognition, franchising, distribution, globalization, capacity to process large volumes of transactions, and its global telecommunications network. From an IT perspective, Company A prides itself on its new leadership team at the helm and its knowledge of the hospitality business. Improved salary structures and spot bonuses have helped to improve the culture and morale throughout the IT organization. With the new management team, there appears to be a renewed enthusiasm in the corporate culture concerning the company and its vision for the future. There also seems to be a shared vision and an understanding that high performers will be recognized for their contributions while non-performers will be weeded from the company's ranks. Because the present players in the IT organization are relatively new, it is too early to identify IT core competencies, as they are presently being developed.

IT Culture in Company A

Company A views itself as a hotel company, not a technology company. Therefore, all applications of IT must be to further the business in some way. In other words, IT should not be deployed simply because the technology is state-of-the-art. According to one company executive, there is no such thing as an IT project. To paraphrase his words, IT is a tool or enabler that allows the company to achieve desired business goals. Therefore, no distinctions should be made for projects involving IT since the goals and objectives should be inseparable from those of the business. This theme was a common one voiced by several other executives throughout the company.

The IT department functions much like that of an internal consulting organization, where each project has customers, albeit internal. Presently, the view of IT in the organization at Company A is mixed. Some view the IT department as a cost center. Consequently, these

individuals place a great deal of emphasis on controlling costs and IT expenditures. Others take a more proactive view of IT and consider the IT department's role as strategic.

Much of the IT department's poor reputation is based on negative experiences encountered during the past seven years, a dark period in the company's history when it was experiencing decline and high turnover. Until recently, the relationship between IT and the rest of the organization could be characterized as adversarial. Problems stemmed from the IT department's lack of credibility and its detachment from the day-to-day operations of the business. Many projects were never completed, and those that were often came in over budget, late, and never fully met customer requirements. Under the previous management structure, the IT organization owned and managed all projects. In retrospect, according to one IT executive, this was an unhealthy situation because it positioned the IT department for failure. Because the IT department maintained all the responsibility, IT was an easy scapegoat when trying to assign accountability and blame for failed or incomplete projects.

Today, under the present administration, the primary responsibility associated with IT is assigned to the business units and departments requesting new systems or IT applications. According to new company guidelines established by the organization's chief information officer (CIO), someone other than an IT person must own each project. This ownership includes justifying the project and defending the justification to top management when seeking project funding. The only exception is when a project is classified as an infrastructural project. In such cases, the CIO becomes the business sponsor. For many business executives, this was a welcomed change, as they were anxious to play a more active role in IT. For others, this decision was met with some resistance, for they preferred the older model which freed them from ownership and responsibility and, hence, accountability. IT could be blamed for poor performance or lack of achievement.

Turnaround Mode at Company A

After suffering years of decline, the company is now in a turnaround mode. Reorganization and a new management team, largely from outside the industry, are contributing to the rebuilding of Company A, as are a renewed emphasis on brand identity, a realigned sales force, and an improved, more IT-friendly culture. High turnover in the management ranks and the IT department has slowed, and according to company representatives, a new CIO from a leading high-tech organization and a new IT management team have helped to bring focus to an environment previously filled with turmoil and known for costly failures.

The business and user communities are regaining respect for IT at Company A. Some of this new respect is due to more sophisticated, technologically savvy management in non-IT capacities. These individuals are more proficient in the capabilities and limitations of technology and possess a better appreciation for the difficulties in developing and implementing IT. There is consensus in the organization that the relationships between the various business units and the IT department are improving, as tensions diminish and as the credibility of the IT department improves. Despite these improved relationships, the

organization's institutional memory is slow to forgive and forget the experiences of yesteryear. Consequently, IT must devote a great deal of its energy to convince the rest of the organization of its value. While the culture is shifting and becoming more supportive, several individuals reported that the IT department must constantly justify itself and the value it provides to the rest of the organization. As a result, the process of winning project approval and funding can be lengthy.

Part of the turnaround strategy for the company's IT department involves a change in how new IT projects are launched. Under the previous administration, the IT department was given a budget and would then determine how best to use this budget to enhance the business. In other words, IT told the business what they would do. IT management would set priorities based on its understanding of the company's business strategies and key initiatives. Under the new model, the process has been reversed. The business now drives IT. The business not only determines the projects and their priorities but funds them as well. No IT project moves forward without business sponsorship.

IT Support Comes from the Top at Company A

Company A's chief executive officer (CEO) is a strong supporter of IT and echoes the themes cited above. Prior to joining Company A about two years ago, he worked for a firm that derived its primary competitive advantages directly from IT. In his previous company, IT was a driving force behind the company's success. The CEO continues to share this vision in his position at Company A and works closely with the company's CIO to ensure that the overall business strategy and IT strategy are developed jointly and synergistically. Several individuals noted that the company's CEO actively participates in many of the IT decisions. To paraphrase their words, the CEO has a hands-on management style, and although he is demanding, he understands the limitations of IT and the difficulties in quantifying all of the costs and benefits of IT. Because of the CEO's commitment, involvement, and understanding of IT, the approval process for IT projects is easier and smoother than what may be found in other companies, but the emphasis is clear: IT must be used to build business value and enable the company in achieving its strategic directives.

Company A's Views Towards Outsourcing

The company's philosophy concerning customized development versus the purchase of technology is to buy off-the-shelf solutions whenever possible. The company tries to avoid internal development and system modifications when possible because IT development is not part of the company's core mission and core competencies. Outsourcing IT functions is considered when a strong business case can be made and when the area to be outsourced is well under control. Anything related to the company's core competencies and customer points of contact is retained in house. At times, the company may hire contract programmers or consultants to assist with software programming or web development. However, project management and control is maintained internally.

The Role of CIO at Company A

The top IT position in Company A is that of CIO. This individual enjoys the status of executive vice president and reports directly to the company's CEO. He is a board member and holds the same standing as the president of any of the company's business units.

The CIO has been with Company A for approximately two years. He joined the organization shortly after the CEO, and like the company's CEO, this is the CIO's first job assignment in the hospitality industry. His previous job was with a firm in the technology sector, where information technology was the very thrust of the organization. Thus, the CIO values IT, recognizes its potential, and actively seeks its deployment throughout the organization to accomplish critical business objectives: to improve competitiveness, market share, and quality. He, like most of Company A's management team, recognizes that in today's world, it is impossible to compete successfully without technology.

The CIO brings a great deal of credibility to the table and is highly respected throughout the organization for both his technological know-how and leadership as well as for his business acumen. This is evident in the responsibilities he has been assigned as well as the praise he receives from both his colleagues and subordinates. In his words, "Respect comes from results."

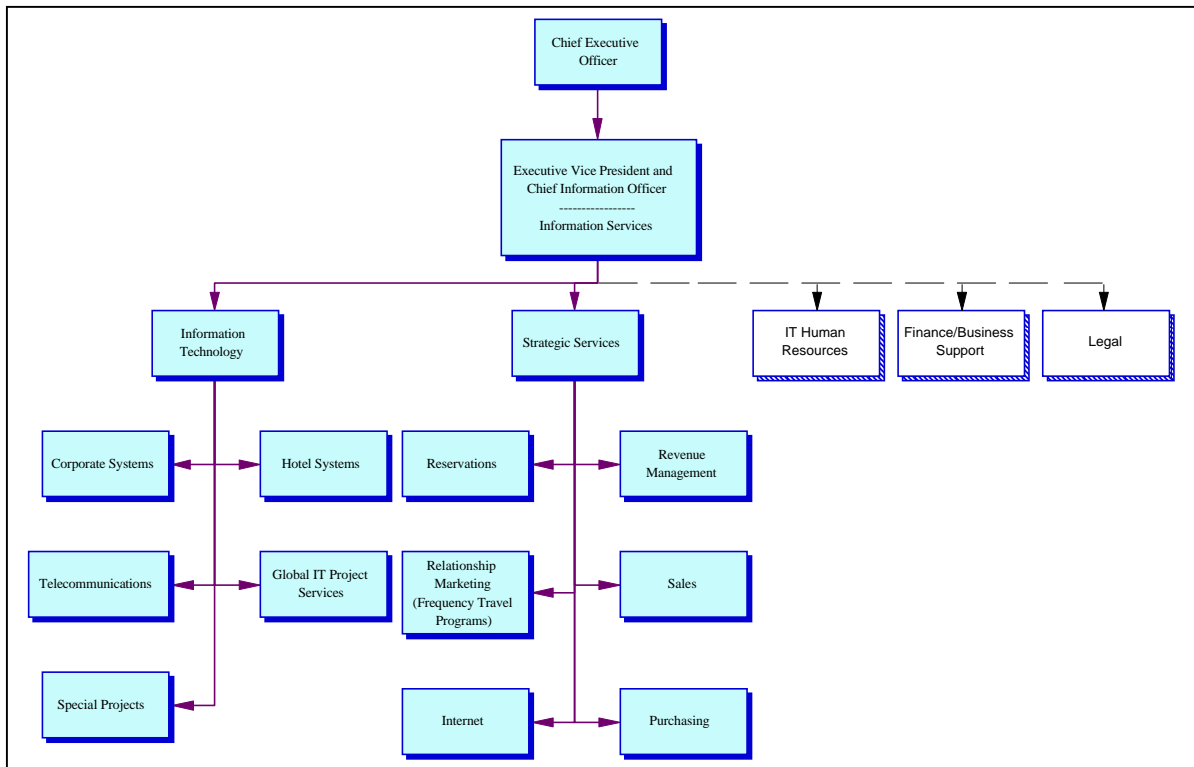
When asked to compare and contrast his present position with his previous one, the CIO responded by noting how far behind he thought the hotel industry was with respect to its use of IT. He attributed this problem in part to the low IT salaries typically paid in the hotel industry. Because they are not on par with those paid in other industries, the hotel industry has great difficulty in attracting and retaining qualified IT staff. This obstacle is somewhat mitigated by creating critical mass in terms of number of properties in a chain's portfolio to share the costs. Because of Company A's size, it is able to offer more competitive salaries and, thus, attract a better pool of IT talent than many of the industry's smaller players.

The responsibilities of Company A's CIO are depicted in Figure 4-1. Like a traditional CIO, this person oversees the company's IT resources, systems, and systems development efforts with a staff of 400 and a budget of \$80 million (US). Company A's IT budget accounts for less than two percent of the company's revenues. The IT department operates on a cost-recovery basis, with all IT development projects billed based on actual project costs to the appropriate department(s) within each business unit.

Unlike a traditional CIO, this individual also oversees a group of functions that drive revenue within the company. These include reservations, revenue management, sales, relationship marketing, the Internet, and purchasing. This is a truly unique and innovative relationship in the industry, where the CIO is tasked with running business areas other than IT. Assigning these important responsibilities to the CIO is testimony of the company's great respect for the CIO and his business acumen and its trust in his abilities. Traditionally, IT's role in each of these areas is limited to overseeing the technology used within these areas and to working with the heads of each discipline to plan and develop new IT applications. This reporting

relationship and organizational structure emphasizes the CIO's role as a business person first and as a technologist second, what appears to be a growing trend in most industries today. It also illustrates the company's recognition of the important and synergistic roles IT plays in both supporting and enabling key business functions in the company's value chain.

Figure 4-1: CIO Responsibilities at Company A



Without question, the CIO's job at Company A is a difficult one, given the scope of his numerous and diverse responsibilities. Along with the rest of Company A's management team, he is presently faced with trying to concurrently solve three very different equations:

- 1) To grow the company faster than the industry.
- 2) To turnaround the internal workings of IT within the company.
- 3) To turnaround the company's overall quality, reputation, and performance.

The CIO's compensation is determined to a large extent on the success of the business, not solely on his accomplishments as head of the IT department. This reward structure helps to align the CIO's goals and objectives with those of the business and with what is in the best

interest of the company. The CIO is not interested in applying “technology for technology’s sake,” a theme heard repeatedly at Company A. According to the CIO, his role is to help Company A build and grow the business by providing an IT infrastructure and a portfolio of IT applications that will enable the business’ strategic objectives. His goal is not to develop a state-of-the-art IT organization that pioneers the latest in technology. Rather than allocate resources to the latest generation of technology, the CIO prefers to use adequate technology and place additional emphasis on building the business and embarking on initiatives to enhance guest loyalty and preference. His philosophy is to create leading-edge IT applications only where they are needed. Otherwise, he prefers to see the resources and funding used elsewhere in the business to fuel growth and other strategic initiatives.

According to Company A’s CIO, the company’s leadership position is defined by the company’s franchisees, not by IT. IT plays a role in enabling market positioning but is only one contributing factor. To this end, Company A believes that its IT should be significantly better than that of other flags. It must be cost-effective, have long-term staying power, and provide value by meeting a variety of needs, not simply a single objective.

When he first started, the CIO said that the IT function was considered to be “at the bottom of the food chain.” The CIO remarked, “IT was treated just like dirt.” Others throughout various parts of the company made similar remarks. Today, that image is changing, as various people throughout the organization had attested. The CIO considers himself to be a turnaround specialist who was brought in to help Company A reclaim its leadership position in the industry. He has established a five-year horizon for rebuilding Company A’s IT organization before he plans to turn the reigns over to someone new.

IT Priorities at Company A

The company’s overall strategic emphasis is operational excellence through total quality improvement, and the number one driver throughout the company is to build brand/guest preference. This focus extends to all IT endeavors as well as to all other initiatives throughout the company. Hence, the IT staff is looking for ways in which it can deploy IT to enhance customer satisfaction, build preference, and generate guest loyalty.

Company A’s IT mission statement centers on the importance of information provided by IT so that both management and staff can quickly and easily access information that will allow them to perform better in their jobs and in making decisions that will affect the overall positioning and operation of the company. It reads as follows:

“Our mission is to develop and maintain high quality systems on multiple hardware and software platforms linked together to allow both internal and external clients at headquarters, regional offices, and hotels to input and access data needed for reporting and decision-making and to do so efficiently and economically.”

Where possible, Company A will use IT to attract and retain franchisees. Long-term, it views IT as a principal differentiator in the marketplace and a reason why a franchise would want to join one or more of the company's brands rather than one offered by a major competitor. True to the company's mission statement, however, the company's priorities with respect to IT are first on attracting and retaining the guest and second on building relationships with franchisees, even though the company is predominantly a franchised organization. While the latter is important, Company A feels that it will naturally accomplish this objective by creating products that are more competitive, more preferred, and, hence, more profitable than those of its competitors. By winning guest loyalty, profits will follow, and the franchise organization will grow. Conversely, if Company A fails to win guests, it will lose franchisees. It is also important to note the Company A earns a percentage of revenue received from these guests. Thus, with improved revenue (yield) management systems, reservations, and guest loyalty programs, both Company A and the individual properties stand to gain.

Company A's CIO considers many of today's hotel systems, including central reservation systems, to be commodities. In his estimation, all of the major chains offer most of the same capabilities and functionality in terms of their abilities to process transactions. Where he sees the battleground is changing is in the area of knowledge-based systems and in the creation of the segment-of-one. According to the CIO, what will be of utmost importance moving forward is what his company knows about its guests, properties, employees, and franchisees; how quickly it can use this knowledge; and what it does with that information (i.e., how it uses the information to create competitive advantage). In keeping within its mission statement defined above, Company A is looking to develop a knowledge-based enterprise, built around three core objectives:

- 1) Get Data – Collect high quality information about customers, employees, franchisees, etc.
- 2) Move the Data – Share data throughout the organization, transferring it from the point of collection to the point of use via a reliable communications infrastructure.
- 3) Use the Data – Provide users with the tools to quickly and easily access the data, manipulate it, analyze it, and infer meaning from it.

These three points have become the primary initiatives of Company A's IT strategy. Presently, the company is working to master the art of data collection and build the communications infrastructure to enable the sharing of this data. It is also working to build a team of users and to train this team to effectively use the data collected.

Company A's Short-Term IT Objectives

Prior to the CIO's arrival at Company A, the IT department was in a state of turmoil due to mismanagement. Since his arrival, the CIO has been in a triage mode to assess the present

situation and establish the company's immediate priorities. When the CIO first arrived, there were as many as 300 IT projects underway. He quickly terminated all but 15, including a central reservation system replacement effort in which a significant investment had already been made. Under his leadership, the organization is quickly moving away from fire-fighting and crises management in favor of a more proactive, planned mode of operation. His three-phased plan of action is simple but seemingly effective, at least thus far:

- 1) Completing a turnaround, remediation, and catch-up effort to reach a point where the IT products are predictable, meet high quality standards, and create a high value proposition for the company.
- 2) Building and training staff and planning and developing the IT infrastructure needed to regain industry leadership.
- 3) Winning and retaining the leadership position in the industry.

From a systems perspective, Company A is pursuing five key initiatives designed to enhance the company's information infrastructure and decision-making capabilities as well as to achieve the tripartite mission outlined above. These include:

- 1) Replace all property management systems, chain-wide, with newer, more capable hardware and software.
- 2) Overhaul the company's revenue (yield) management system with enhanced yield algorithms.
- 3) Accelerate developments to the company's central reservations system to create a single-image inventory; a fully-integrated, two-way interface with the company's property management systems; and a consistent user interface (e.g., a common look and feel throughout all applications).
- 4) Drive electronic commerce initiatives to decrease overhead and offset fixed costs.
- 5) Continue developing the company's data warehouse and data mining capabilities to better track guest information and drive new marketing promotions.

The collective benefits expected to be realized from these five initiatives include richer functionality, a single-image inventory, better integration between systems, increased REVPAR, systems that are easier to use with better consistency and a common look and feel, reduced fixed costs, and better guest information to drive frequency marketing promotions for the company's frequent travel programs.

Company A's IT Critical Success Factors

The critical success factors for Company A from an IT project perspective are to deliver projects on time, within budget, and according to project specifications (i.e., projects that meet the required functionality). To maximize the success of any IT project, Company A suggests the following:

- Business sponsorship
- An executive steering committee
- Business/IT strategic alignment
- A funding and rewards model that is consistent with business goals and objectives
- A clear and well-communicated IT vision
- Corporate understanding of IT

Company A's Emphasis on Deploying IT to Meet Business Objectives

Through several organization-wide quality improvement initiatives, the company expects to improve guest satisfaction levels and build preference. In addition to winning over the guest, Company A wants to become the preferred franchisor in each of the segments in which it competes. To achieve this, the company is working to develop a better value proposition through value-added services and technologies that will help franchisees earn an effective ROI. By attaining these objectives, Company A believes it will be well positioned to grow and prosper.

One example of using IT to improve product quality and consistency in conjunction with a business-sponsored objective can be seen in a recent enhancement made to the company's reservation system. As part of its emphasis on quality improvement, Company A launched a major program to reinvent its image. This makeover involved significant investment in property renovations and the implementation of a new quality rating system. As part of the latter program, quality inspectors routinely inspect each property within the chain and rate them according to a set of performance indicators and quality scales. These ratings are then recorded and incorporated in the company's reservation system, web site, and hotel directories.

When a query is made in the company's reservation system or on the company's web site, the resulting list displays properties within the requested geographic area in order of their quality performance scores. Top performers are the first properties promoted, whereas underachieving hotels fall to the bottom of the list. If these properties repeatedly score below the predetermined thresholds stated as part of the new quality standards and do not make the

recommended improvements within a specified time period, they are dropped from the franchise. These moves illustrate Company A's commitment to quality and serve as incentives for properties to maintain high-quality products. Moreover, they reward guests by helping them find the best and highest quality (i.e., in terms of price-value relationship) accommodations available within their price range for a given market.

Company A's Reservations Technology

As one of the first to implement a central reservation system and, later, online booking on the Internet with direct access to the company's CRS, Company A has long been recognized in the industry for its sophisticated reservations technology and pioneering strategies. Today, the company's worldwide reservation system, which accounts for nearly \$30 billion (US) in gross room revenue, is described as the "nerve center" of the company and the heart of its IT portfolio. First introduced almost 35 years ago, it is now considered to be one of the largest and most technically-sophisticated, privately-owned, computerized networks of its kind. It supports access to over 2,500 hotels in more than 90 countries, handles as many as 80 million room-nights per year, and processes as many as 300 transactions per second.

The reservation system is mainframe-based using IBM's Transaction Processing Facility (TPF) language. TPF is a standard programming environment used for high-volume transaction processing and is commonly used throughout the travel industry for airline, hotel, rental car, and railroad companies. Since TPF is a character-based, command-driven interface with what often appears to be cryptic codes, the learning curve can be steep for new agents. To reduce training time and to facilitate use, Company A has developed a graphical user interface (GUI) to front-end the reservation system.

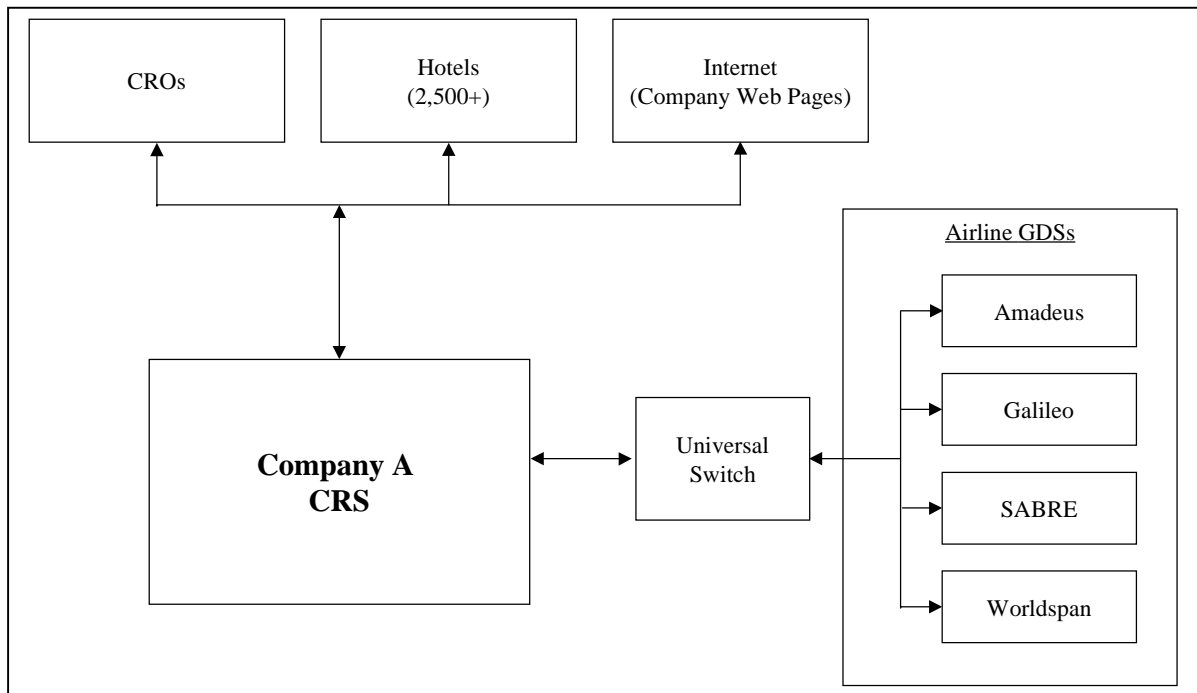
The central reservation system underwent a major overhaul in the late 1970s with continual modifications and enhancements since then, and once again, the company is preparing to embark on another major enhancement and modernization effort. A schematic of Company A's reservation system is depicted in Figure 4-2.

Company A's multiple central reservation offices (CROs) around the world are linked via a highly sophisticated satellite network. Collectively, these centers account for approximately 15% of all bookings. Direct bookings to its hotel properties account for 70% of all bookings. The remaining 15% of bookings come from travel agents through airline GDSs and from the Internet.

The reservation system's links to airline GDSs are through a universal switch versus direct connections to reduce the number of costly interfaces that must be developed and maintained. Airline GDS fees vary between \$2.25 and \$3.00 (US) depending upon the GDS. Travel agent commissions range between 8% to 10%, and switch fees average \$.50 (US). According to the IT manager of reservations systems development, the cost of distribution channels in use by Company A can be ranked in descending order as follows:

- 1) Airline GDS – This is typically the most costly due to booking fees and travel agent commissions.
- 2) Central Reservations Office – This ranks as the second most costly scenario due to labor, equipment, and building costs.
- 3) Internet – This is probably the most disputed. Some would rank it as the cheapest distribution channel. Once critical mass has been reached, this will likely be the case. Others, however, would rank it as the most expensive channel since many customers shop via the Internet but book via a travel agent; thus increasing the overhead. As volumes increase via this channel, the economics will change, making it possible to spread the fixed costs over a wider base. As the costs per transaction drop, the Internet will become the company's preferred channel.
- 4) Hotel – Presently, this is considered to be the cheapest channel since the costs involved for reservations from this channel only involve computer-processing time.

Figure 4-2: Schematic of Company A's Reservation System



In addition to the channels depicted in Figure 4-2, Company A is expanding its distribution through new online-based channels. These include a presence in priceline.com and a new strategic alliance with America Online, the leading Internet service provider, for a presence

in its popular Travel Channel. As new channels emerge, they will be evaluated on an ad hoc basis for their suitability and projected benefits to Company A.

Reservation System Value and Budget at Company A

While the value or net worth of Company A's reservation system is not immediately known, one IT executive responsible for reservation system development defined its value based on replacement costs. He estimated it would cost the company upwards of \$30 million (US) to rewrite the entire reservation system. Other company executives felt it was impossible to place a value on the reservation system because of its sophistication, immeasurable contributions, and extensive guest history. In their eyes, the value is incalculable and extends well beyond its room-night contributions. Within the organization, there was unanimity that the reservation system is the lifeline of the organization and a priceless asset.

Without question, the reservation system for Company A is the most expensive and most valued asset in the company's IT portfolio. Its annual development budget for system enhancements and new functionality is \$14 million (US), which represents 17.5% of the company's total IT budget. On-going maintenance and operation costs account for an additional \$1.5 million (US), most of which come directly from franchise fees.

Reservation System Initiatives and Priorities at Company A

For reservations-related initiatives, development funds typically come from a reservation fee assessed to each property. However, due to rising costs, these fees are no longer sufficient to cover both on-going operational costs, provide capital for new developments or enhancements, and meet the costs of inflation. Contractual agreements impose limitations on the amount this fee can be increased each year, and because they remained flat for a number of years under former management, the gap continues to grow. To offset this shortage in capital, Company A must tap external sources of funding. Recently, the company was successful in making a direct appeal to its franchise community for supplemental funds. However, it is unlikely that franchisees will continue to support these kinds of appeals. In the future, the company is considering imposing a technology fee that would cover systems development and enhancement projects and using the existing fee structure to finance on-going operational costs.

The current assessment of the company's reservation system is that it has lost its competitive advantage. During the years of management transition and the failed reservation rewrite project, Company A lost its technological leadership position. According to one IT manager, the system atrophied. Functionally, it is considered to be on par with the systems used by its primary competitors. Presently, the company is in a turnaround mode and hopes to regain its technological edge. Yet, the challenge was so aptly stated by one IT manager:

“It is expensive to make changes. All the easy stuff has been done already. The new stuff is complicated, and it is hard to come up with ideas that will lead to new competitive advantage.”

The problems in enriching the system’s functionality are further compounded by the company’s present franchising funding model, as discussed earlier, but Company A is clear on its priorities:

- 1) A two-way, fully integrated and fast interface between the central reservation system and the property management system.
- 2) A seamless, single-image database for inventory and rates featuring last-room availability.
- 3) Increased Internet bookings via the company web site.
- 4) Enhanced functionality for booking different rates, room types, packages, and promotions.
- 5) Enhancements to group sales functionality.
- 6) Automating the request for proposal (RFP) process.

The company is planning a multi-million-dollar (US) redesign of its reservation system. At the heart of this redesign effort are a modernization program and the implementation of a single-image database for room inventory. During the years of turmoil and high management turnover, the company unsuccessfully attempted to develop a new reservation system. Throughout this time, development and enhancements to the existing system were suspended so that resources could be channeled to the new system. Because this replacement reservation system never came to fruition, the functionality of the company’s existing reservation system fell behind that of the industry. Company A reported that, during this period, it lost most of its technological lead in the industry with respect to its reservation system functionality and technology. Consequently, a major objective of this redesign effort is to enable Company A to catch-up, regain its competitiveness, and reclaim its leadership role.

Another initiative currently underway at Company A is an aggressive promotional campaign to entice consumers through an array of incentives to book via the web to drive volumes upwards and to reduce the look-to-book gap. The larger volumes will help the company achieve greater economies of scale and offset many of the high, fixed costs incurred in developing this channel. The company is also working to increase bookings made through its nine central reservations offices (CROs) by channeling reservations traffic away from its properties, especially during peak hours of operation. Company statistics suggest that its CROs, on average, tend to sell higher rated rooms and convert a higher percentage of calls to bookings than property reservations staff because they have more and better training in selling and are considered to be sales agents versus order takers. To increase the number of

calls taken by the CROs, Company A is launching a Virtual CRO project to automatically route reservations calls to one of its call centers during off-peak periods or when all agents are busy.

The future outlook for Company A's reservations system is that TPF will become a large file server accessed by multiple GUI clients. The company is also looking to reduce the number of distribution channels due to the cost of maintaining so many links. Outsourcing either the reservations system or the call centers has been considered and has not been ruled out of the question. However, for the foreseeable future, Company A will control, maintain, and manage all development and operations of its reservations operations and technology.

Current Limitations to Company A's Reservation System

Company A's reservation system presently lacks a single-image inventory and last-room availability, major weaknesses in an environment where speed and interconnectivity are paramount to survival. Needless to say, the company experiences credibility issues with its guests. It also sees a high volume of shopping activity at its central reservations offices, through the airline GDSs, and on its web site, but the majority of bookings takes place directly at the hotels because the consumer has access to the most complete set of rates and availability information. Oftentimes, the best rates, under the present system, are found by calling properties directly. A guest shopping multiple channels to find the best available rate results in increased overhead costs since channels are being unnecessarily overtaxed by this guest's queries. To correct the problem of disparate rates and incomplete availability information, Company A is refocusing its efforts to create a single-image, seamless inventory. When completed, customers will have full access to rates and availability, regardless of where (i.e., which distribution channel) they shop.

The area of group sales poses many challenges for Company A as well. Presently, the property management systems and the group sales systems do not communicate well and share group data effectively. A standardized PMS architecture and group sales system as well as new interface standards and development should alleviate these problems. Other initiatives include bypassing intermediaries; automating the request for proposal (RFP) process to streamline pricing and bidding for meetings and conventions; developing business intranet/extranet solutions with large corporate clients; and enhancing the meeting, convention, and group services and booking capabilities on the company's web site.

Company A's Web Site

At the present time, Internet-based bookings from Company A's web site account for 1% of all reservations. While this figure represents only a small share of total bookings, the company expects web-based bookings to grow significantly in the ensuing years and achieve what it believes will be critical mass. Internet-only rates, special promotions, and bonus frequent travel points are being used as incentives to grow Internet booking volumes. Travel

agents, however, are discouraged from using the web site because bookings are non-commissionable. Instead, the site suggests they use an airline GDS or contact one of the company's worldwide reservation offices.

At Company A, the Internet represents one of the most dynamic areas for IT development. It represents significant growth opportunities despite today's low look-to-book conversion ratios. In the first quarter of 1999, Company A unveiled a new version of its company web site, which was completely redesigned with faster and easier navigation, better throughput, and access to more complete and reliable information. The new site provides information about the company, its properties and its frequent travel programs, franchising opportunities, available jobs, recent press releases, company news, and investor information. The site also features links to each of its five major brands, its reservations system, and its frequent travel programs and provides facilities for customers to share feedback.

Web-based reservations functionality was enhanced to include the ability to search for best available rates and to receive instant confirmations via electronic mail. Additional features include maps and destination information and interactive functionality to allow guests to enroll in one or more of the company's frequent traveler programs, check point balances, update account information, find and book special promotions or discounts, and more. Functionality has also been added for meeting and convention planning. Tools for site selection, event planning, and electronic requests for proposal (RFPs) have been added to simplify and streamline the shopping process. In total, Company A has spent well over \$1 million (US) in web site development.

Company A's IT Decision-Making Process for Resource Allocations

Company A does not profess to be a high-tech company. It is in the hotel business and uses IT to support its core businesses. There is little research and development done with respect to technology, and the company avoids the use of technology for technology's sake. While the CIO has some discretionary spending authority to explore new technologies and experiment with new applications, these efforts are generally minimized due to budgetary constraints.

Justifying investment in IT projects within Company A can be a difficult task. During an interview with one of the company's financial executives, the focus of conversation was on the industry's poor track record with respect to IT projects. The financial executive discussed several accounts in the current literature suggesting that the success rates of IT-enabled investments are unacceptably low and that the majority (as high as two-thirds) of all IT projects are late, over budget, and fail to deliver the promised benefits. According to this individual, these grim statistics make winning funding for IT projects an uphill battle in his and other organizations. These bleak numbers and the company's prior history with IT projects cause consternation in the financial executive's eyes, especially surrounding the organization's ability to recoup its investment. As the costs associated with IT projects continue to grow, so do this individual's concerns. In expressing his frustrations concerning

the many challenges involved with trying to quantify the impacts of IT and build strong business cases with financial justification, one financial executive stated: “I am not doing this for the glory.”

Company A adheres to a formal process for requesting funding for all projects, IT or otherwise. In Company A, IT investments are treated in the same manner as any other investment for the company, where the emphasis is on capital returns and growth. With this disciplined approach, company executives believe that only the *best* projects win approval and funding. Well-articulated business cases supply decision-makers with the necessary information so that they can make informed, fact-based decisions.

IT Project Classifications at Company A

Company A typically classifies IT projects in one of three major categories: strategic, regulatory or mandated, and infrastructural. To some extent, the type of project influences the design of the project’s business case and has an impact on the approval process and the level of consideration given to the project.

Wherever possible, IT projects are tied to the company’s strategic directives. For these projects, Company A considers the financial merits of the project, its appropriateness for the company, affordability, timing, and risk. IT projects classified as regulatory or mandated require less scrutiny because they are required regardless of the payback and benefits. For example, Y2K (Year 2000 millennium bug) enhancements are essential to survival and must be completed irrespective of the ROI. Thus, ROI is less of an issue for these types of projects.

The third category of IT projects relates to IT infrastructural improvements. Projects in this category involve technologies that help build the foundation on which other applications can be developed or used. A good example of infrastructural technology is the company’s communications network, which enables data transfer and file sharing between systems and each of the company’s locations around the world. Decisions in this area are generally based upon demonstrated need and enabling opportunities. They are among the most difficult to justify because they often lack business sponsorship outside the IT department and because the benefits are more difficult to articulate and quantify. They are often viewed as necessary overhead.

Planning Horizon at Company A

The IT planning horizon corresponds with the company’s planning window of five years, although annual plans are also prepared. This planning window coincides with the company’s five-year financial incentives. Under this program, managers are rewarded for their performance with annual bonuses; larger bonuses are also awarded every five years for those who meet their long-range objectives. These bonuses are tied to the company’s stock

price and include both money and the issuance of stock. This compensation program promotes accountability, enhances management retention, encourages long-term thinking, and reduces the likelihood that managers will mortgage the future in favor of short-term gains.

To increase the success rate of IT-related projects, Company A requires that all projects be reduced in size and scope and kept within manageable timeframes, typically six to nine months or less. Large projects are divided into subprojects or major milestones to meet these parameters. History has shown that large, multi-year projects tend to be less successful due to changes in staff and technology. By modularizing projects and keeping to smaller time horizons, the company can better control many of the variables and reduce the level of risk associated with the project. Phasing projects also helps to build credibility in the organization for the IT staff and its capabilities because progress is more visible and demonstrated on regular intervals.

Business Sponsorship Is Key

At Company A, there is no such thing as an IT project. Any project involving IT involves the business and, therefore, cannot be isolated from the business and its goals. Thus, all projects must be not only endorsed by the heads of a business unit (or their key lieutenants) but also championed and managed by them. It is this support that helps to speed the approval process and adoption throughout the organization. It also helps to ensure that technology is being applied to the business based on sound business logic rather than for the use of “technology for technology’s sake.” In other words, the business problem or need and the desired objectives must be clearly articulated before a project will be considered for funding.

One of the contributing forces to the shift in IT culture within Company A is more active involvement from the customers (i.e., the end users of the systems). The new CIO has made it a priority to have customer involvement, global perspectives, and key business sponsorship for all IT-related projects. Without this involvement and support, he will not allow any project to proceed. One of the most significant moves is to have customers and the business sponsors present all business cases to the executive committee for authorization and funding. It is these people that must present the business merits and return on investment for a given project. They must take ownership for the project because they will be held accountable for it. The formalization of procedures and a structure for the approval of projects has been welcomed by most in the organization, and it has helped to improve the image of the IT department as well as the success of implementation and adoption of new IT projects.

At Company A, business sponsorship is an essential ingredient for all IT-related projects. This sponsorship goes beyond the role of a figurehead or someone who makes a significant financial commitment in the project. A project champion must not be someone in name only, but rather, someone with a vested stake and personal interest in seeing the project succeed. This individual must actively drive the project, communicate its status, and oversee its management. Demonstrated support from key executives in the organization is a prerequisite

to the approval of any IT-related project. Without such support, a project will not receive funding.

Testimony from executives at Company A suggests that because business sponsors must own IT-related projects, justify them to management, and defend their business cases, IT projects tend to have a higher success rate at winning approval and funding and face less scrutiny than if the IT department alone presented and defended their business cases. The rationale of the company's top management is that since the funding will come directly from the business sponsor's budget, the person overseeing this budget is the best person to manage it and to determine how it should be spent. Moreover, this person's compensation is tied directly to how well he/she manages that budget. Therefore, the incentives are in place for every manager to manage his/her budget as effectively as possible so that they maximize their personal gains as well as those for the company. It helps that businesses generate revenue to help offset these project costs. Greater scrutiny is used when projects are considered as mere overhead.

Building the IT Business Case at Company A

Winning project approval and gaining funding at Company A is a multi-step process. Generally, the process begins in one of the company's business units. The first step is to identify a business need to be fulfilled or a business problem to be solved. A management committee comprised of department heads within the business unit will then conduct the first level of project prioritization and request assistance from the IT organization to estimate and price the project. A partnership is then formed between the IT organization and the requesting business unit to build a business case justifying the project.

This business case, called "capital papers" in Company A's vernacular, is a formal report consisting of several sections, as summarized in Table 4-2. An executive summary/cover sheet provides a brief overview of the project, its costs, and its expected benefits (including ROI and payback). The body of the report provides a background of the project, a statement of the business need or problem being addressed, a needs and benefits analysis, and a discussion of the project's significance to the organization. The body of the report then defines the scope of the project with a detailed budget and request for funding. The report also describes the risks, opportunities, and benefits of the project. The benefits presented are both qualitative and quantitative. The quantitative analysis is a complete financial assessment of the project, including assumptions, net present value (NPV), and payback. Cash flow schedules for the net present value analysis are included and typically cover a five-year span. The report discusses possible alternatives that were considered and provides an assessment of competitor activities. The report concludes with a set of recommendations and signatures by both the CIO and the business sponsor(s) to indicate their support for and endorsement of the project.

Table 4-2: Key Components of a Typical Business Case at Company A

<ol style="list-style-type: none">1. Project Overview and Summary of Benefits2. Definition and Scope3. Needs and Benefits Analysis4. Project Budget and Funding Request5. Risk Assessment6. Financial Analysis7. Alternatives Considered8. Competitor Activity and Assessment9. Recommendations10. Signatures of Endorsement

Company A's Decision Criteria

When justifying IT projects, management at Company A considers the financial ROI as one criterion among several others that must be taken into account as part of the decision-making process. In most cases, ROI is not the primary determinant for project approval. Management at Company A recognizes the many limitations of ROI and the difficulties in quantifying the expected benefits. Hence, while calculating an ROI is expected as part of the decision-making process, ROI represents only one criterion. Due to the many qualitative factors, intangibles, and unknowns associated with IT projects, Company A often places less emphasis on ROI analysis than it otherwise would for non-IT projects where the benefits are more easily quantifiable and where history exists to establish benchmarks and to develop well-informed assumptions.

Presently, there are six key thrusts or considerations that weigh heavily in any IT project decision at Company A. These include:

- 1) A project's inherent ability to provide a business solution.
- 2) A project's ability to generate new revenue or reduce costs.
- 3) A project that is guest-centric.
- 4) A project that will enhance systems integration and data sharing.

- 5) A project that will enhance user-friendliness and consistency to reduce training time.
- 6) A project that is web-based. Company A considers itself to be bullish on web-based development and initiatives.

The specific variables considered when evaluating a new distribution channel include:

- Start-up costs for developing the channel and the necessary interfaces
- Costs for on-going maintenance and support
- Overall return on investment
- Volume assumptions
- Incremental business
- Direction of the market and key competitors
- Payback (within five years)
- Net present value (hurdle rate depends on risk premium)

As the above lists suggest, there is no litmus test, singular formula, or set of rules for the approval of IT projects. Each project is considered individually based upon its own merits. Primary considerations are given to cost-savings, revenue generation, efficiency, and improved customer service. The emphasis of the decision process is not placed directly on the company's stock price or cash flow per share, though the company hopes that all its decisions and actions will enhance value, an underlying assumption of NPV. Management believes that if it manages the business correctly, value will follow, naturally allowing these to increase. While these value indicators are important, the company's analyses for IT projects are not translated into this level of detail due to the many other confounding variables involved. These represent company-wide measures that are calculated periodically and reflect the results of many different efforts, not simply the impact of one project. It is important to note that these statements came directly from interviews with company executives and do not necessarily represent the broadest perspective with regards to strategy and finance, where each individual decision should be measured in terms of its direct impact on company value.

The Role of an IT Steering Committee at Company A

A steering committee comprised of the heads of functional business areas (or members of their staffs) review, evaluate, and prioritize projects based on the merits presented in their business cases. This committee meets monthly and tries to leverage solutions across all brands. One executive described the dynamics of these committee meetings as "interesting with lots of lobbying and horse trading taking place." Despite all of these political dynamics,

the general consensus is that the right priorities and initiatives to support these priorities do emerge and are sent forth by the committee to the company's executive management committee, comprised of the company's most senior executives, for approval.

With this process, niche projects that benefit only a small constituency tend to be minimized in favor of projects with broader appeal and greater positive impact to the entire company, unless of course the proposed project can demonstrate significant returns. Throughout the entire process, members of the business unit, the IT organization, and the finance department work as a team to analyze a project and determine its costs, benefits, and viability. Once the business case is prepared and approved within Company A, the project must be reviewed and approved by the finance committee and the CEO of Company A's parent organization. Generally, this process is mostly of a formality, since the parent organization operates in a decentralized mode. Upon this final authorization, the funding is allocated so the project can commence.

Post-Decision Analysis at Company A

Company A presently lacks a tracking system for comparing forecasted benefits to realized benefits from an IT project. While the IT department will frequently conduct a post-mortem evaluation of a project, the focus of study is the development process to identify ways in which it can be improved and streamlined. Occasional audits may be conducted to evaluate the results of a given business case to see if they achieved the desired objectives. However, no executive could recall the last time one was performed for an IT project. Generally, accountability is managed through the company's bonus system. Unfortunately, this does little to help strengthen the company's decision-making process or build a set of benchmarks that could be used when planning subsequent IT initiatives.

Defining Risk at Company A

In general, Company A describes itself as risk-averse. Yet, within Company A, there are a number of different perspectives and little consensus as to what constitutes risk. There was, however, consensus that IT projects tend to involve more risk than many other projects in the company. As such, it is not uncommon to see the use of risk premiums to raise a project's hurdle rate above the company's normal 11% after tax cost of capital.

According to one financial executive, there is a high degree of perceived risk related to IT projects due to past failures within the company, IT project mismanagement, unrealized financial projections, and the frequently published statistics and accounts of project failures in both the hospitality industry and in general business. This negative history is the basis of the skepticism that contributes to greater perceived risk for IT projects.

Although the definitions of risk are many and broad, the financial executive provided the best summary of the various dimensions of risk at Company A. He defined risk based on three dimensions: project risk, technical risk, and business risk.

- Project Risk – pertains to issues of project size, reach, complexity, scope, and schedule. These usually involve project delays, scope creep, cost overruns, and projects that fail to meet their defined objectives or provide the agreed upon functionality. Risks such as these can be mitigated through disciplined project management, frequent project milestones, open communications, well-formed customer relationships, and an effective change management process.
- Technical Risk – addresses issues related to the underlying technology employed in the project, its proven track record (or lack thereof), and system downtime. Technical risk includes a technology's life cycle, stability, reliability, portability, scalability, etc. By employing reliable technologies with proven track records, by hiring skilled staff with expertise in the chosen technologies, and by building in system redundancy wherever possible, these risks can be reduced.
- Business Risk – refers to impact on the business or its reputation due to system outages or failures, financial or otherwise. Business risk also includes the firm's ability to recover its investment and realize the expected benefits of the IT being implemented. Finally, it considers flexibility and the firm's ability to adapt to a changing marketplace. These are typically measured in financial terms or in terms of customer service. Business risk can be addressed in part by back up policies and procedures. In some cases, however, the company must rely on insurance policies to provide protection against risk. For example, the company relies on an extensive satellite network for all data traffic. Because it would be cost-prohibitive to implement a fully redundant, land line network as a backup solution, Company A purchases an annual insurance policy to protect itself in the event of a satellite outage.

Risk, according to the CIO, is failure to deliver a project on time, within budget, and in accordance with the agreed upon scope and functionality. Risk as defined by an IT development manager refers to project risk and technical risk. Project risk refers to system changes or enhancements that are more complex than first anticipated. Technical risk relates to the newness of the technology, the availability of staff, established methodologies and standards, and proven track record of the technology under consideration. With respect to the reservation system, TPF has an established track record and is in use by many organizations. It is difficult to find and costly to attract resources experienced in this programming environment. It is also a complex environment in which to work; this often results in project overruns (in terms of costs and/or schedule). The graphical user interface that front ends the reservation system uses client-server technology. This programming environment tends to introduce additional risks. While client-server technology is widely used throughout general business and the hotel industry, the programming environment is less defined and less disciplined. There are fewer established methodologies and many possible scenarios for implementation. As a result, it is easy for a project to go astray and for programmers to exhibit maverick-like behavior.

The marketing executive looks at risk in terms of Year 2000 (Y2K) issues, the flexibility and scalability of solutions, and the ability to add new products and services as needed. The sales executive defined risk in terms of what is lost by foregoing an investment, especially the potential impact of lost customers.

Challenges to IT Adoption and Implementation at Company A

Company A is focused on catching up and regaining its leadership positions in the industry with respect to profitability, market share, product image, and information technology. As the company grows and as its lodging portfolio becomes more diverse, it will need IT solutions that are flexible and adaptable to meet a broad spectrum of needs. Yet, this diversity and the company's franchise structure create many challenges to adopting and implementing information technology throughout the company.

Company A is preparing to launch a chain-wide systems upgrade initiative to its 2,500-plus hotels. Since a rollout of this magnitude is unprecedented, Company A has no benchmarks to which it can compare and no track record for success in this area. A daunting task, a large-scale system rollout such as this is complicated due to the heterogeneity of environments, the franchise structures, fragmented ownership, decentralized systems, and training needs. The number of variables that must be taken into account are enormous when one considers the number of hotels involved and their geographic dispersion. In comparison, large banks or a company like Wal-Mart have more homogenous environments and exercise greater control over IT through centralized management and centralized IT. Therefore, they face fewer variables in large-scale rollouts and can accomplish a company-wide rollout in a more efficient, timely manner.

Because the company is mostly franchised, it has little control and sometimes little influence over the technology assets used in its hotels. If contracts do not require the use of specific technologies or IT applications, winning franchisee approval can be a lengthy process, slowing the use of IT and hindering the development of IT standards in the organization. While many franchisees are becoming more supportive of technology and at times driving the use of technology throughout the company, there are still a large number of stragglers who hinder the process. Needless to say, the process of convincing and selling IT to the properties and their owners can be lengthy.

The affordability of technology is always an issue for each property, given the capital intensity and the number of capital improvement projects under consideration at any one time. In Company A, like other franchised organizations, individual properties often voice concerns over the benefits they will receive from new systems versus what the parent organization will achieve. With this tension, they do not always see the bigger picture or how improvements for the whole chain will benefit them directly. Therefore, they are not always inclined to purchase systems recommended by the franchisor. They are also reluctant to pay the franchisor additional fees, and in this case, to fund new developments. At

Company A, raising development funds for enhancements to its central reservation system and its web site is a major, on-going challenge.

Company A's Outlook for the Future

Looking to the future, many of the hotel GDS developments industry-wide will be web-based. The trend continues to show an increase in the volume of electronic bookings through airline GDS and Internet channels. With the rise popularity and usage of the Internet to book travel accommodations, the controversy surrounding commissions continues to be the subject of debate. Airlines have imposed flat-fee structures to online booking services. It is expected that the hotel industry will follow their lead. Company A took a hard stand against Microsoft's Expedia Travel by refusing to pay commissions. For a time, Microsoft dropped Company A's hotels from its database until an undisclosed settlement was reached based on a flat-fee structure.

The Internet offers tremendous opportunity to the hotel industry, but it is also feared by many at Company A. Without question, the Internet is changing the distribution process and how hotel rooms are marketed and sold. Online booking services like Microsoft's Expedia Travel, TheTrip.com, Travel Navigator, priceline.com, and others are viewed as significant threats because they contribute to the erosion of hotel brand value and because of discounting, the erosion of profit margins. Customers are lured to these sites by bargains, convenience, and one-stop shopping. Furthermore, many of these sites are beginning to introduce their own forms of frequent travel programs—awarding points for travel bookings and, in some instances, for referrals—to entice consumers to use their services and to convince their friends and colleagues to use them as well. These points are brand neutral, supplement frequent travel points earned by travel providers, and can be redeemed through the booking service for future travel.

According to Company A, these online booking services promote discounting as a primary pricing strategy to win customers and maintain market share. Since customers can easily comparison-shop, they will base their purchase decisions on price. To win, a hotel company must heavily discount its product. Additionally, they must pay airline GDS fees, booking fees, commissions, and award frequent travel points. In the end, Company A believes it is losing on all fronts. Its profit margins are eroding, as is the value of its brands. Moreover, when consumers use these channels or other forms of intermediaries, the hotel company loses control over the customer relationship.

In looking at the future, Company A is banking heavily on the role the Internet will play in booking hotel and meeting rooms. It believes that the Internet will be the channel of choice for business travel whereas travel agents will maintain a stronghold on the high-end leisure market. Company A also forecasts greater use of the Internet to provide answers to shopping questions for meetings and conventions. Smaller events will likely use the Internet to book their accommodations. This is believed to be a largely untapped area with explosive growth

opportunities. However, for larger events, face-to-face negotiations are believed to be the preferred method.

Another possible threat Company A sees lurking on the horizon is the growth of smart agents that can quickly and easily shop different web sites for price comparisons in a practice known as “web scraping.” One of the concerns was mentioned above: the guest’s focus on price, which will lead to more discounting. The other concern is the impact a large volume of these queries could have on the company’s web servers. It is possible that this web scraping could create bottlenecks on the company’s web site and lead to high infrastructural costs with little to no benefit to the company in terms of increased booking.

Recapitulation of Company A

Company A is a recognized leader in its use of information technology and is committed to the use of IT for competitive advantage. To summarize Company A’s philosophies towards IT, it can be said that an IT project is concerned with taking a set of business requirements and delivering an IT solution that meets those requirements. At Company A, IT projects do not exist on their own. Instead, business endeavors include IT projects to help accomplish their goals and objectives. To this end, Company A believes that there should be no translation of business endeavors into IT requirements. In other words, there are only business requirements. To separate IT projects from their associated business endeavors would increase the likelihood of failure.

Using this philosophy, business executives sponsor and champion all IT-related projects. They play an integral part in building the business case to justify the need for a given technology or application and define the expected benefits. They must then successfully defend this case to win project approval and funding. A steering committee helps to establish the organization’s priorities and promotes the use of enterprise-wide solutions wherever possible. This disciplined approach provides rigor that helps to keep the company focused and ensure that only projects related to its strategic initiatives are funded.

After several declining years, Company A has launched a significant turnaround strategy. A new IT-savvy management team and a renewed focus on brand image and quality are leading this turnaround effort. Since Company A is presently playing catch up and hoping to regain its leadership role, IT decisions are, at times, easier than they might otherwise be because management recognizes the importance and the urgency of acting. Consequently, emphasis on ROI analysis is relaxed in favor of strategic value and other qualitative considerations such as emphasis on customers, revenue enhancement, cost reduction, ease of use, and web-based initiatives.

Company B

Brief Profile of Company B

Company B is a large, multinational and multibillion-dollar (US) hospitality firm with lodging products servicing three primary segments: mid-tier, full service, and luxury. The company's 570-plus hotels account for more than 105,000 rooms in 54 countries and generate more than \$250 million (US) in annual revenue.

Company B considers itself to be entrepreneurial and innovative. Its philosophy is to create its own rules for a new game. It needs to be different from its competitors since it lacks some of their major strengths. This is not to say that Company B will always be first to market with an IT initiative. However, it does want to be a leader versus a follower.

Both Company B and its parent organization are highly regarded among industry insiders for their expertise in marketing, travel, hospitality services, incentive programs, and technology. They are frequently cited as examples of best practices in each of these areas. The company has proven itself as a leader and an innovator. Its many industry awards and kudos provide testimony of its industry leadership and innovations, many of which have come in the areas of information technology and reservations. However, compared to the other two companies included in this study, Company B is smaller in size (in terms of portfolio breadth and geographic dispersion) and lacks the brand identity and loyalty of the other two.

Like Company A, Company B is predominantly franchised, and its brand image and consistency have deteriorated over the years. Consequently, its performance trends have been on a decline. According to one company executive, "Our three lodging brands have been sleepers." Reported another, "The company's hotels are underperforming in terms of market share, profitability, and guest satisfaction scores." In many markets, the rooms are inferior to those of their competitors because they lack most of the modern amenities expected of today's business travelers: large work surfaces, data ports, voice mail, etc. Moreover, the company lacks a presence in key international markets. Most of its international growth has come from tertiary markets, making it difficult to build brand identity and an international reputation for world-class service.

The trend at Company B appears to be changing. Threatened by the industry's growing tendency to become more commodity-like, Company B has embarked on an aggressive re-imaging campaign. This corporate makeover entails a shift in focus away from a product-driven past towards a customer-driven focus. Company B's number one priority is creating customer intimacy to achieve greater guest satisfaction and build guest loyalty. The company's goal is to provide a comfortable place to stay featuring all of the amenities of its competitors but with a more relaxed atmosphere. As part of Company B's rebuilding campaign, the company is pruning its franchise systems to shed properties that are unable or

unwilling to invest capital to meet the company's new standards. This effort will result in higher quality hotels and greater consistency throughout each brand.

Over the years, Company B has built strong relationships within the travel agent community. The company estimates that of the 500,000-plus travel agents in 125 countries, it maintains a loyal following with over 125,000 in 96 countries. Its booking incentive programs have served the company well in building this loyalty. It also helps that one arm of the parent organization is one of the largest travel agencies in the world. However, the rise in Internet bookings is taking its toll on the travel agent community, and Company B is feeling the effects.

With the bulk of the company's business booked through travel agents, the company focused its attention on building strong ties with travel agents at the expense of building relationships with the end consumers. At the time, this focus seemed appropriate because the approach taken by other companies to establish the pull with the consumer was considered to be more costly and less effective in terms of booking potential. For a while, the company's chosen strategy to focus on the travel agent market worked. As one brand executive suggested, it was a brilliant move because winning travel agent loyalty gave the company more leverage to increase booking volumes. A single travel agent generally books more rooms than a single guest during the course of a year. Additionally, it created a unique marketing niche for Company B since most of its competitors were introducing frequent travel programs to capture customer loyalty while Company B was implementing programs that would build travel agent loyalty.

The results indicate that over the years, this strategy has served the company well. However, with a growing shift towards disintermediation, the timing seems right for Company B to shift its focus towards the consumer to establish lasting relationships. In retrospect, the brand executive admits that both strategies clearly have pluses and minuses. Therefore, the company is increasing its efforts on data mining and warehousing to learn more about its customers and their behavior in hopes that it can establish one-to-one relationships with them. It is playing catch up in this area to leading competitors who implemented frequent travel programs to win customer loyalty while also building relationships with travel agents. The company has launched a comprehensive brand strategy that will influence intermediaries and win the end consumer.

Customer Intimacy, Brand Image Top Company B's List of Priorities

While the company's overarching goals are growth and value creation for its owners and investors, its focus on and commitment to the guest is undeniably its top priority. Its vision is customer-centric and focused on the quality of facilities and services as well as the identity of each of its lodging brands. The company is working to solidify its position as a market leader by focusing on total guest satisfaction, customized services, and initiatives that will enhance customer intimacy and brand recognition. According to the company's vice president of marketing, "Personalizing the service and relationships we have with our customers is what

genuine hospitality is all about.” This spirit and commitment to the customer is evident in the company’s mission statement:

“We strive to create loyal, satisfied customers who will return to Company B properties repeatedly because of the quality and value which is offered. Our mission is to be the leading global hospitality services company. We will achieve this by combining innovative industry expertise in marketing, technology, and management with enthusiastic, responsive service, thus enabling the businesses within our system to better serve their stakeholders.”

The company’s mission statement along with the following values and principles guide the company’s strategic initiatives:

- Growth
- Innovation and Creative Thinking
- Continuous Improvement
- Responsiveness and Flexibility
- Integrity and Trust
- Teamwork and Synergy
- Partnerships/Strategic Alliances of Mutual Benefit

Together, these values and the company’s mission statement support what Company B calls the “triangle of excellence,” which calls for the constant balancing of the interests and needs of three distinct stakeholders: guests, employees, and franchise owners/investors. The theory behind this concept simply states that rewarding employees for providing high quality service leads to satisfied and repeat guests, which, in turn, generates higher revenue for franchisees and Company B. Thus, it is through a customer-centric vision that Company B will achieve its strategic objectives for growth and value creation.

Growth is another important element of Company B’s strategy. The company will continue to expand globally with owned and managed properties. To strengthen quality, the company is looking to increase its ownership interests and retain management contracts in new hotels. It will target key gateway cities to establish a market presence and build its image and then expand into secondary and tertiary markets.

Strategic Foci at Company B

The company’s strategic orientation is on achieving customer intimacy. There are five key strategic initiatives at Company B designed to build customer loyalty, improve market share, and grow company revenues. These serve as the primary drivers of IT projects and include:

- 1) Strengthen Brand Identity and Value – Brand identity at Company B has slipped to the point that most customers no longer know what distinguishes its brands from those of its primary competitors. Therefore, Company B has launched a major campaign to rebuild brand identity and define the intangible aspects of its products. This campaign includes a customer satisfaction guarantee, a large media blitz to promote awareness and trial usage, the launch of a new frequent travel program to build customer loyalty, and the unveiling of new brand logos to enhance the company's image.
- 2) Establish Lasting Customer Relationships – Changing market conditions suggest a greater need to build strong and lasting customer relationships. To this end, Company B is seeking ways to better understand, attract, and retain its customers through database marketing initiatives. The introduction of a new, points-based frequent travel program is one initiative to help accomplish this objective. The creation of company-wide data warehouse, a multi-dimensional decision support system, is a second major initiative to help the company determine the lifetime value of its customers. IT, through data mining and customer tracking, will play an important role in enabling the realization of this goal, and part of this effort will also involve sharing customer information with the parent organization to generate marketing referrals and leads. Additionally, the company recently created a full-time position called director of relationship marketing with the primary responsibility of determining each customer's lifetime value to the organization. This person is responsible for developing the models, mining the data, and processing the analytics that will help the company in fulfilling this objective. Naturally, this is an evolutionary process, and because the company has only recently entered into this arena, the customer database is too immature to yield meaningful results at this time.
- 3) Maximize Revenue – Going forward, the company is searching for an automated, "smart" yield management solution that will allow the company to maximize the lifetime value of each customer, not just daily revenue. In other words, the company seeks to implement a yield management system tied to its customer information system so that loyal customers can be identified and rewarded for their repeat business with more favorable rates, not penalized by yield management strategies because of fluctuations in supply, demand, or booking curves. In remaining true to its mission statement, the company wants to ensure that these individuals are not "yielded out" in favor of a non-loyal customer willing to pay a higher rate for a single night.
- 4) Grow Globally – The umbrella theme for all of the company's strategic initiatives is to expand the company globally. This includes growing its market presence as well as building an international reputation for excellence. The company's targeted growth rate is 15% per annum.
- 5) Leverage Resources – The company wants to leverage resources across each of its lodging brands and its sister companies to achieve greater synergy and economies of scale. The costs of reservations and technology are rising and eating away at

marketing budgets, while concomitantly, the company's fee streams are shrinking. Hence, the company must find ways to reduce overhead to remain competitive.

Company B's Core Competencies

Executives at Company B define the company's core competencies to be in the areas of franchising, marketing, and IT. In fact, several executives went so far as to identify the Company CIO himself as a core competency. His leadership, accomplishments, and numerous awards suggest that he is a very capable individual, and with his help, Company B has distinguished itself as a leader in using IT as a marketing tool and as a tool to successfully manage and influence its distribution channels. Driving this culture is the CIO's enthusiasm and creativity and the IT department's underlying philosophy of "Marketing with IT." To paraphrase the words of one brand executive, the company succeeds because of the IT applications that support the company's marketing function and staff. According to one marketing vice president, the marketing and IT departments have formed a strategic partnership, enjoy a good working relationship, and are pursuing parallel tracks.

The consensus at Company B is that IT is the backbone of its strengths. Company executives emphasized that its people, along with technology, are its competitive difference. This is supported by customer feedback. For example, in guest comment cards, customers frequently praise the company's employees as "genuine, caring people." To paraphrase the company CEO, Company B combines people with technology to create magic and unique, memorable experiences for its guests. IT is the enabler, but it is the people who make things happen.

With respect to IT, the core competencies of Company B include the ability to align IT with the business, systems integration, marketing with IT, and the department's ability to maximize resources to accomplish as much as it does. Company B prides itself on being an industry leader in applying information technology to serve customers and in using reservation systems and global distribution technologies strategically, especially in the areas of seamless and two-way interface development and in incentive programs to increase bookings.

Without question, Company B is widely recognized and celebrated in the industry trade press as innovative, creative, and resourceful. It strives to create a culture that supports this type of thinking among its employees throughout all levels of the organization.

IT/Marketing Initiatives Create Competitive Advantages at Company B

Company B recognized early on that, in comparison to other industry leaders, it was at a competitive disadvantage in the marketplace due to its size, limited geographic presence (i.e., distribution of hotels), and its brand recognition. To compensate for these limitations, Company B recognized that to compete successfully, it must play by a different set of rules.

The company created three joint marketing/IT programs to enhance its reservations systems and create unique advantages in the marketplace. All three initiatives were designed to attract and build lasting relationships with the travel agent community. At the time, the travel agent market represented an important opportunity since travel agents influenced a significant volume of hotel bookings, particularly in the leisure segment, and because they controlled and managed a great deal of the corporate travel. To capitalize on this opportunity, Company B needed to find some way to win travel agent loyalty. The three initiatives described below did just that.

The first initiative is a sweepstakes program, an online, interactive incentive program that randomly awards prizes to travel agents who electronically book reservations with Company B. An agent's chances of winning improve with the volume of reservations he/she books. By all accounts, this promotion was—and still is—incredibly successful. Electronic booking volumes increased as more agents learned about the promotion. As an additional benefit, agents channeled their booking traffic to less-costly electronic channels rather than the company's toll-free reservation centers, allowing the company to reduce its overhead. Word-of-mouth, or “squeal appeal” as the company refers to it, quickly spread around a travel agent's office and prompted more people to book reservations at Company B in hopes that they, too, would win one of the many prizes being offered.

For its second loyalty-building initiative, Company B developed and patented an incentive-based frequent booking program for travel agents. The program was designed to close the look-to-book gap. Under the program, agents accrue points for every confirmed reservation booked at one of the company's properties. Participating agents earn ten points for every \$1 (US) booked electronically in the company's CRS. After every agent booking, a message appears on the agent's screen indicating the number of points earned for the booking and the total account balance. Like a frequent travel program, points can be redeemed for over 140 rewards consisting of merchandise and travel. The company reports that this is a highly successful promotional program. Since its inception, the program is credited with generating over \$800 million (US) in hotel bookings and issuing more than \$14 million (US) in awards to over 26,000 travel agents. The program enjoys a loyal following of more than 125,000 travel agents from 96 countries, including 13,000 who have achieved an elite status in the program for earning over 80,000 points in a one-year period.

Third, the company is credited with creating one of the industry's first seamless interfaces for room inventory between the airline GDSs and the company's CRS to enhance the travel agent booking process by providing agents with better access to rates and availability information. Today, many hotel companies rely on Type B (batch and transfer) or Type A (high-speed batch and transfer) interfaces and are trying to implement single-image inventory management solutions. Company B, however, is in the forefront of interface development and room inventory management. This seamless connectivity allows travel agents to bypass the data structures of the airline GDS systems and directly access information stored in Company B's CRS. This provides travel agents with richer text descriptions of the company's products as well as access to the same rates and availability information available to any of the company's own reservation agents at its call centers. The airline GDSs serve as communications vehicles while Company B's CRS serves as the primary database engine.

Unfortunately, not all of Company B's hotels take advantage of this technology for supporting last-room availability. Some prefer maintaining exclusive control of their inventory and using an allotment method for the CRS. Thus, the full benefits of a seamless, single-image inventory with last-room availability have not yet been realized chain-wide.

IT Culture in Company B

Overall, Company B's IT department enjoys a positive reputation in the organization, although it may have what appears to be a "love-hate relationship" at times with its counterparts in the organization, according to one IT executive. Despite this observation, the company's executives repeatedly expressed confidence in the IT staff, their knowledge, and their abilities to deliver. The CIO was praised for his ability to effectively articulate seemingly complex technologies in simple terms that can be understood by all and for his ability to market the benefits of IT within the organization. Concerning the IT staff, these sentiments were echoed by one of the company's controllers:

"IT does a tremendous amount of work with few human resources. Its people are credible and committed to their work...They know the business and are not just IT geeks."

Company B's IT department functions like an internal consulting organization that provides IT services and solutions to its customers. The department defines hotel guests as its ultimate customer and, accordingly, places most of its emphasis in this area. Other customers include staff at the corporate office, hotel owners, and management companies that franchise its properties. The IT department is the largest (in terms of budget) of five shared services units within the company, referred to as centers of excellence. In addition to IT, these include human resources, mergers and acquisitions, public relations, and franchising. Each of these areas is a division that oversees an entire function shared throughout the entire organization. These centers were created to leverage resources, achieve economies of scale, and build efficiencies. Within each division are subgroups of resources dedicated to each of the company's lodging brands. An internal allocation process is used to assign the operating costs for each center of excellence to those who benefit from their services. Each brand is assessed a portion of the center's overhead based on its usage of a division's services. Marketing is not considered to be a shared service, although the various marketing departments try to coordinate their efforts when possible. Instead, marketing is decentralized within each of the company's three lodging brands. This separation is deemed important to maintain each brand's unique identity.

At Company B, IT is involved in the strategic planning process at the division level but not at the brand level. The CIO sits on the executive committee for the division level but not on those for each of the company's lodging brands. Since brand integrity is a primary focus of marketing and the brand presidents, brand executives believe they must determine their needs from a business perspective before involving IT. Their concern is that IT, in trying to leverage solutions across the company's lodging products to achieve efficiencies and

economies of scale, will blur brand images and identities, thus creating confusion among their customers. Some executives noted there is a constant struggle between what is good for a brand versus what is best for the company. To mitigate this concern, the IT department looks to implementing flexible solutions that can be easily scaled, configured, and adapted to satisfy the range of requirements for each brand.

One brand executive recognizes the need for and importance of IT in his organization. However, he admits he takes a more pragmatic view towards the application of IT. He looks at his business needs and objectives and then turns to IT to see where it can help. He avoids the intrigue of new technology because he feels it is too easy to become distracted from the company's core strategic objectives. In this executive's view, IT is used more to support the business rather than create new business opportunities. The vice president of marketing concurs with this view. In her words:

“Technology can't drive the business. Instead, business must drive IT. Technology must be used to solve business problems, not the other way around. There must be a well-defined business need before we spend too much money on IT.”

These attitudes and the relationships with each brand prove frustrating to the CIO because IT is often brought into the process too late to affect change or redesign business processes to take advantage of the capabilities IT can offer. Therefore, IT in Company B cannot always impact the business in the way the CIO would like. In efforts to ease this situation, the CIO tries, whenever possible, to stay one or more steps ahead of the business.

Everyone interviewed at Company B agreed that the IT department is the primary catalyst for change in the company and that the company's CIO is the primary change agent. Although change is considered favorably at Company B, it can be faced with resistance at times, especially in projects involving IT. The resistance is often greater with IT projects because the CIO and the IT department often initiate projects that bring about change. At the time of adoption, the IT department frequently finds itself faced with the “not invented here” syndrome or the attitude that the project is just “an IT thing.” Fortunately, according to the CIO, these hurdles are declining over time as the IT organization builds trust and as others in the organization become more knowledgeable about and embracing of technology.

Concerning the company's core technologies (e.g., its reservation system, property management system, data warehouse, and corporate data network), the IT department is well respected. The IT staff supporting these technologies is deemed qualified and talented. They are respected for their knowledge of the business environment, and their peers throughout the organization value their contributions.

While the IT department enjoys support and commitment from the company's executive committee, a mix of attitudes and opinions concerning the IT were shared within the ranks of the company. Much of the frustration concerning the IT department's offerings seems to be with property-based solutions—where there are gaps in what was promised versus what was

delivered in terms of functionality and integration. The other major concern voiced relates to the cost of IT in the organization.

The general consensus among those interviewed for this study is that the IT department is on the leading edge of hospitality information technology, using proven technologies and applications. Its solutions work well and facilitate data access, use, and sharing throughout the organization. However, some consider IT to be expensive, and although the CIO tightly manages his budget, his budget is considered too large in comparison to other departments. In some cases, it appeared that there was a sense of jealousy because of the size of the IT departmental budget, but one executive presented a different perception that is probably the truer concern: “IT is like a huge black hole.”

To support this claim, many executives noted that although the IT department has a successful track record for completing projects on time, it is less successful in managing project budgets. Furthermore, several executives commented that while they were satisfied with the service levels and solutions delivered by the IT department, they were troubled by the costs associated with IT. Others suggested that they could survive with less technology without losing any functionality or competitiveness. These individuals remarked that the IT department is not always as cost conscious as it should be and that it sometimes implements “technology for technology sake” rather than for sound business reasons.

IT Costs are an important concern because they are rising quickly at the expense of other projects while fee streams are shrinking. Most of the costs associated with IT are to be borne by the franchisees. Yet, franchisees are not always willing to invest money in IT, and when they are, they often prefer to make their own choices under the presumption that they can obtain the same benefits elsewhere but for less money. Invariably, this is seldom the case because the systems available on the open market lack the customization and integration that Company B can provide. Naturally, the heads of each brand try to prohibit franchisees from straying from the corporate directives and standards so that consistency and economies of scale can be achieved. Nonetheless, this continues to be a significant challenge, making it a difficult struggle to sell IT to franchisees and win their support and adoption.

Suggestions for improvement with the IT department were in the areas of process improvement, project management, and the speed in which they bring solutions to market (time to market). The marketing executive suggested the need for liaisons that could serve as boundary spanners between the business units and the technical staff, translate business needs into technical solutions and vice versa, and assist in the development of detailed functional and technical specifications for each project. At the present time, the CIO is one of the few people within the company who can play this role.

IT Support Comes from the Top at Company B

IT is held in high regard in Company B. The executive leadership firmly believes in IT as a marketing tool and pushes IT throughout the organization because IT and marketing

represent the largest common denominators of each of the parent organization's lines of business. The consensus in Company B is that IT is an essential element to stay on top and compete more effectively in the marketplace.

The CEO of Company B is young and energetic. According to everyone interviewed, the CEO is an avid and visible supporter and promoter of IT and innovation within the company. He affirms that Company B's future success will depend on using advanced technology to obtain extensive customer knowledge to deliver customized service and create highly personalized experiences. Thus, the corporate culture promotes IT as a good investment for the long-term health of the company, and clearly the CIO is the driving engine for IT in the company, based on the comments from all those interviewed.

The president of Company B's largest lodging brand said that he, too, pushes the use of technology among his organization and his direct reports as an important tool for information, communications, and marketing. In his eyes, there must be close collaboration between IT, marketing, and operations to create new strategic opportunities, introduce creative thinking in the organization, and reduce operating costs. As he sees it, IT drives this new thinking.

The company's controller best captured the company's openness to technology when he said:

“Since we are in the age of technology, we spend money on IT. Our culture dictates that we spend money on IT, try new things, make information available, and use IT for competitive advantage.”

Company B's Views Towards Outsourcing

When executives were asked if they would consider seeking external resources to help with their IT needs, the answer was a resounding no. They are quite satisfied with the level of service they presently receive and have little or no desire to turn to outside organizations for their IT needs.

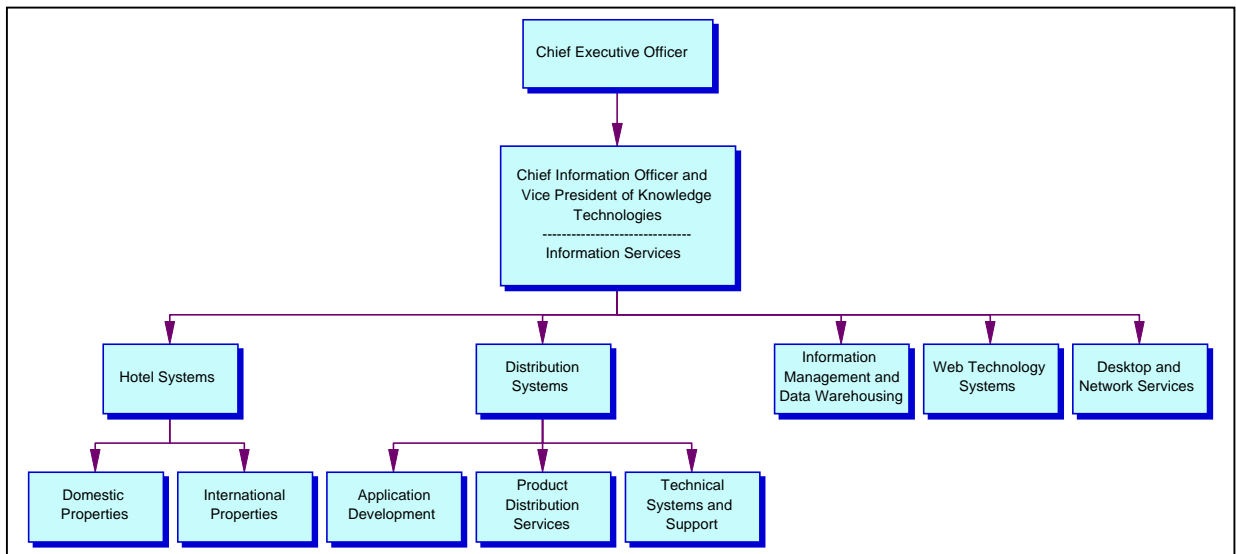
Internal control of IT operations and development is preferred over outsourcing, but outsourcing is considered a viable business strategy at times. For example, Company B outsources the processing of travel agency commissions and Internet web site development. When it comes to IT development, Company B's philosophy is to buy and integrate off-the-shelf solutions whenever possible versus internal development. The company will develop applications internally when there are no suitable products available in the open market or where strategic advantage is essential. The company's new reservation system, which was developed internally with the help of consultants, is a good example of the company's desire to maintain control over a strategic application. At times, Company B will use a hybrid approach where it will buy a product and then modify it internally to meet the organization's custom needs; for example, the company's property management system.

The company will use contractors and consultants as needed, and when used, Company B will stress knowledge transfer as part of the contractual agreement for the engagement.

The Role of CIO at Company B

The top IT position in Company B is that of CIO, whose formal title reads vice president of knowledge technologies. Despite a non-traditional title, the CIO performs typical CIO duties and oversees a traditional IT services organization (see Figure 4-3), including hotel systems, distribution systems, information management and data warehousing, web technology systems, and desktop and network services. This position reports directly to the chief executive officer of the company and serves on numerous high-ranking and influential committees in the organization, including the executive committee, the strategic planning committee, and the appropriations committee. The CIO at Company B oversees a corporate staff of 70 and an IT budget of \$7 million (US), approximately 3% of company revenues.

Figure 4-3: CIO Responsibilities at Company B



Until recently, CIO oversaw the reservation call centers' operations. A change in reporting relationship was made to free up the CIO so he could focus on other responsibilities and allot more attention to the specific needs of the company's lodging brands. Now, the reservation call centers come under the president of lodging, who oversees each of the company's three brands. Overall, this is perceived to be a positive shift because it helps to better align

business needs and lodging strategy with the reservations, sales, and marketing of each brand to achieve a cohesive brand focus.

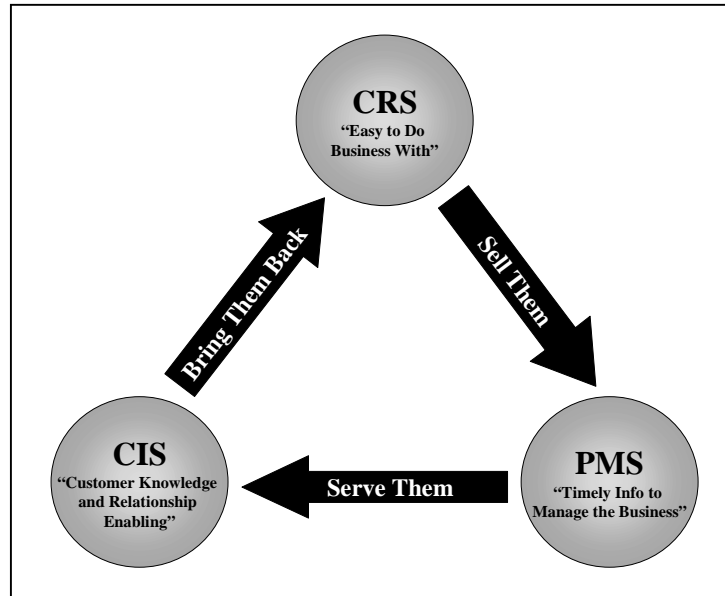
The CIO is a highly celebrated and accomplished individual in the fields of hospitality technology and electronic distribution. During his tenure at Company B, he has been involved in numerous large-scale IT development projects, which include two successful central reservation systems and the technology supporting many of the company's highly acclaimed marketing programs. Company B's CIO has long been considered an industry pioneer, a leading authority on technology, and a champion of electronic distribution. His accomplishments in global distribution and reservation systems technology and the public recognition he has received over the years serve as testimony to his credibility and pursuit for technological excellence. He has won numerous awards for his achievements, appeared on the covers of several trade publications, and featured in numerous articles.

The company's CIO is also highly respected within the organization. In fact, when individuals were asked to identify the company's core competencies, several responded, "the company CIO." He clearly follows the lead set for him by the company's top executives in terms of using technology to gain competitive advantage. He is not viewed as a wasteful person. In fact, he spends his budget as cautiously as he would spend his own money. Despite his credibility and track record for making things happen, some people in the organization report that they sometimes feel disconnected from the CIO. In their eyes, his thinking is several years ahead of theirs with respect to IT applications in their business. Fortunately, they recognize this as an important and necessary trait, especially for someone serving in the capacity of CIO. In response to this, the CIO stated that his roles are to be principally a change agent and an educator. He plants ideas, the seeds of change, throughout the organization and then helps them grow.

Company B's CIO is not a CIO by training, although judging by his accomplishments and awards, no one would ever know it. As a 27-year veteran of the company, the CIO started in hotel operations and worked his way through the organization to his current position of CIO, which he has held for 6 years. Because he came up through the ranks, many of the long-term employees view the CIO first as a businessman and second as a CIO. The newer employees view his role principally as that of CIO. Of the three CIOs interviewed, Company B's CIO is the youngest and has held his current position the longest.

The CIO defines the overarching philosophy at Company B as "Marketing with IT." When it comes to using IT, he takes a customer-centric view of the business, where technology should serve the customer to enhance the quality and personalization of the guest stay and build customer loyalty. At Company B, three core systems, depicted in Figure 4-4 and connected by a very capable corporate data network, serve to fulfill this mission: the central reservation system (CRS) for worldwide product distribution, the property management system (PMS) for local service delivery, and the customer information system (CIS) for knowledge and customer relationship building. The company's slogan is to sell the company's products to customers with CRS, serve them with PMS, and bring them back again with CIS.

Figure 4-4: Core Systems at Company B



IT Priorities at Company B

IT priorities are determined based on a project’s ability to drive profit to the company and are often driven by the company’s more advanced users of information. Typically, sales and marketing requests receive the highest priority because of their ability to drive top-line revenue. Projects that benefit guests and franchisees are considered next.

The typical IT perspective is one of incremental improvement, with most of an organization’s focus drawn to solving customer needs, creating efficiencies, and reducing costs. Company B, however, takes a much more radical approach. Its strategy is to break the rules to create a new competitive playing field.

The rising costs of technology, the growth of electronic commerce, and the parent company’s push to share relationship marketing opportunities between each of its lines of business are forcing Company B to continue to explore new ways of using information technology to compete differently and more effectively in the marketplace. The company’s CEO defined several key strategic initiatives to achieve growth. IT is the underpinning for each because it serves as an important enabler in achieving this growth and in helping the organization to provide best-in-class service. According to the CEO, “Our investment in technology contributes to creating dynamic and interactive relationships with all of our partners, including franchisees, associates, and suppliers.”

Property connectivity is an immediate challenge for Company B. To overcome this challenge, Company B is in midst of rolling out a suite of property-based applications that will provide a standardized technology architecture among all of its properties. Company B's brands are also moving towards contractually-defined IT standards and minimums for each property to help raise the level of IT in the company, enhance consistency in service levels, and facilitate data sharing. Together, these will play key roles in building the company's IT infrastructure.

Lifetime Value of the Customer

One of the key marketing initiatives at Company B is to understand its customers better. Company B believes that customers will soon demand greater recognition for their value, if they have not already begun to do so. As a proactive step to meet this demand, create differentiation, and win greater market share, a new Unix-based, Oracle customer information system will become the primary repository or warehouse for all guest data, with data feeds coming from the company's CRS, PMS, and web site. Through data mining, Company B will be able to identify trends that will be used to predict customer behavior, create new marketing promotions, and develop new products and services. The system will also create a common guest profile that can be shared across systems and used at every point of customer interaction. One desired objective of this initiative is to determine the lifetime value of each customer, with the hope that the company can influence and improve this lifetime value. While measurement is important, the real benefits to the company will be in growing each customer's lifetime value to produce incremental revenue.

To achieve this objective, Company B recently created the full-time position of director of relationship marketing that will spearhead this effort. The person filling this role is tasked with creating a longitudinal study using a time-series database to look at guest booking and spending habits. Admittedly, this individual knows of the daunting challenges with which he is faced because of the many confounding variables.

The company is in the early stages of identifying the coefficients to what it believes to be the key components of the lifetime value concept and account for all costs of acquiring and processing each guest as well as all revenue earned from each.. The initial model will be based on five dimensions:

- 1) Stay Stream – The model's basic building blocks come from capturing a guest's stays over time. The company will record frequency of visits, recentness of last stay, seasonality, purchasing patterns, and monetary spending measures.
- 2) Stay Preferences – These include what a guest wants and needs during each visit in terms of expectations, room type, amenities, etc.

- 3) Buying Preferences – These consider the marketing elements of product, price, place, promotion, and person to collect the type of promotions to which a consumer responds, the channels used to book reservations, the person making the actual booking, the kinds of products/services (e.g., economy, full service, or luxury) sought, etc.
- 4) Affiliations – Customer affiliations include not only the individual’s employer but also special programs (e.g., frequent travel programs) and organizations (e.g., AAA, AARP) to which the individual belongs organizations.
- 5) Customer Characteristics – These include demographics, psychographics, and lifestyle traits.

Additionally, Company B is working with American Express to develop an external valuation model of the customer. This will help Company B assess the overall share of the market and its potential. The company’s goal is to identify people who stay at competing hotels in locations where it has a presence and influence them to stay at one of Company B’s hotels in the future.

IT Objectives

Company B does not believe in implementing technology for technology’s sake. IT must somehow enable the business. Furthermore, Company B’s philosophy is that IT alone cannot provide competitive advantage, and seldom is the advantage sustainable. In cases such as the booking incentives programs where IT has provided Company B with a distinctive advantage, the advantage came from the coupling of IT with people, marketing, and the business. How technology is used and what it enables, rather than the technology itself, provides the advantage. According to one IT executive:

“It isn’t IT that must be better than the competition. It is the business that must be better. The question is, which IT will support the business to make it better than the competition?”

The IT department’s mission statement can be succinctly stated as this:

“Our objective is to support and enable each of our Brands to be the most successful Brands on the planet, delivering satisfied customers and exceptional financial results!”

All IT initiatives are designed to grow the business; create satisfied, loyal guests; and improve business performance. The need for more and better information and the conversion of this information to knowledge is one of the primary drivers of IT in Company B. This is especially evident in the company’s desire to understand and learn more about its customers

and build better relationships with them. In essence, the underlying theme of the IT department, according to Company B's CIO, is to "enable a customer-centric service strategy via a knowledge-centric IT architecture." The department's tag line reads: "We make IT easy. We make IT Great. We make IT fun. We make IT right. We make IT happen. We make IT better."

- We implies collaborative teamwork, not just among IT people but among everyone in the entire organization—working and growing together.
- Make implies a proactive effort as opposed to passive participation. Make also communicates creativity and innovation, solving real business problems.
- IT refers to both information technology and the bigger "IT," a growing, global family of successful hospitality businesses.
- Happen communicates results and implies personal responsibility and individual accountability to get the job done, better than anyone else.

Collectively, the triumvirate of systems depicted in Figure 4-4 (back on page 283) supports and enables each of the company's brands to achieve five strategic business imperatives:

- 1) Grow brand value
- 2) Grow REVPAR
- 3) Grow customer satisfaction, build loyalty, and expand market share
- 4) Grow the company
- 5) Reduce operating costs

With respect to IT, the priorities at Company B can be summarized by the following seven objectives:

- 1) To use technology to leverage the business and achieve the company's strategic goals.
- 2) To create a seamless flow of information throughout all levels of the organization and all customer "touch points."
- 3) To take care of the customer.
- 4) To optimize the company's use of resources while simultaneously managing the present environment and positioning the company for the future.
- 5) To build value of the company's brands by improving brand identity and image.
- 6) To create flexibility and business agility through architecture.
- 7) To develop user-friendly applications and solutions.

If successful in achieving its objectives, the company is confident the brands of choice for owners, investors, franchisees, and guests.

Company B's IT Critical Success Factors

The CIO defines his department's critical success factors in terms of delivering projects on time, within budget, and that work as advertised. Measuring the success of IT in the organization can be difficult. The critical success factors for web development include ease of use, speed, benefits or value provided to the customer, and the ability to leverage technology to create a better guest experience. One brand executive says he measures the success of IT at the property level in terms of increased bookings, REVPAR, and rate lift. For intra-company and corporate-level initiatives, he was at a loss for decisive measures. He noted the difficulty and then said that it is impossible to run a distributed company today without IT. Thus, the critical success factors would be defined by need.

Company B's Reservations Technology

Providing its brands and hotels with the industry's most advanced reservation technology is a top priority at Company B, according to its CIO. In 1995, Company B launched a \$20 million (US) project to develop a new central reservation system because it was outgrowing the system in use at the time. The previous system was nearing capacity and could not keep up with Company B's projected growth. Therefore, a replacement system was needed. The new CRS project was developed with the following four objectives in mind:

- 1) To provide superior access to accurate, comprehensive sales information.
- 2) To enable rapid integration of emerging distribution channels.
- 3) To attain superior ability to know customers and analyze performance.
- 4) To invest in a superior system architecture.

The company introduced the new system in phases; its migration strategy was to replace modules as necessary until the entire system was converted. After four years of development, the old CRS was completely replaced. The new technology platform is based on a three-tier client-server architecture, relational database, and global data network using reusable software modules to streamline development. This architecture was chosen, according to Company B's CIO, "to remain technically agile." The system was developed using the Forté applications development toolkit and an Oracle 7 relational database management system. The system operates on a Unix-based Sequent hardware platform with a graphical user interface.

The new system is described as a suite of applications. The core components include central reservations, an integrated data warehouse, guest profiles, and a database manager application to synchronize rates and availability across multiple distribution channels. The key benefits include more personalized and faster service, increased guest recognition, better inventory management, and last-room availability—all of which lead to higher revenues. Today, Company B's reservation system processes upwards of 40,000 transactions per day and is credited with contributing as much as 50% of all hotel room revenue.

With the new system, hotels have a single place to enter rates and adjust availability, while maintaining the master room inventory locally in the property management system. The database manager application provides hotels with complete control over their room inventories, rates, packages, and selling restrictions. The hotels are free to establish selling restrictions and control the inventory allotments as they see fit, and once entered, they are then automatically reflected in the CRS. Last-room availability, where inventory balances are automatically updated as rooms are sold, is available to all hotels and is the preferred approach at the corporate level, but if for some reason a hotel prefers, it can choose to override this and use a declining room allotment. The company's overall policy is to keep the CRS open as long as a hotel has availability. Once entered, this information is then automatically propagated to both the CRS and PMS and maintained by a bridge interface. Through better PMS/CRS synchronization, Company B has reduced "usable denied revenues" and improved REVPAR. An automated rate update utility is planned for as a future enhancement that will then pass this information on to each of the major airline GDSs, eliminating manual loading over more than 100,000 different room rates.

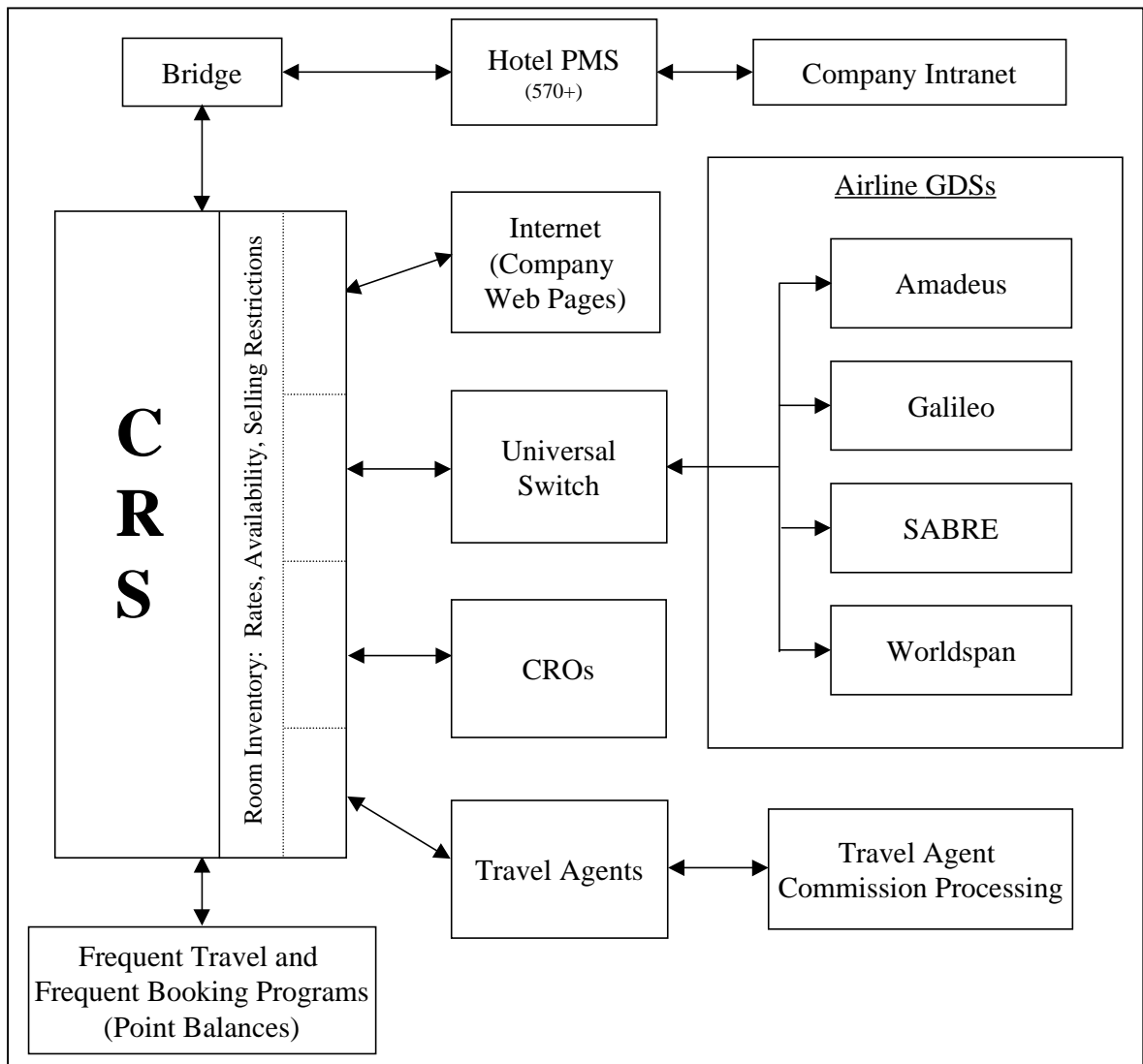
Company B's new reservation system has been recognized through several awards and kudos that rank the system as one of the most productive in the industry and number one in the industry in terms of occupancy contribution and technology leadership. The company reported that it books 25 reservations per available room (ResPAR), outbooking its nearest competitor at 17. The company also reported that its reservation system transaction costs, excluding travel agent commissions, average 5% of revenue delivered, what it believes to be the lowest in the industry.

According to the company's CIO, this new CRS is designed for more than just taking reservations. It will play a vital role in providing the core infrastructure needed to integrate all of the company's systems and position the company for rapid growth. It will also help the company in better managing its business and building fuller relationships with its customers. In introducing the new system, the company's CEO described the system as "a technology showcase which distinguishes us from the competition" and as "the cornerstone for achieving the company's customer-focused strategic vision." Echoing these remarks, the CIO stated that the new reservation system is "the platform upon which the company is building its customer-focused future" and will become "the strongest reservation and global product distribution system in the industry."

A schematic depicting Company B's reservation system can be found in Figure 4-5. Primary distribution channels include the company's worldwide central reservations offices (CROs), its hotel properties through their property management systems (PMS), airline GDSs

connected via a universal switch, the company's Internet web site, and travel agents. To manage the multitude of distribution channels, Company B has established shadow databases that pass information concerning rates, availability, and selling restrictions to each distribution channel. A separate subset of data is used for each category of distribution channel. As the schematic illustrates, Company B maintains some direct links with large travel agents. This is because travel agent reservations account for a sizeable volume of the company's business and because of the strategic alliances the company has created with many of the larger travel agencies. The goal, however, is to streamline the synchronization process for each channel through a series of automated routines.

Figure 4-5: Schematic of Company B's Reservation System



The reservation transaction costs (excluding travel agent commissions), booking volumes, and distribution mix of each of these channels can be found in Table 4-3. As the table reveals, airline GDSs (i.e., reservations coming from travel agents) represent a disproportionate share of the booking volumes. Moreover, in comparison to its competitive set in the marketplace, Company B reported that, while it receives less than its fair share the frequent travel market (zero to 15 nights per year, most probably business travel), it outperforms the market in the non-frequent travel category, which is dominated by leisure travel. One brand president and a vice president of marketing attributed these anomalies to three factors: 1) the company's efficient and effective reservation system technology, 2) the company's travel agent incentive programs, and 3) the company's strong relationships in the travel agency community.

Table 4-3: Transaction Costs and Booking Mix Per Distribution Channel at Company B

Channel	Transaction Costs Per Reservation	Includes	Booking Mix	Primary Users
CROs (Toll-Free Reservation Centers) and Direct to Properties	\$12 (US)	<ul style="list-style-type: none"> • Labor and Benefits • Talk Time • Computer Processing • Overhead and Rent 	34%	General Public
Airline GDS	\$6 (US)	<ul style="list-style-type: none"> • GDS Transaction Fee • Switch Cost • Computer Processing 	65%	Travel Agents
Company Web Site	Presently \$25-\$50 (US) but expected to decrease to \$2-\$3 (US) when critical mass is achieved	<ul style="list-style-type: none"> • IT Infrastructure and Hardware • Web Development and Programming • Computer Processing 	1%	Pioneers

Company B's goal is to direct booking traffic to the channel of lowest cost; eventually, this will be the company's Internet web site. After the company recoups its development and infrastructural costs, this will be the cheapest channel on a transaction basis because there are no airline GDS fees, no travel agent commissions, and no universal switch fees to pay. This site also offers an attractive feature that few other channels can provide: the ability to capture detailed customer information for use in database marketing. It is using incentives such as bonus frequent travel points, special discount fares (hot deals), and a sweepstakes program to

influence customer booking behavior and patterns. The company's marketing department predicts that in the next five years, the Internet will become the company's primary distribution channel.

Reservation System Initiatives and Priorities at Company B

The immediate priority for reservations is to improve the efficiency and speed of transaction processing to reduce transaction costs and overhead, especially as airline GDSs threaten to increase fees. The company is also looking to shift the reservation focus at each property and its five worldwide call centers away from order taking in favor of a sales focus, using the reservations booking process as a time to build customer relationships. The company wants to reduce its emphasis on transaction processing and place greater emphasis on customer relationship building and management. It believes that this shift will allow the company to charge premium rates for its products and services. As part of this effort, the company has introduced a qualified rate quoting program whereby agents seek more information about a guest's needs and wants before quoting a rate. This new approach enables the reservation agent to use the best sales strategy by offering rates and accommodations that will better serve the guest's needs. In addition, the company learns valuable information about each guest, which can be stored in a guest profile and accessed during subsequent service encounters with that guest.

Moving forward, the company's CRS will likely become a greater source of customer information and will be "webified," with multimedia and pictures to help agents familiarize themselves with and sell the company's products. The CIO recommended adding pictures to the CRS database several years ago, but the project was turned down. The timing was not right then, he noted, but now, the user community is seeking this kind of functionality. Other planned enhancements include yield management and hurdle pricing controls, the addition of cross-selling capabilities and hotel-to-hotel reservations, expanded information and hotel fact pages to provide agents with more information at their fingertips, a new telephone sales system and telephony integration to reduce talk times, speech recognition, an upgraded GDS-web interface, the use of geo-coding software to locate hotels in reference to attractions or areas of guest interest, and a GDS rate shopper service that will enable Company B's properties to shop and compare room rates and availability for their local competitors.

Reservation System Value and Budget at Company B

Reservation technology and services account for the bulk of Company B's IT budget and a significant portion of the marketing budget as well. Upwards of \$20 million (US) were spent developing the new reservation system, and another \$1 billion (US) is proposed in enhancements over the next three to five years. When asked to assess the value of the company's reservation system, one marketing executive defined its value based on its contribution to the business in terms of booking volumes and revenue. Another approach is to value the system in terms of at what the company had invested. However, other company

executives suggested that these approaches were unfair because they undervalue the system. According to one financial executive, the value of the system is not in what was spent on the system but what the system contributes to the company and enables the company to do. One brand president suggested value is based on the technology the company brings to the table in the context of its brands. From his perspective, value is associated with both brand and technology; they are inseparable. Most agreed that it would be impossible to assess this value because there is presently no valuation model in the industry capable of this task and because of the intangible value associated with guest information. Therefore, most of the company executives interviewed concluded that the value of the company's technology, including the reservation system, is priceless.

Because the reservation system is a corporate asset, the invested value (i.e., the costs to develop the system and the hardware involved), amortized or depreciated over time as appropriate, appears on the company's balance sheet. However, its true value is not reflected on the balance sheet because accounting rules only allow the reporting of historical costs, not appreciation value.

Current Limitations to Company B's Reservation System

The three primary weaknesses of Company B's central reservation system are 1) its lack of a comprehensive revenue (yield) management system, 2) the system's inability to process hotel-to-hotel bookings, and 3) lack of a true, seamless, single-image inventory with last-room availability.

Company B lacks a revenue management system to manage pricing strategies and set selling restrictions. At a time when most of its primary competitors are in their second or third generation of revenue management systems, this is considered to be a major weakness. In the words of one marketing vice president, "We leave a lot of potential revenue on the table because we lack a yield management system." While the company's reservation and property management systems feature some yield management functionality, the capabilities are primitive at best compared to today's industry standards and competitors' capabilities and require extensive manual intervention. Consequently, the company believes it is losing revenue by not optimizing its rates and availability to the extent possible with a full-blown, automated yield management system featuring more sophisticated yield algorithms and revenue maximization strategies.

The company's second major deficiency is its inability to process hotel-to-hotel bookings via its CRS. Presently, reservations between hotels are handled via the telephone or by fax. In the future, the company is considering building a web-based application to process hotel-to-hotel reservations through the company web site.

The third major weakness of Company B's CRS is its lack of a true, single-image database for rates and availability capable of selling last-room availability in all distribution channels. This problem is complicated because part of it is due to technology limitations and part is due

to cultural issues in the organization. The current synchronization process for each channel involves extensive manual intervention. Moreover, properties are afforded full control over their room inventories. Most use an allotment method or an open and close statusing system to control the room inventory represented in the company's CRS. The IT department has improved the data synchronization considerably with its new CRS and the database manager functionality that allows inventory updates from a single place. It is planning to develop a "one-button" update process to streamline and automate the synchronization of rates, selling restrictions, and availability information. However, the cultural issues must be addressed if the organization is to realize the true benefits of a seamless, single-image inventory with the ability to display last-room availability at any point of distribution used by the company.

Company B's Web Site

Company B recognizes that the Internet is changing the rules of hotel distribution. Consequently, management at Company B sees the Internet as both an opportunity and as a threat. Despite limited resources (both people and funding), Company B is actively seeking ways to exploit the Internet's vast capabilities and potential. At the present time, Company B's web site functions as a low-cost, ancillary sales/booking channel. The company hopes that with more advertising and promotion of the web site, its activity will increase, catapulting the site into a major source of booking revenues. The company provides online booking capabilities and listings for each of its properties on the Internet. For an additional \$1,500 (US), Company B's corporate staff will develop customized home pages for each property with more advanced features, richer detail, and pictures.

Adding Business Value through the Web

The director of interactive marketing predicts a positive outlook for the Internet and Internet bookings over the next five years. She expects that her company's revenue from the web will double from last year's volume to the tune of \$6 million (US). Despite attractive revenue figures, the company has not yet realized a profit from its web site and will not until its web site reaches critical mass in terms of booking volume. Nevertheless, the web is adding value to the business and helping the company position itself for the future. Company B also observes higher booking volumes through its own web site than through the numerous one-stop shopping services available online. Company B attributes this to the value of its brand name and the loyal following of its customers who book online.

For an example of how the Internet is adding value to Company B, one need only look to its operations in India. Noticing increased bookings from India, Company B evaluated the option of opening a reservation call center to service its Indian guests. The costs, however, were prohibitive, and the idea was abandoned. As an alternative, the company added reservation agents and Internet access to one of its India-based properties. The solution required little investment capital and has proven quite successful. In the future, the company

may consider more web-based reservation centers and the use of the web to book reservations between hotels, a capability presently lacking in the company's CRS.

Differing Viewpoints on Web Strategy

For reasons that are discussed below, there has been some apparent tension between marketing and IT concerning web strategies. Consequently, the marketing department has taken the lead role in developing the company's web site, and it is treating this initiative much in the same manner it would for any advertising campaign it conducts. Expressing disagreement, the CIO openly criticized the company's web initiatives because he felt the marketing department jumped in without first researching customer needs, studying the booking process, or taking into account the technology issues and data structure. In his opinion, if the decision were based solely on a cost-benefit analysis, the web site initiative would never have been funded since the economics suggest a negative ROI.

Company B's CIO takes a very different perspective from the marketing department as to how the web will evolve. The CIO considers the web to be an invaluable tool when consumers know exactly where (i.e., to what destination) they want to go. Otherwise, he sees the web as a slow and painful process, especially for inexperienced web users. In his opinion, the web is a necessary evil; every company needs a web site because consumers expect one. Long-term, however, he predicts that building exclusive, brand-based booking sites will be an ineffective strategy because he believes consumers are seeking consolidated, one-stop shopping venues for all of their travel needs. They will only want to enter their travel preferences and profile information once, shop with convenience for everything in one place, and view all of their options at the same time.

According to Company B's CIO, the nature of a person's trip dictates the purchase decision. The first decision criterion is based on location. Within a given geographic market, who has availability for the desired dates of travel? The second consideration relates to brand, reputation, and quality (including the price-value relationship). Based on today's technology, the airline GDSs are best equipped to answer the first question because, out of all the distribution channels, they have the most complete access to the industry's room supply and the processing capacity to respond to consumer queries in a timely fashion. Tomorrow, however, Company B's CIO predicts that the web will have the upper hand in answering these consumer questions for routine bookings, while the telephone will remain a viable and preferred option for booking more complex travel arrangements.

The marketing department wants to drive people to the company's web sites. However, according to the CIO, this can only be effectively achieved if the company enjoys a solid reputation with high brand loyalty. Presently, the company's brand identity suffers from inconsistent quality, and as noted earlier, the company is small in size with limited geographic distribution compared to many of its competitors and is heavily franchised. Because Company B lacks the brand loyalty and property distribution of many of its major competitors, it is at an unfair disadvantage. By focusing solely on the company's web site,

the CIO believes that Company B only exacerbates its weaknesses because the potential pool of customers is limited to a select set of brand loyal customers. Because Company B's brand reputation is weak, it must look to other competitive methods. Intuitively, the CIO recognized that his company cannot successfully compete by the same set of rules every other lodging company is using to compete. Instead, his company must break the rules or create its own rules. Its survival is dependent on competing differently from everyone else. What the CIO proposes is to allocate resources so as to enable the company to play in a larger field, that of the one-stop providers. It is his belief that his company's products can get more exposure and win more bookings by being cast into a larger pool of hotels.

Following this logic, every time a potential customer searches for lodging accommodations in a geographic market where Company B has a property, the company will have a chance to compete for the customer's business. This puts the company in play more often than it would otherwise be if it relied solely on the traffic visiting its own web site. Admittedly, the CIO notes that confidence in the company's product and brand reputation is necessary to compete head-to-head with the likes of its major competitors—a confidence that presently seems to be lacking in the marketing department since the marketing staff is unwilling to take the necessary risks. Moreover, the CIO believes that its programs and incentives, namely its new frequent travel program and its look-to-book promotions, will help to win the traveler's business, especially since the industry is becoming more commodity-like as the value of brand erodes. Additionally, under this scenario, Company B can benefit from overflow and turndown traffic from other hotels, thus increasing its market share and providing an opportunity to win these customers' loyalty by letting them experience first-hand the services the company has to offer.

As one can see, the CIO's views are quite different from those of his marketing colleagues and have caused some dissension in the organization. To some, his views seem maverick-like or even contentious at times. Yet, to others, they are quite logical. Because of the differing viewpoints, the CIO initially took a hands-off approach toward the web because it was not something he could support. His strategy was to defer investment to conserve resources until a time when he could leapfrog the present model with a whole new approach. The marketing department, however, was looking for an immediate solution to gain a web presence. Consequently, the company's web sites are managed and maintained by the marketing department with help from Washington, DC-based web development firm. The IT department presently plays a lesser, but growing, role.

Company B's Web Budget

The company is presently on its fourth generation of its web site, and to date, Company B estimates it has spent in excess of \$300,000 (US) in web site development, a fraction of the seven-digit budgets some of its larger competitors have spent. According to the director of interactive marketing, Company B cannot afford to spend as much as its competitors and lacks the resources to create a large, interactive marketing department. In 1995, managing the company's web site represented only one component of the director's job. Today, it is

her full-time responsibility, and she is essentially alone in her efforts, save the outside firm that has been retained to program and develop the web site and a little guidance/assistance from the IT department.

Web Site Features and Functionality

Company B's web site is fully equipped to process reservations. To attract visitors to the web site, the company offers special rates and promotions. Many are geared to individuals whose travel plans are flexible and are designed to offload distressed inventory. All reservations booked on the company's web site go directly into the company's reservation system. To manage room inventory and availability and to synchronize the data with that of the CRS, the company has a team of resources located at its reservation centers whose sole responsibilities are to update room availability, rates, and selling restrictions in each distribution channel, including the company web site. Eventually, this synchronization process will be automated with a "one-button" update.

The look-to-book gap remains high on the company web site, but this does not concern officials at Company B because of the brand exposure the web generates and because of the role it plays in answering consumers' questions. The company reported that it has noticed a significant reduction in talk-time at the company's reservation call centers since launching its web. Company representatives said that they are pleased when people visit and shop the company's web site because they can collect invaluable guest information that they would not otherwise be able to ascertain and build new customer relationships. Of all its channels, the company's web site has the potential to capture the richest guest information. The company observed that people on the Internet tend to be more open to volunteering information than they are when using other channels because they believe they will receive greater value in return for the information they share. Unlike airline GDSs that are unable to pass along everything they collect about a guest, the company's web site has the ability to track each customer's visit, the time spent on the site, the content viewed, and more. Company B's web site also collects detailed guest information by allowing guests to create and store multiple profiles based on their travel needs (e.g., business versus leisure).

According to Company B, strong brand loyalty and incentives drive traffic to a web site. While the company is working on the former, it has a proven track record with the latter. To increase traffic and booking volume over the company's Internet site, Company B recently launched special vacation promotions and discounts. The company is credited with launching the first electronic mail service offering customized vacation packages to its web subscribers. With this program, consumers can create a profile containing their interests, favorite recreational activities, and list of places they would like to visit. They will then receive customized promotions via electronic mail that match their interests and criteria with links to book the trip. This new program illustrates one of examples of how Company B employs technology to focus on the increasing sophistication of its customers, learn more about what they are seeking, and then deliver a more customized offer in a convenient, streamlined process.

The company's director of interactive marketing reports that customer interest has been impressive thus far, with over 26,000 subscribers since the project's launch in June of 1998. Because of the customized nature of the service and the detailed profiles customers create, the company should be able to easily and successfully match customer preferences with market supply. Hence, it is anticipating a high conversion rate of messages distributed to bookings received, which results in high value for the company due to the incremental nature of the bookings and the low cost to distribute the promotion. The company cautions, however, that there will be a short window of opportunity for this type of electronic mail marketing before customers grow tired of receiving so many messages. Thus, the company is trying to cash in now while the opportunities exist.

The company's web site also includes tools for meeting planners to submit online requests for proposal and check space and availability. However, booking meetings via the Internet is another topic Company B has chosen to defer. Instead, special convention and meeting desks have been created at the company's reservation call centers to assist meeting planners in planning meetings, conventions, and other events. While several hotel companies are developing online booking capabilities for meetings and conventions, Company B considers the process to be too complex due to the number of variables involved (e.g., room setup, menus, audio visual equipment, etc.). Company B claims its customers are not ready for this type of functionality and will, therefore, work on enhancing its group meeting and convention booking services at its reservations call centers. Online bookings for meetings and conventions will be added later, when the timing seems more appropriate.

Future Web Enhancements and Developments

Company B has considered the development of business-to-business intranets, but few clients have expressed demand for this kind of connectivity. Since the interface development and maintenance are costly barriers, there must be a compelling business reason (e.g., volume of bookings or savings in travel agent commissions) to move in this direction. Because many of Company B's large corporate clients use corporate travel agents to manage their travel and entertainment expenditures, Company B sees no immediate need to develop intranet booking solutions but will continue to monitor the marketplace and develop private booking sites via intranets as needs arise.

Company B continues to explore new functionality and uses of the web. Future functionality includes smart selling capabilities that reach out to consumers, interact with them, and learn from their behaviors and interests. For customer convenience, Company B has created several interactive partnerships with leading airline and rental car providers to offer special on-line promotions in a convenient, one-stop shopping venue. It will soon add virtual property tours to help guests envision an experience prior to their arrival. Additional developments will also come in the way of increased personalization on the web site and possible language translation. While the company is exploring the use of collaborative filtering with leading technology providers of Internet-based marketing and relationship

building software like Redwood City, CA-based BroadVision and Eden Prairie, MN-based Net Perceptions, it is proceeding cautiously in this area until it finds a suitable application of this technology and to ensure that the technology is transferable to the company's business model. The company does not see its role as matching consumer tastes with products like Amazon.com does when it matches consumers with books and music titles that are likely to be of interest based on other people's tastes. The company's experience suggests that when people contact the company, they know where they want to stay and are not seeking recommendations. Therefore, it will continue its exploration of this technology but avoid implementation of it until a suitable fit has been determined.

The company will also consider participation in new and emerging Internet-based distribution channels as they become viable. For starters, Company B is testing priceline.com with a limited supply of inventory.

Company B's IT Decision-Making Process for Resource Allocations

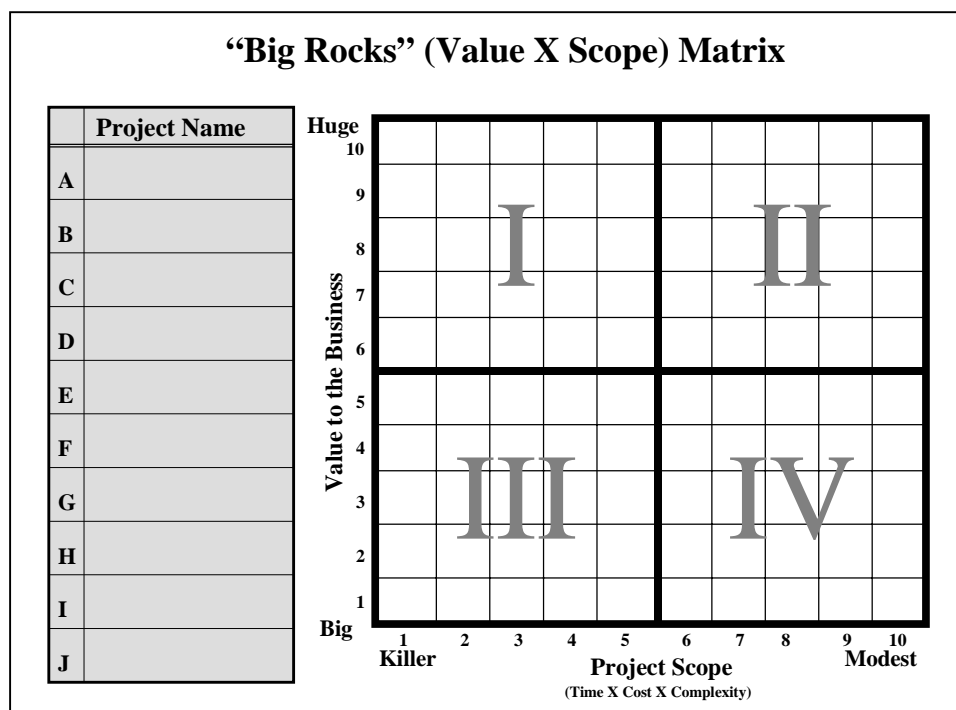
Biannual planning meetings are conducted to review business strategy and IT initiatives in the organization with the CEO, CIO, brand presidents, and the rest of the senior management team. At these biannual planning meetings, executives from all areas of the company discuss priorities, needs, and the future. During these meetings, a series of exercises is undertaken to identify the needs and priorities of each area as well as a brainstorming exercise to assess what the future of the industry might look like. At the completion of these exercises, a comprehensive list of capabilities is compiled that the organization would like to see developed. At this point, the next logical questions address how long it will take the IT organization to develop these capabilities, at what cost, and with what resources. The discussions also look for intersections with the organization's core competencies and overlapping needs and priorities between lodging brands and departments where synergy and economies of scale can be achieved.

Using nominal group techniques, the executives gathered in the room are asked to vote for their top priorities based on a project's impact to the organization. The IT staff then estimates the scope of each project and the level of effort required to complete it. Once this step is completed, the projects are plotted on what the company calls the "Big Rocks" Matrix, depicted in Figure 4-6, to determine a priority index. The projects are plotted based on expected business value on one axis and project scope (determined by multiplying project time times expected costs times complexity) on the other.

Projects falling in quadrant two of the matrix receive the highest priority index because they have the biggest impact to the organization and require the fewest resources based on the projected costs, time, and complexity. The organization will center its efforts on these projects, requesting resources and funding in the annual budget cycle which typically begins the project approval process. (Each department is required to prepare and submit a capital plan outlining its funding requirements and the planned uses of the proposed funding.) Of the remaining projects identified, the organization looks for complementary projects that

could be accomplished with only a small amount of additional effort and resources. These projects are kept on the list and will be selected to fill in around the “big rocks” as time and resources permit.

Figure 4-6: Project Prioritization at Company B



It is important to note that not all IT projects are identified in one of the company’s formal strategy planning sessions. Many IT projects generally start when someone from either a business area or the IT department recognizes a need or problem. According to company executives, these realizations can come from anywhere and require the right structure, listening posts, and relationships with vendors and staff to be able to pick up on them. In the words of one executive, “New project ideas are often the result of hallway conversations.”

Building the IT Business Case at Company B

The IT department almost always takes the lead and is generally credited with coming up with and conceptualizing most new ideas. As a metaphor, the CIO suggested it is “like raising other people’s children.” Once the IT staff have been consulted and had the opportunity to assess the project and estimate its scope and costs, they then craft a problem statement, define the project, and build the business case, or in Company B’s vernacular, the authorization for expenditure (AFE).

Table 4-4: Key Components of a Typical Business Case at Company B

1. Executive Summary
2. Capital Requested and Expected Returns
3. Customer Benefits
4. Current Conditions
5. Alternatives Considered
6. Financial Analysis
7. Critical Assumptions and Risk Factors
8. Project Assumptions
9. Project Plan (Timeline)
10. Appendices (as Needed)

All requests for capital funding must be filed using an AFE form. This form provides a summary of the project. It lists the project requestor, a brief description of the request, and a financial summary of the project, including funds requested and expected financial returns. The bottom of the form lists the signatures of those approving the project from the unit, group, and corporate levels. AFEs are accompanied by a more detailed report (see Table 4-4) that define the project, the benefits to the company, impact to the customer, alternatives considered, assumptions, competitor activities and trends in the marketplace, a detailed financial assessment, and a risk analysis. Together, these documents create the business case and serve as a mini business plan for each project. The filing includes tangible and intangible, measurable and immeasurable aspects of the project. Where possible, costs and benefits are quantified.

Company B follows a standard and rigorous process for all requests for capital expenditures, IT or otherwise. To paraphrase the words of one IT executive, all projects must detail the expected costs and estimated gains. No project is accepted on a leap of faith alone. IT projects are held to the same level of accountability and typically use the same 15% hurdle rates, although the company's cost of capital is 10%. Some latitude may be extended by relaxing the 15% hurdle rate, particularly if it is categorized as an infrastructural project. Exceptions to this rule are also granted when projects are deemed essential or mandated. For example, ROI was a non-issue in approving Y2K projects since they were necessary to remain in business. Rarely are risk premiums applied to IT projects to compensate for greater perceived risk.

The company's controller first approves all requests and then submits them for review and a decision by the company's executive committee. After AFEs have been submitted to the committee, the committee members and their team of analysts review the proposal and prepare their lists of questions. At their regularly scheduled meetings, they invite those who submitted proposals under consideration for the current session to defend their projects and answer questions.

IT projects typically receive three levels of approval. The first level is with the executive committee of the company. They evaluate each project based on its benefits and ability to add value to the business. A second, concurrent review is with the parent organization's IT Council, who evaluates an IT project based upon its technology and methodology. The final and ultimate approval comes from the executive committee of the parent organization, who considers each project for its merits as a sound business investment.

The CIO does not feel that he is competing for funding or resources with other, non-IT projects that are under consideration at the same time—at least it has not happened yet. He does concede, however, that this could become an issue in the future if resources become strained and the company chooses to implement tighter controls on its capital funding process. One controller suggested that the company would soon begin capital rationing due to shortages in capital that are expected to arise as part of the company's rapid expansion plan. In the past, any project that could clear the 15% hurdle rate was approved. However, this trend appears to be changing, meaning that projects will likely compete with each other for funding. If this happens, it is expected that the company will develop a strategic weighting scheme for projects submitted for capital funding.

IT Project Classifications at Company B

While Company B attempts to standardize the funding approval process, it recognizes that each IT project is unique in terms of its purpose, objectives, scope, and technology. Therefore, it cannot apply a true "cookie-cutter" approach to IT projects. Although the general process, procedures, and decision-making criteria are the same, each approval process is somewhat different and ad hoc. The specific approach taken will be determined based on a project's classification. Regardless of the classification, however, most IT projects submitted are capitalized versus expensed. The decision as to how to treat IT projects is based on the FASB (Financial Accounting Standards Board) guidelines, although the company admits that there are still some gray areas. Because the expenses are spread over a longer period of time, these projects tend to face greater scrutiny. Marketing projects, in comparison, are generally expensed immediately. This means their impact is felt immediately in a brand's profit and loss statement to which bonuses are tied.

At Company B, two primary classifications are used to categorize IT projects: strategic/business and infrastructural. In the case of the former, projects are defined as strategic when they enable one or more businesses or provide a solution to a set of problems or needs. Most projects fall into this category. For approval, these projects require a

complete ROI analysis illustrating their impact on the business. However, the ROI analysis is not the sole criterion for project approval or rejection. Other factors are also considered and sometimes outweigh the ROI analysis. For example, the primary reasons for approving a new Oracle-based accounting system, a project which cost \$41 million (US), were 1) its role in enhancing decision-making by providing better, more timely access to information, 2) the integration that could be achieved with the parent organization, and 3) the mandate received from the parent organization. The fact that the NPV analysis was positive due to cost reductions and labor savings was important and added to the project's case, but it was treated as a secondary consideration in this particular case.

The second classification of projects at Company B involves infrastructural improvements. These projects generally provide enabling capabilities of some kind to the organization but do not always demonstrate a direct payback. Because the payback is not easily quantifiable for these projects, less emphasis is placed on an ROI analysis. Oftentimes, the CIO will submit an AFE without an ROI analysis, stating that he is unwilling to commit to a payback period or financial return. He emphasized the importance of not forcing or contriving a payback or financial return when the numbers are not readily available.

Based on conversations with the CIO, it appears that the second category is a catchall for all projects for which ROI is not easily calculated. For example, the CIO discussed a research and development project proposal he submitted to test the use of what he called wearable PCs, smart cards that could track guests throughout a property. He submitted the project as infrastructural with the stated objectives to learn about the technology, its applicability to guest services, and guest reactions. The project was accepted without incident. Projects such as these are often funded separately from other projects. These funds come from the corporate level and are in limited supply. Heads of businesses compete for these grants by submitting proposals outlining the objectives and expected benefits.

Planning Horizon at Company B

The company's planning horizon covers a ten-year window. The company has an annual budget cycle and develops annual plans as well. IT projects are broken into modules capable of being completed in one year or less, but financial projections are typically calculated over a ten-year period.

Bonuses are based on overall performance and the bottom line. Failure to meet performance objectives and to stay within budget can result in foregone bonuses and, in some cases, terminations. Bonuses are awarded annually. An additional, long-term stock incentives program is offered where management receives company stock every three years. Once the manager is fully vested, he/she can convert this stock to cash. This compensation plan helps to keep management focused on its objectives, both short- and long-term, and makes it more difficult for someone to mortgage the future in favor of the present. Individual integrity and long-time seniority among the company's management ranks suggest that an emphasis on the short-term at the expense of the company's future is not really an issue.

CIO, IT Department Spearhead Process

In most cases involving IT, the CIO drives the AFE process and serves as the project sponsor and champion, though some business units will also identify business champions for the project. Generally, the business units are involved, but to the chagrin of some and the joy of others, they tend to play a secondary role in the process. One marketing executive voiced her frustration with the CIO's domineering role and suggested that either she or someone on her team should play a more active role in building and defending business cases for joint marketing-IT projects. As a rebuttal, one IT executive suggested that the reason IT plays such a visible role in the process is that for most projects, IT bridges strategies across brands and represents the majority of a project's costs. Moreover, the organization's goal is to create enterprise-wide solutions. Therefore, it seems only natural for IT to play a lead role in the process.

In his own defense, the CIO responded that if the AFE process were left up to each business unit, those involving IT would never get completed. In his opinion, the business units only seek funding for buying or refurbishing hotels, not for projects that will change the way they do business because of their inherent resistance to change.

According to the CIO, his track record for winning project approval is impeccable. He claims none of his projects have ever been rejected. His secret, he claims, is that he only submits projects that demonstrate strong financial payback or have seemingly obvious benefits to the business, what he terms "line-of-sight business benefits." Additionally, he only submits projects on which he would be willing to spend his personal money. Some of the greatest resistance is encountered when a project is initially proposed, especially for the more innovative ones. To appease this resistance, the CIO will include a summary of the obstacles, possible objections, and a description of how he and his team will overcome them. Also, prior to submission, he meets with his colleagues in the organization and members of the committee to test his ideas, seek their input, and to socialize his concepts. By the time his idea reaches the committee for a decision, all of the pre-work has been completed. The committee members are familiar with the project and its benefits, have been convinced of its merits, and understand the risks involved. Therefore, the project is an easy sell. He believes his logic is bulletproof, and his track record provides testimony of his success.

Company B's Decision Criteria

Decisions to invest in IT are based on the needs of the company, the projected returns on investment, and the proposed benefits. All projects must stand on their own merits and pass the company's 15% hurdle requirement, unless they are deemed infrastructural. As a rule of thumb, any project that can clear this hurdle rate is approved and funded unless the risk assessment reveals that the project is of too great of risk to the company to proceed. The ROI analysis for most projects typically uses what the controller calls a straightforward, textbook approach to NPV. The decision-making process evaluates two key financial criteria used to

assess revenue generation and cost reduction opportunities when approving or rejecting projects in addition to their strategic objectives and benefits. These include:

- Net Present Value (NPV)
- Payback – Five years or less

While financial measures are important, the evaluation criteria goes well beyond the ROI measures cited above. The evaluation process is conducted from three perspectives: an internal business perspective, an IT perspective, and an external perspective. The list of considerations from each of these three viewpoints is depicted in Figure 4-7. The evaluative criteria are both quantitative and qualitative, tangible and intangible. Company management looks at how quickly the company can develop a set of capabilities, the cost to develop these capabilities, the complexity of the development effort, the proposed benefits, and the strategic impact to the company. Basically, Company B tries to assemble a portfolio of projects that will provide the most impact with the least amount of effort.

Figure 4-7: Evaluative Criteria at Company B

Business Considerations (Internal)	Information Technology Considerations	Other Considerations (External)
<ul style="list-style-type: none"> • Competitive Advantage and Strategic Enablement • Ability to Leverage Company Assets and Resources • Business-Culture Alignment: Timing and the Business' Ability to Adopt Change • Financial Benefits/ROI • Alignment of Compensation to Ensure Success 	<ul style="list-style-type: none"> • Availability of Project Resources • Architectural Fit and Timing • Buy vs. Build Evaluation • Sponsor Involvement and Commitment to Project • Ability to Retain Team Through to Conclusion • Risk Factors and Obstacles • Total Life Cycle Cost 	<ul style="list-style-type: none"> • New or Emerging Technologies • Other Enabling Capabilities or Alternatives • Competitive Positioning and Ability to Create Sustainable Competitive Advantage • Expected Industry Response or Reaction • Partnership Leverage Opportunities for Funding or Project Resources • Value Creation - Shareholder Returns

The company's growth objective is to expand each brand by 15% per year. According to one individual, this growth rate is engrained in the company's culture. Therefore, one key consideration for all projects is how they will help the company in achieving its targeted growth objectives.

Because the company is privately held, little emphasis is placed on cash flow per share or the price per share at a project level. However, the company is concerned with value creation and satisfying its shareholders (private investors) by offering healthy returns on their investments. If a project can demonstrably satisfy the company's hurdle rates, it is assumed that the project will automatically add value to the firm and maximize shareholder wealth.

While Company B hopes that each IT project will enhance company value and, in turn, that of its owners, it typically addresses value at the aggregate level, not at the individual project level. For example, economic value-added (EVA) models are being adopted at a macro level to reflect the combined impact of a series of projects on the company's value over a period of time. This information is then used in calculating individual bonuses and executive compensation. It is important to note that these statements came directly from interviews with company executives and do not necessarily represent the broadest perspective with regards to strategy and finance, where each individual decision should be measured in terms of its direct impact on company value.

When evaluating new distribution channels, Company B considers many factors. It considers the channel's brand recognition and position in the marketplace, its potential to increase booking volumes, the likelihood that customers will use the channel, the channel's typical customer profile versus Company B's guest profile, the channel's competition, what other hotel companies are doing in the market. Usually, representatives from marketing and IT conduct the analysis. They prepare a joint recommendation that is then approved by the brand presidents. If approved, the project is submitted through the AFE process for funding and endorsement from the top.

The Role of an IT Steering Committee at Company B

Within Company B, there is no IT formal steering committee to advise the CIO and his management team on projects and priorities. This is usually accomplished during each of the biannual strategic planning meetings. The parent organization has an IT council consisting of the CIOs for each of its lines of business. This committee is often used to review projects from a technological and methodological point-of-view. Where possible, this group tries to achieve synergies and leverage IT initiatives across businesses, but each IT unit is fairly autonomous. Each CIO has a dotted line reporting relationship with the parent company's CIO. According to Company B's CIO, this relationship is somewhat strained because of an inherent conflict. Although he tries to align his efforts with those of the parent organization, his bonuses are based on his performance within Company B.

Post-Decision Analysis at Company B

The company routinely conducts follow-up studies and analyses (post-mortems) of AFEs to measure the actual results with the expected results. Projects are selected on a randomized basis one year after their completion. Project managers are held accountable through the company's bonus and rewards system.

According to one of the company's financial executives, individual bonuses and budgets drive management actions at Company B. If a project is considered exploratory or has an unusually high risk associated with it, the sponsoring manager can ask for "bonus relief" for a given year. This will provide the manager with some leeway while helping the company

position itself for the longer term. However, if a manager receives bonus relief, he/she will be required to make it up in a later year.

If the post-mortem audit reveals discrepancies between the initial projections and what is realized, the numbers must be revised accordingly. Discrepancies are discouraged and can jeopardize not only an individual's bonus but also a person's credibility when submitting future proposals for funding. The results of these audits are used to improve organizational learning and improve the process for the next funding cycle.

Defining Risk at Company B

Within Company B, there was consensus that the company is innovative, creative, and open to risk. According to the CIO, people within the organization are allowed to fail so long as they follow the company's process for winning project approval and securing project funding. One IT executive supported this statement when he said: "Not all projects are successful. If someone doesn't fail once in a while, that individual isn't trying hard enough."

The AFE process requires that a risk assessment be conducted for all projects, often with guidance from the company's internal audit staff. While risk is an important issue and consideration for each project, there are a number of definitions and perspectives of risk shared throughout the organization. These include business risk, technical risks, and project risks and are discussed in the following paragraphs.

The company's vice president of finance defines risk as anything that creates a situation that would cause a project's results to deviate from what was predicted. IT is deemed especially risky since there are so many variables that are unknown, subject to fluctuate, and lie outside the organization's control. Wherever possible, management tries to identify potential risks surrounding a project and enumerate their impact. The risk assessment usually includes a qualitative analysis, a quantitative assessment, what-if modeling, and scenario building for the worst, best, and middle ground cases. Typically, the financial staff will be involved in the risk assessment along with those sponsoring the project.

One of the company's controllers defines risk from two vantage points: from a business perspective and from a technology perspective. Each has various sub-components. Business risk includes an element of financial risk; that is, the amount of money that will be lost if a project fails. Brand risk looks at any negative implications that could tarnish a brand's image and cause a decrease in loyalty or market share. The controller also defines an element of business risk as failure to act. By sticking with the status quo, the company may fall behind or may miss opportunities that could propel itself or one of its brands ahead of the industry. Finally, key person dependencies can result in business risk. The most critical key-person dependency cited was with the company's CIO. Presently, there is no succession plan or second in command.

From a technology perspective, the controller looks at risk in terms of investing in the *right* technology for long-term use. To mitigate this risk, he looks to fund technologies and projects that demonstrate modularity and flexibility to change as business needs change. Another form of technical risk pertains to the company's knowledge in and proficiency with a given technology. Finally, the controller suggests there is the risk of overkill due to the use of technology for technology's sake. He suggested that there are times when the IT solutions go overboard. In his estimation, they are too much for the field to comprehend. Their sophistication exceeds an individual's capacity to absorb and understand, causing frustration and turnover.

The CIO defines risk as obstacles. To reduce project risk and isolate individual benefits of key modules, large, multimillion-dollar projects are broken into smaller, more manageable units, called "chunks" in Company B's vernacular. Each chunk is a business-driven, standalone module that can be completed within a year's time, function on its own, add value to the business, and be integrated with other chunks when they become available without requiring rework. In the case of the new reservation system, Company B created ten chunks, or a ten-step process. Using this approach, Company B can launch new projects without committing the total project investment all at once. This process makes it more palatable to the company's executives when funding is requested because it lowers the project risks and the company's financial interest, thus freeing capital for other uses. Additionally, it allows the company to begin realizing benefits as soon as modules become available, while affording the company with the ability to assess the costs and benefits of each module individually.

Using a portfolio approach also helps Company B reduce risk. The CIO also tries to create a portfolio of projects of different sizes, complexity, and scope to help spread out the risks. He wants to avoid having too many large, complex projects underway at any one time while balancing resource loads.

One IT executive defines risk in terms of system downtime and disruption and financial impact to the business that results. Another IT executive defines risk as a technology application's fit with the business; that is, its ability to continually meet the needs of the business. Long development cycles make it difficult for the IT department to keep pace with the business' changing needs. Other risks cited included Year 2000 issues and the Euro.

Regardless of how one chooses to define risk, the company rarely requires the use of a risk premium for high-risk projects. The company's general policy is to apply the same hurdle rate to all projects. This policy was a topic of concern raised by one financial executive; for in his estimation, this policy biases the amount of risk borne by Company B by screening out viable and important projects that would serve the business well even though they cannot clear the 15% hurdle rate. Consequently, he believes the company does not have a well-balanced portfolio of projects because the mix of projects is skewed towards higher risk projects, those that can clear a hurdle of 15%. He would prefer to use a more blended approach that would reduce the company's overall risk by mixing projects of lower risk (i.e., with hurdles less than 15%) with projects of greater risk (i.e., using hurdle rates of 15% or more).

Challenges to IT Adoption and Implementation at Company B

Company B faces numerous challenges when trying to implement IT throughout its organization. These challenges include a fragmented ownership structure, resistance from end users, time and resource constraints, a shortage of IT labor, and lack of suitable vendor offerings. Each of these issues is discussed below.

The company's franchise structure creates a major barrier to the adoption and implementation of IT in the organization, and rarely do franchisees push for new technology solutions. Because franchisees are responsible for buying the technology used at their properties, they are reluctant to spend anything more than the minimum required. Occasionally, Company B will subsidize some of the costs (usually those involving infrastructure), but whenever possible, the costs of IT are passed on to each hotel—including usage of the technology infrastructure. Needless to say, winning approval from franchisees for new IT applications can be a long, uphill battle—especially given the financial commitment required and the fact that as much as 7% of their franchise fees already go to IT.

The problem of IT adoption is further complicated by user frustration, a sense of being overwhelmed by technology, and resistance to change. Many voiced concerns that the IT department is pushing down new, property-based technology for which the properties and their staffs are not ready to embrace. Most see this as a training issue. However, some expressed concern that only a fraction (estimated at 10%) of the technology functionality available in the company's hotels is used today. Despite these concerns, the IT department continues to push IT into the field to remain competitive, but to mitigate these feelings, the IT department focuses on evolutionary rather than radical change. Instead of taking big technology leaps, the IT department pushes technology solutions in small dosages. It also focuses a great deal of its efforts on education and socialization of ideas concerning uses of IT.

Time and resource constraints are among the everyday challenges Company B faces when implementing IT, especially with the rising costs and the shrinking fee streams from its hotels. Today's IT solutions are sophisticated and require extensive training to cover their many complex features and functionality. End users in the field continuously ask for more simplified solutions—but without losing any of the benefits. Trying to maintain a balance between simplicity and functional richness is a never-ending struggle.

A significant threat to Company B is the lack of qualified IT professionals available in the marketplace. Attracting and retaining competent individuals is difficult in a field where the labor pool is scarce and the marketplace is highly competitive, offering generous salaries, sign-on bonuses, and more.

Finally, the hotel industry is plagued with relatively small technology suppliers in a capital-intensive industry offering either outdated or new and unstable technology. Thin profit margins limit the amount of competition and the amount spent on product research and

development. Consequently, there is a lack of suitable product offerings available to meet the robust needs of a large chain.

Company B's Outlook for the Future

The CIO at Company B predicts extensive consolidation of web booking channels. In his opinion, there will be two or three "one-click" mega sites managing guests' travel preferences and profiles and supporting their travel procurement. These sites will be equipped with smart agents or shopping "bots" to search all of the available options for hotel accommodations based on a given set of criteria and consumer preferences. After a simple query, users will receive a short list of hotel providers that match their criteria and preferences. Users will then select a hotel company with a recognizable identity and strong brand value. In some cases, the smart agent may even make the purchase decision, but the consumer will oversee and control the purchase decision.

If these concepts come to fruition, it is believed that individual travel providers will no longer need to maintain Internet booking sites. Who the winners are is yet to be determined. They could be the airline GDSs, popular sites like Microsoft's Expedia Travel or Travelocity, an Amazon.com, or some new players altogether. It is expected that this consolidation will change the present model of competition by bringing about a co-opetition model, where travel providers will create strategic alliances with these mega-booking entities. The pricing model will change from commission-based to transaction fees.

Airline GDSs will continue to play a significant role in the travel distribution process and should not be quickly dismissed. These systems enjoy access to the worldwide supply of all forms of travel, including air, car, and hotels. Presently, these systems process the bulk of all travel bookings. They have the technology, the processing capacity, connectivity, and access to the industry's inventory like no other distribution channel. As companies that own these systems watch and evaluate the many market developments with respect to technology and consumer booking habits, it is likely that these companies will enhance their products to look and function more like web sites and offer more detailed and graphic information about the hotels they sell. They will become more graphical in appeal, easier to use, and support greater information and multimedia images about the products they sell.

Today, the GDSs have access to the inventory, are best suited for locating the best available rates, and are fast. The many web-based initiatives, on the other hand, are easy to use, rich in functionality, and graphical in content. According to Company B's CIO, it seems only logical that the two technologies will merge to form an incredibly powerful solution that provides the best of both worlds. He predicts that the timing of this GDS/web convergence is less than five years away and that it is only natural for the airline GDSs to continue playing a leadership role in hotel and travel distribution. In his words, "If they become more like the web, they will hit a home run. If not, they can lose. This is their business to lose." He also predicts further consolidation with the airline GDSs to a point where there will be only three major players.

When the Internet first surfaced, industry analysts predicted the demise of the travel agent. While smaller agents are at greater risk, Company B believes that there will still be a need for travel agents, especially since consumer behavior is slower to change than the technology itself. However, the role of the travel agent will continue to change as a result of these technology shifts. Less emphasis will be placed on the booking transaction, and more will be placed on delivering value-adding services.

Travel agents will become knowledge brokers, consultants, and entities that can amass purchasing volume and clout to obtain competitive rates. Corporate travel agents will do more to help clients manage and control travel expenditures. Leisure travel agents will establish niches and focus on vacation packages and cruises. They will likely do more marketing and bundling of services and charge fees to consumers. Many will also look to consolidate or become part of larger organizations with more visible reputations to gain access to technology, volume purchasing agreements, and best practices. In any case, it is clear that if travel agents are to survive, they must provide services and value that are worth buying.

Recapitulation of Company B

Company B is highly respected in the hospitality industry for its innovative uses of technology, especially in the areas of global distribution and incentive marketing. Both the company and its staff have won several awards and have been cited in numerous articles for their successful implementation of IT throughout the organization. The company continues to innovate using a “break the rules” attitude since it lacks the brand reputation, size, geographic dispersion, and depth of product segmentation of many of its primary competitors. While the drive for IT comes from the CEO, the CIO is credited with spearheading most of the innovation in the company through his leadership, ingenuity, and initiative.

The role of IT at Company B is best summarized with phrase “Marketing with IT.” This slogan is the underpinning of the company’s strategic focus, which is to build brand value and customer intimacy to thwart off the threat of becoming a commodity. The company has enjoyed strong relationships with the travel agent community at the expense of those with individual consumers. To make up for lost ground, the company is redirecting resources toward its guests. Knowledge-based systems are at the heart of accomplishing these objectives, and the company’s new CRS, customer information system, and property management system serve as the foundation.

Aligned with the business, IT project priorities are driven by a customer-centric focus, an eye for company growth, and a need to leverage resources and reduce overhead costs. Biannual strategic planning sessions help to synchronize IT and business initiatives, set mutual goals and priorities, and determine resource allocation needs. IT projects are then subjected to a rigorous decision-making process in which a business case justifying the project must be

developed and presented to the company's senior management team. Typically, the CIO takes the lead in building and presenting each business case involving IT with support from the business units. Decisions are based on a number of quantitative and qualitative factors and look at how the project will ultimately impact and benefit the business. ROI plays an important role in each decision, though it is not always the most important criteria considered. To minimize risk, projects are kept under a year's time frame.

Company C

Brief Profile of Company C

Company C is a global leader in the lodging industry with revenues of \$8 billion (US). Its success and reputation, revered by all, are widely chronicled throughout the industry and in the trade literature. Company C has received numerous accolades for its programs, operations, and facilities, including high industry rankings for its use of and investment in IT. The company enjoys a strong brand image. To many, its name is synonymous with quality and consistency. Moreover, its employees' commitment to service has become a hallmark of the company's culture and core values, providing a distinct competitive advantage. These tributes notwithstanding, Company C's market position and distribution—in terms of location, breadth, and size—are esteemed by most of its competitors.

Company C's customers exhibit a high degree of brand loyalty, due in part to the company's highly successful, multi-brand frequent travel (guest loyalty) program. Through an aggressive segmentation strategy, Company C's lodging portfolio spans the entire gamut of the lodging industry's segmentation and, with more than a dozen brands, is one of the broadest in the industry. The company likes to think it has the right product for any market location in the world, although some critics would accuse the company of over segmenting the market to the point where brands converge and confuse consumers. Company C's portfolio consists of over 1,800 hotels with more than 325,000 rooms in 55 countries. The company's products typically rank top in their segments in industry surveys, and its growth in earnings per share surpass the industry. In almost all of the segments in which Company C competes, it outperforms the industry when it comes to sales, occupancy rates, and customer preference. The rate premiums the company commands allow its properties to earn higher REVPAR and ADR than industry averages and outpace inflation rates.

Without question, Company C is a financially driven company with a keen sense of responsibility to its shareholders. All decisions are considered in the context of improving the business, growing the long-term value of the company, and enabling the company's targeted growth rate of 15% to 20% per year. Recent acquisitions, the introduction of new brands, expansion into international and non-traditional markets, and micro-segmentation are fueling the company's growth and horizontal integration initiatives.

Growth, Operational Excellence Top Company C's List of Priorities

Company C has an enviable balance sheet with a rich cash reserve and relatively modest debt structure. These, coupled with the company's strong operating cash flow, provide a substantial investment capacity for achieving long-term growth aspirations. The company is in the process of building a corporate-wide infrastructure that will support \$25 billion (US) in system-wide sales by the year 2002, effectively tripling company revenues in less than five years. The basic building blocks of this enabling infrastructure include brands, systems and technology, people, and capital. With an eye towards international markets, future growth will come from the addition of new properties, franchising agreements, acquisitions, and the development of new product lines (or lodging concepts). As part of this growth initiative, the company expects to add as many as 200 new properties per year, on average, for the next five years.

Growth will also come from leveraging the company's core skills and systems to develop major new hospitality businesses related to existing lines of business to increase the company's distribution and to broaden its service offerings. This includes turning support functions into business opportunities and consolidating activities and functions within regions and clusters to achieve greater efficiencies. Company C will continue to pursue its operational excellence strategy by fine-tuning its market offerings and continuing to leverage its size and expertise to achieve synergies and economies of scale to reduce operating costs and overhead.

Fearful of the unknown and organizations attempting unconventional moves, Company C has become more aggressive in its competitive strategy and defense mechanisms in a quest to control the industry marketplace. Company C's strategic focus is to achieve operational excellence. The company is seldom a pioneer. The company carefully and meticulously analyzes almost every decision before taking action. However, when it embarks on a new initiative, the company's goal is to implement that initiative better and cheaper than anyone else in the industry can.

Company C's Core Competencies

Company C's guiding principles, since the days of its founding, have been instrumental in defining the company's culture and core values that are at the heart of the company's success. These guiding principles are:

- Take care of the employees who serve the customers and the profits will follow.
- Offer quality products and great service at a fair price.
- Stay in close touch with the business and never become complacent.

Company C's mission statement is simply to be the world's leading provider of hospitality services. This implies being the best and most preferred lodging provider in the eyes of its

customers, employees, and shareholders with the goal of creating significant value through aggressive growth. The company is “dedicated to providing exceptional service to customers, growth opportunities for associates, and attractive returns to shareholders and owners.” It is this tripartite philosophy that builds a culture committed to excellence, service, and strong financial performance.

Company C holds a preeminent position in the industry because of its geographic distribution and presence in key markets, its portfolio breadth, its service levels, its core technology applications (namely reservations, yield management, guest history/customer information, property management, and payroll systems), its price-value relationships, and its standard operating policies and procedures. Company C’s core competencies, which are embedded in the company’s culture and are direct outgrowth of the company’s core values, are in the areas of operational excellence, customer service, guest loyalty programs, financial management, feasibility and site selection, distribution, market management, segmentation, and brand management/brand equity. Specifically, Company C has arguably one of the finest lodging portfolios in the industry. Furthermore, the company is unsurpassed in its ability to train and motivate large quantities of relatively unskilled workers—those with little to no previous work experience—to deliver stellar guest service. Company C is known for maintaining some of the highest standards in the industry for its employees, franchisees, facilities, and suppliers and for delivering consistently high-quality service for the value paid in each of its brands. To continually stay in front of its competition, Company C actively collects customer input, listens to its customers, and responds to their needs and requests.

With respect to IT, Company C’s core competencies are in the areas of high-volume transaction processing. Its reservation, yield management, frequent stay, and payroll systems are considered to be four of the company’s best technology assets and rank among the best in the industry. These systems, coupled with a capable corporate network and a solid technological infrastructure, provide distinct competitive advantages and worldwide connectivity for the entire enterprise. The CIO defines Company C’s core competencies with respect to IT as the company’s ability to leverage, integrate, and apply IT to manage a large number of complex brands. A recent acquisition of a sizeable competitor provided testimony of the company’s abilities in these areas.

Throughout its history, Company C has also been successful at organizational change, integrating acquisitions, and restructuring in response to industry changes. As the result of a recent acquisitions to grow the company’s international presence and expand its product portfolio and a multi-year, multi-faceted change effort designed to better leverage resources across brands and within markets, Company C appears strong, well positioned, and prepared to dominate the industry for years to come. However, recent acquisitions by major competitors will intensify the competitive pressures faced by Company C.

Distribution Strategy at Company C

Company C was one of the early players in the industry to embark on electronic distribution. Today, Company C's hotels rank among the most booked properties in each of the major airline GDSs. Since the company introduced its first centralized reservation system in the early 1970s, it has witnessed many changes over the years in electronic distribution and in how hotel companies deliver their products and services to the marketplace. The industry is quite different in terms of the dynamics, competitive threats, and industry cost structure as the result of computers and global distribution systems. Reminiscing about Company C's original strategy, one company executive remarked of its genuine simplicity and intuitiveness: "In the early days, the goal was obvious: to put inventory in front of as many people as possible to sell it." At the time, an open and close approach to inventory management worked well for managing room inventory in multiple distribution channels, with little need for sophisticated interfaces. Last-room availability and single-image inventories were not even imagined then, but over time, these concepts have evolved as the company grew and as the logistics became more complex for managing room inventory across multiple properties around the world. They are now critical in today's competitive marketplace and require complex, sophisticated, and costly interfaces.

In the early years, interfaces were reportedly easy to develop, relatively inexpensive, and fairly easy to justify, making it feasible to enter almost any distribution channel used in the industry. Company C first developed interfaces to SABRE and APOLLO (now Galileo), the two largest airline GDSs. These interfaces provided Company C with competitive advantage through first-mover advantages based on evidence collected by the company's marketing department. Over time, however, other hotel companies began copying Company C's moves. This required Company C to invest more to stay ahead of the competition and protect its lead. As the functionality of these interfaces become more complex and as airline GDSs and the company's CRS changed with time, maintaining these interfaces became more challenging and costly.

Company C's philosophy concerning distribution has always been to provide methods or channels that people want to use to book rooms and to provide a set of choices or options so that customers can select the channel best suited to their needs or convenience. In other words, Company C takes a consumer-centric approach. According to one marketing executive at Company C, distribution channels must be driven by two key considerations:

- 1) How customers want to book with Company C.
- 2) The revenue upside versus the costs of creating, maintaining, and using a distribution channel.

Thus, Company C will enter any distribution channel that is indicative of how its customers want to buy its products rather than try to dictate how its consumers buy its products and services. To this end, Company C will continue to fund distribution channels of higher cost so long as there is sufficient volume to justify their existence. For example, one executive at Company C indicated he would like to eliminate the company's toll-free reservation call

centers because they are so costly to operate. However, since a significant number of people prefer this service and channel to others, Company C will continue to offer reservation call centers as a distribution channel, but it will make them as operationally effective as possible.

Over the years, Company C, unlike Company B, has successfully pursued a two-pronged GDS strategy that involved building relationships and developing loyalty with both consumers and travel agents (or other influencers such as secretaries/administrative assistants) alike. Company C's competitive positioning today can largely be attributed to this strategy. Going forward, Company C's overarching distribution strategy continues to be: "To make it as easy as possible to do business with the company by putting its products and services on as many shelves as possible." It accomplishes this objective by offering:

- A customer-centric sales force capable of selling multiple brands.
- A strong loyalty program and detailed customer profiles to recognize repeat customers and speed the reservations process.
- Superior worldwide toll-free reservation services and event booking centers.
- Easy access to a fast, reliable reservation system through the highest level of connectivity presently available to each of the major airline GDSs.
- Real-time, two-way, seamless links to all its hotels, with single-image inventory and access to last-room availability.
- Cross-selling capabilities between properties and brands.
- A fully functional web site and presence in most Internet booking sites.
- Help desks and special service counters offering support and assistance to customers and travel agents.
- Strong ties to the travel agent community.

The company's reservation technology and distribution channels, support infrastructure, and rational pricing strategy simplify the shopping process and add to the guest convenience. Through a simple menu of rates, Company C maintains that there is "a logical and rational reason for every rate offered at every hotel." This approach reduces rate "haggling," improves rate integrity, and virtually guarantees that customers will be offered the best available rate given their qualifications, dates of travel, affiliations, and room requests. Rational pricing also ensures that the same rates are offered through any booking channel used by the company.

Moving forward, Company C will continue to explore innovative approaches that make it easier, faster, and cheaper for guests to book rooms at each of its brands. It will continue to look for ways to leverage its size and expertise to build unparalleled competitive advantages while maintaining an interminable commitment to its customers.

Protecting Relationships with the Travel Agent Community

Recognizing the important contributions of travel agents in influencing and stimulating travel, Company C has spent years developing and fostering good relationships with the travel agent community. Programs to boost travel agent relations include special service desks, centralized travel agent commissions, familiarization programs, double commission guarantees, access to single-image inventory, last-room availability, and more.

Travel intermediaries presently deliver about 25% of all of Company C's room-nights, chain-wide. In 1998, Company C reported paying a record high of \$150 million (US) in travel agent commissions. The company attributed this volume to its reservations and global distribution system capabilities, its commitment and strong ties to the travel agent community, the quality and breadth of its lodging portfolio, its strong customer service, and its single-image inventory with last-room availability. Because of the significant contributions from the travel agent community, Company C continues to foster relations and develop programs that include, rather than preclude, travel agents. As one executive put it:

“Even if travel agents influence only 5% of the company's business, this is still a significant chunk of business that cannot be overlooked.”

Therefore, Company C is overly cautious about doing anything that might jeopardize relationships or be perceived as a threat or an attempt to undercut travel agents out of fear of losing their business. While the Internet may threaten the role of travel agents, Company C does not see them disappearing—at least not any time soon. Moreover, Company C believes that further consolidation in the travel agency marketplace will create mega-agencies that will carry significant clout, especially in corporate travel where they help companies control travel and entertainment expenses. Thus, building and maintaining healthy travel agent relationships will continue to be important.

While Company C could benefit financially from steering customers away from travel agents in favor of cheaper distribution channels like its web site, Company C will not promote its web site in this way or do anything that could be construed as an overt attempt to direct bookings away from travel agents. Instead, it will assume the role of a cautious follower. It would prefer to see some other company challenge travel agents much in the same way that Delta Air Lines has done in the airline industry. Its efforts, according to one executive, will be covert so as not to “put the mother load at risk.” Company C will continue to monitor booking patterns, and as booking volumes shift over time with travel agents—or any other distribution channel, for that matter—Company C will reinvest its resources accordingly to optimize customer access, booking volumes, and revenue and work to facilitate bookings through channels of lower cost.

IT Culture in Company C

To reflect an emphasis on information and knowledge sharing versus a technology focus, the CIO refers to the company's IT department as Information Resources (IR). In his estimation, IT is all about information sharing and transfer. This department operates as a cost center and functions like an internal consulting organization. Its clients, comprised of end users and business experts representing each of the company's brands and disciplines, are billed for IT services through an internal billing and tracking system.

Despite a spotty record with IT projects in the past, Company C recognizes the value of IT and is committed to using IT to win competitive advantage. According to one vice president of information technology, the view of IT within the company is changing rapidly. Not long ago, the role of IT was viewed primarily as that of support for the rest of the organization. To most, IT was considered to be a necessary evil. Today, most executives in Company C view IT as strategic, capable of making important and valuable contributions to the business. There is consensus that IT has become an integral part of Company C and how it does business. This change in attitudes and perceptions regarding IT, noted one IT executive, has occurred only in the past 12 months and can be attributed to several factors. These include a maturing industry, better and more capable technology applications, higher comfort levels with technology, growing recognition of the company's dependence on IT, actions taken by competitors, and a change in IT leadership with more focus on and responsibility to the business.

The growing support and emphasis on technology at Company C notwithstanding, the CFO suggested that there still needs to be a system of checks and balances in place to control the use of IT in the organization. In his estimation, IT is not always the solution to a problem. He advised not to overlook the operational side of the equation. At times, an IT project or system will look attractive on paper. However, in practice, the application or technology may be too complex or too costly for what is required, making it an inappropriate or ineffective solution.

It seems that the CFO is not alone in his thinking and that the IT management share similar concerns. Under the present IT leadership, Company C has become more focused on the business and creating a company culture that is embracing of IT. Its goal is to provide a resource to the business and develop/implement solutions that serve business needs. This shift in emphasis has allowed Company C to escape the "technology for technology's sake" trap into which so many IT departments fall. Their tendency is to become overly engrossed in technological advances, and in doing so, they fail to consider how these new advances can impact the business. To avoid this trap, Company C's IT department focuses all of its efforts on serving the present and future needs of the business, only implementing IT where it makes good business sense. Additionally, all IT projects are collaborative efforts involving business and IT resources.

The IT department's greatest shortcomings are in the areas of project management and legacy systems. According to one IT vice president, the IT department consistently delivers high

quality systems but takes too long to do so. Projects repeatedly tend to get off track, suffering project delays, scope creep, and budget overruns. These problems are a function of many variables, including operating in a dynamic environment, reliance on outside vendors and consultants to deliver solutions, delays in knowledge transfer, the lack of qualified project managers within the company, and an overly diverse IT portfolio based on legacy technologies. Therefore, one of the objectives for the IT department is to become more responsive to the needs of the business by reducing cycle time or time to market. To accomplish this objective, the IT department is looking for ways to simplify its IT portfolio by reducing the number of systems and by replacing older technologies with newer, more flexible ones. By simplifying the IT portfolio, the IT department hopes to reduce its operational costs and free up capital that can be used for systems enhancements, new projects, and research and development.

Company C recognizes that its technology position (e.g., straggler, follower, leader, and visionary) is not static and is dependent upon the technology development cycle. In years past, the industry's technology development cycle was seven to nine years. Today, the development cycle is three to five years but rapidly declining to two to three years. This means that complacency is not an option; Company C must act quickly and decisively to maintain its IT lead in the industry. To this end, Company C must improve its ability to implement and evolve to new technologies. Company C's future technology positioning is based on three factors:

- 1) Current technology positioning
- 2) Readiness to evolve to new technologies
- 3) Ability to implement new technologies quickly and sunset (i.e., retire) old technologies

Unfortunately, resource constraints and preoccupation with Y2K issues, namely updating the company's existing portfolio of applications for the new millennium, have created a backlog of IT projects, hampered the company's ability to embark on new initiatives, and slowed some of the CIO's agenda for building a more responsive, proactive IT department.

Developing a Culture Supportive of IT

In the past, executives at Company C have experienced a great deal of frustration as a result of not understanding technology, both its capabilities and limitations, and their inability to comprehend why systems cost so much and take so long to develop. In the words of the CIO:

“The company's top executives know IT is important. They know they need IT, and they are spending a lot of money on IT. However, they don't know what questions to ask because they were not schooled in the IT

discipline...And where they often fail is in estimating what it takes to assimilate IT into the business.”

To close this gap in understanding and to help business leaders ask the right questions, Company C’s CIO has made executive education and cultural change his top priorities. He makes it his job to understand Company C’s business and to show executives how technology can play an important role in improving the business and in creating new business opportunities. Understanding organizational culture and change are important elements in any technology initiative and vital to a project’s success. The CIO is working to educate executives and modify the organizational culture so that it will be more accepting of change and technology, especially since many IT initiatives either support or require business process reengineering. His efforts are having an effect, as indicated by the words of the CFO, “IT is extremely important to Company C as it moves forward. IT provides the pathway, access, and channels to the customer.”

IT Support Comes from the Top at Company C

IT enjoys support from all levels of the organization, including the executive suite. Indicated one company executive, the executive committee at Company C has a great understanding of and appreciation for both the capabilities and the limitations of IT. The CEO reportedly has a tremendous and broad vision of customers and the roles and advantages IT can play in reaching them. According to one vice president of IT, both the CEO and the COO use an executive information system (EIS) on a daily basis to review the performance of various properties, brands, and markets.

While IT enjoys full support from the company’s top ranks, there remains a trust issue due to past experience, project failures, and mismanagement. Furthermore, the industry is notorious for large-scale projects going awry and for announcing products long before they are completed. Company C has fallen victim to these on several occasions, and the company’s institutional memory is slow to forgive and forget.

Company C’s Views Towards Outsourcing

Company C is in the hotel business, not the software development business. Therefore, the company’s philosophy concerning customized development versus the purchase of technology is to buy off-the-shelf, packaged software solutions from mainstream vendors whenever possible unless the functionality is deemed proprietary to the company and strategic in value. This philosophy represents a significant departure from the company’s traditional thinking and requires significant process re-engineering. In the past, Company C has been known for doing things differently from the rest of the industry in terms of its operating procedures. Consequently, this uniqueness has often precluded the selection of off-the-shelf applications without extensive customization. However, since internal development and product customization proved costly and ineffective at times, Company C decided it was

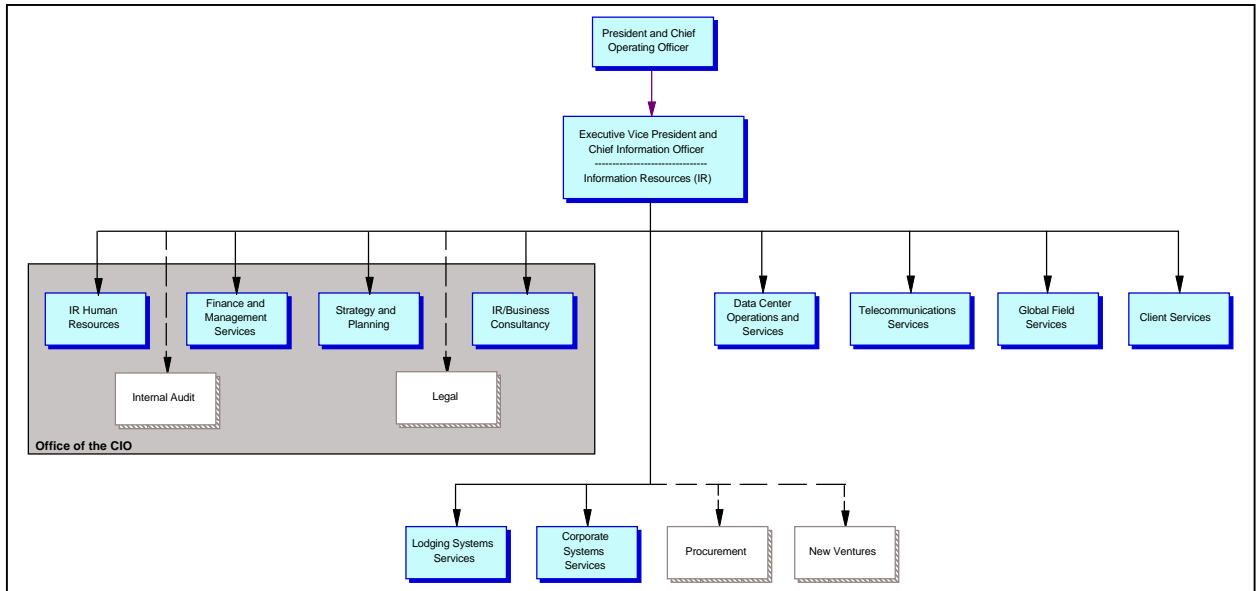
time to change its approach. Today, the company looks for ways in which it can profit from packaged solutions by adapting to common industry-standard practices and open systems solutions without losing its distinct competitive advantages. Only in circumstances where strategic applications, core competencies, or distinctive advantages are at stake will Company C consider internal development. In most cases under the present leadership, internal development is considered as a last resort.

Company C hires consultants and contractors where necessary to complement its IT staff and provide needed labor and skills as projects require. For example, Company C uses contractors to assist with modifications to its central reservation system. The company also outsources the management of its corporate data network and the backend reservations processing (i.e., the booking engine) for its company web site. Initially, Company C used external resources to build its web presence. Now, however, the company is looking to move this function in house to develop an internal base of knowledge, reduce its dependency on outsiders for something it believes has become strategic, and reduce costs of development and deployment. Generally, Company C's philosophy is to outsource non-strategic functions when outsourcing proves to be more cost-effective than performing the functions internally. When consultants and contractors are used for strategic projects, Company C will retain project oversight and management responsibilities, develop performance-based milestones into the agreement, and include provisions for knowledge transfer as part of the contract.

The Role of CIO at Company C

The highest ranking IT position at Company C is that of CIO and reports directly to the company's president and chief operating officer (COO). This individual enjoys the rank of executive vice president and serves as a corporate officer of the company. His organizational responsibilities are those of a typical CIO and are illustrated in Figure 4-8. He oversees a staff of 1,200 and a budget of \$120 million (US), the second largest in the company next to sales and marketing. What differs from most hospitality organizations is the "Office of the CIO," an IT policy committee which is depicted in the organizational chart in the shade region. This may imply a greater sense of organizational maturity or formalization in terms of organizational structure and hierarchy at Company C than what is present at each of the previous two companies included in this study. Reinforcing this notion of a formalized structure are the horizontal breadth (number of direct reports) on the top-level organization chart depicted here and the depth (number of organizational layers), job specialization, and the number of people detailed in the layers below but not included here. Further indications of a formalized structure are comments that come from several individuals within Company C reporting high amounts of bureaucracy, a culture that is slow to change, and a company that is sometimes blinded by its past successes.

Figure 4-8: CIO Responsibilities at Company C



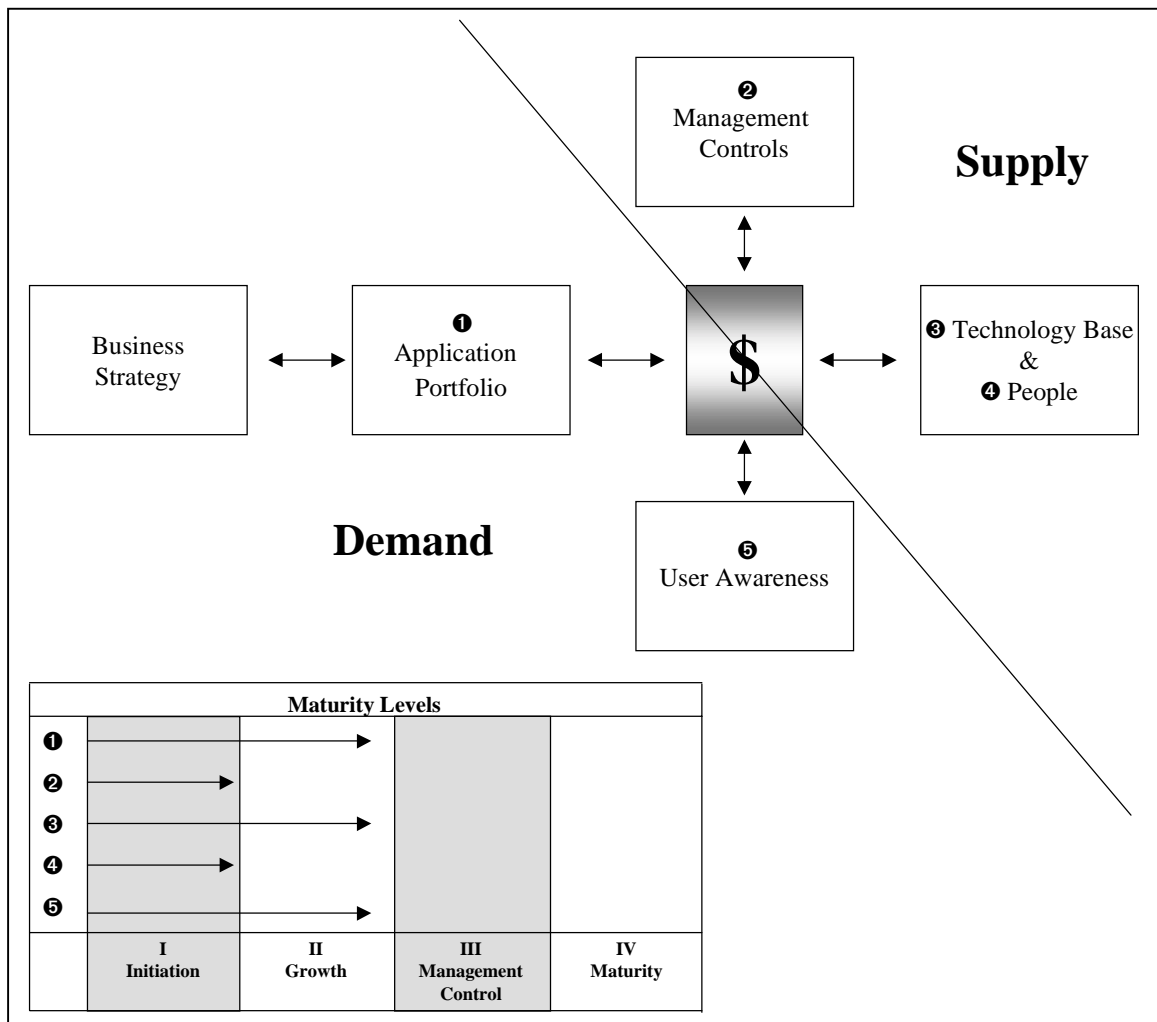
The CIO is a career CIO whose forte is serving as a turnaround specialist. He first joined Company C approximately three years ago for his first stint in the hospitality industry. Prior to joining Company C, the CIO served in similar capacities in several *Fortune 500* companies. Upon joining Company C, the CIO inherited an organization in the midst of chaos. His predecessor was not performing to the level of expectations of the company's top management and was relieved of his responsibilities. Company C went outside the hospitality industry to find a seasoned IT executive who could provide vision, a fresh perspective, and discipline (i.e., structure and methodology) in an organization that was stagnating and struggling with IT. The present CIO was selected for the job because of his seniority, proven track record in turning IT organizations around, and his technological and business knowledge. Since joining Company C, the CIO has brought order and focus to the chaotic situation he inherited. He has also hired several high-ranking IT executives who, like himself, come from outside the industry to provide fresh perspectives and insights to a company that is rich in tradition.

The CIO's first six to eight months on the job were spent conducting triage exercises. It was the CIO's belief that the problems being articulated by members of the organization were not the true issues that needed to be resolved, but merely symptoms. Therefore, he conducted a full assessment of the company's entire IT portfolio. This assessment was to take stock of the organization's present state, establish benchmarks, and define priorities for moving ahead. Every system was methodically evaluated for functional quality (i.e., its ability to satisfy the functional requirements of the organization, automate the processes for which it was designed, and be used effectively by the end users) and for technical quality (i.e., the

ability to easily and quickly make changes to an application and the currency of its architectural platform).

The CIO's assessment addressed five key elements (depicted in Figure 4-9): 1) the company's application portfolio, 2) management controls, 3) technology base, 4) people, and 5) user awareness. The company's IT direction is driven by supply and demand (i.e., a matching of IT resources and capabilities with business/market demands) and guided by the company's business strategy. All of these factors must be considered in conjunction with the organization's life cycle and four key phases or levels of maturity: 1) initiation, 2) growth, 3) management and control, and 4) maturity.

Figure 4-9: IT Assessment and Alignment within Company C



The goal is to align the IT initiatives, applications portfolio, and resources with the needs of the organization to drive revenues and firm profitability. According to the CIO, the organization and each of the five components must methodically move through the four phases without skipping any of them. Underpinning this model is organizational learning. It is necessary to invest money both in IT for state-of-the-art applications and in the end users to help them effectively use and benefit from the technological advancements being made. To paraphrase the CIO, if the organization does nothing to advance its people, a common mistake made in many companies, it will fail to realize the full value of its technology portfolio. If alignment does not occur between the firm's strategy, the IT in use, resource capabilities, and the organization's maturity level, the organization's use of IT will be compromised. The CIO's present assessment is that the company has been in the growth stage. The goal for IT is to move as quickly as possible through each of the four stages to arrive at the maturity phase. Thus, the organization's IT priorities are focused on moving each element into maturity.

From his assessment, observations, and experience, the CIO blamed many of Company C's past failures on three things: 1) the company's attempts to overautomate (i.e., providing more functionality than is needed or using IT to solve a non-IT problem, 2) the company's failure to reengineer processes when automating them, and 3) the company's underestimation of what it takes to assimilate IT into the business. In his words:

“Systems initiatives don't fail because of the technology. The technology is there, and it works. Assuming an IT initiative is a good business decision, the project can fail due to 1) a lack of executive leadership and commitment and 2) the lack of an appropriate and effective change management process.”

The CIO views his role first and foremost as a businessman and secondly as a technologist. In order to be understood and accepted by his peers, the CIO said he must use business terminology to which everyone can relate rather than technology terminology and cryptic acronyms when he speaks. He sees his primary mission to be a change agent, “to pressure his peers to keep innovating.” He defines the role of his department to be one stewardship, operating and managing information technology assets that have been entrusted in its care.

The CIO stressed the concepts espoused by the co-alignment principle, although not explicitly referencing this theory by name. He considers IT in the same light as any other corporate asset. He indicated that IT, like any other resource, must be aligned with the company's strategy and vice versa. It must also be aligned with the company's culture and its position in its organizational life cycle. To paraphrase his words, it is all about strategic alignment. IT is enabling and shaping strategy, although he admits that many of the company's executives are slow to realize this. IT needs to provide tools that users can use effectively to perform their jobs better. Therefore, better understanding of the business and its strategies are driving the IT priorities for the ensuing years.

IT Priorities at Company C

Company C is constantly striving to balance and meet the needs of three equal but distinct stakeholder groups: guests, owners, and franchisees. This challenge extends to the IT department as it tries to serve the company by using IT to drive business profitability, create an enabling infrastructure, and ensure workforce effectiveness. The mission statement of Company C's IT department reads as follows:

“Our mission is to contribute to Company C's being the best company in all industry segments in which it does business, by promoting competitive advantage through effective use of information technology and by deploying information technology to drive business profitability, an enabling infrastructure, and workforce effectiveness.”

To fulfill this mission, the IT department is committed to building and maintaining an infrastructure that will support Company C's five strategic goals:

- 1) Enhance guest service to build loyalty and repeat business
- 2) Generate new revenue
- 3) Reduce costs, increase productivity, and improve workforce effectiveness
- 4) Grow and build market share
- 5) Drive company and shareholder value

Within Company C, IT priorities include implementing systems that provide better and more timely access to information, support global communications and connectivity, streamline processes and reduce paper, enable product and service innovations, expedite time to market, and create value for the firm.

Company C's Short-Term IT Objectives

The CIO indicated that one of his top priorities is to control wasteful spending. To do this, the CIO is focusing IT investment decisions on areas where the company's businesses have reached maturity. Additionally, wherever possible, Company C tries to leverage its IT solutions across its entire portfolio of brands to achieve greater economies of scale and efficiencies in developing new applications. In most systems, the core engines and basic building blocks are identical across each brand. To accommodate differences in functional needs, Company C tries to use flexible, parameter-driven solutions where modules can be turned on or off as needed. Additionally, each system is designed with groups of interchangeable parts, or modules, that can be assembled in various combinations to suit the specific needs of each brand.

The CIO's goal is to automate business processes, not what he terms "functional silos." In the past, Company C has focused its IT efforts on improving functional disciplines at the expense of integration. Today, the focus has shifted away from discipline solutions to enterprise-wide solutions. These solutions cross organizational boundaries and budgets and offer greater rewards in terms of streamlined processes, cost reductions and efficiencies, and greater competitive advantage.

The major projects for 1999 include the following:

- 1) Y2K initiatives, mandatory system enhancements to ensure continued operability and reliability after the turn of the century;
- 2) Customer information systems to build and enhance customer recognition and loyalty;
- 3) Sales 2000, an initiative to drive revenues with the aid of better sales and decision support tools;
- 4) Shared service centers, to gain greater economies of scale and reduce overhead.

Company C's IT Critical Success Factors

From an IT perspective, the critical success factors at Company C are to deliver projects on time, within budget, and in accordance to the their specifications (i.e., with the agreed upon level of functionality). Success depends upon business sponsorship and a product champion, management commitment and support (top-down), disciplined project management, open communications, and a good working relationship between IT and the business partners.

The reservation system's critical success factors are throughput, speed, cost, booking volume, and revenue generation. To date, the company has not been able to find another architecture that can meet its capacity requirements and support the breadth of Company C's products while meeting or exceeding the response times the current system is capable of providing.

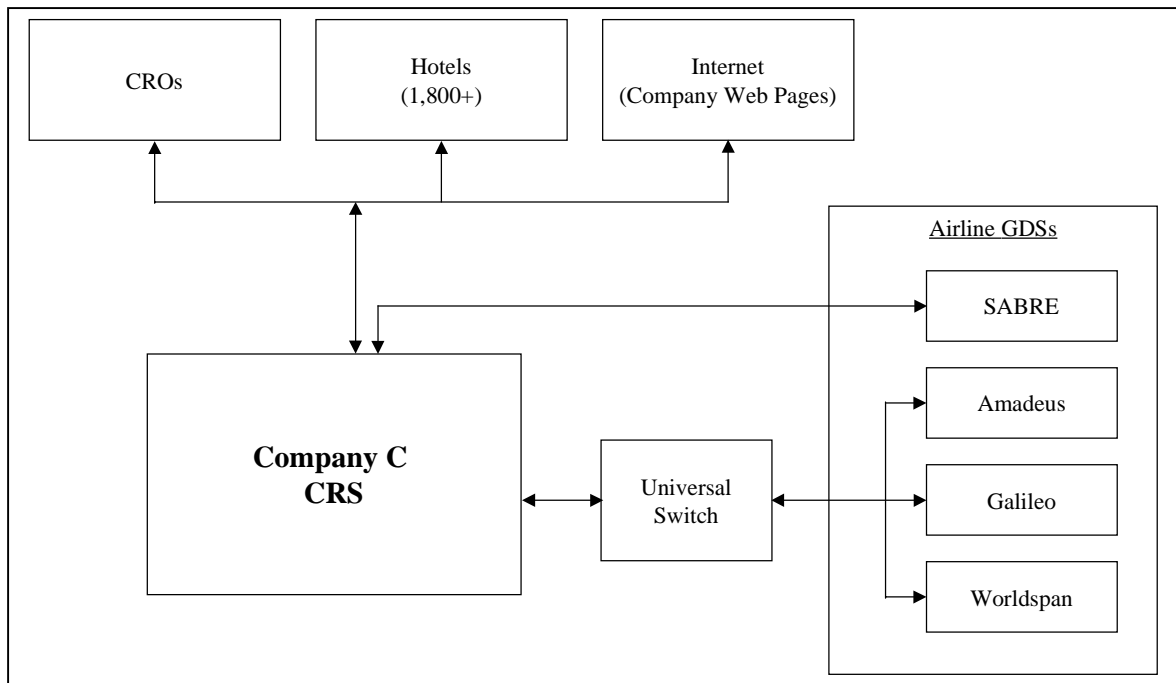
Company C's Reservation Technology

Company C has consistently been recognized as an industry leader in the area of reservations processing and is considered to have one of the industry's most sophisticated reservation systems in terms of functionality, processing capabilities, and speed. In a recent annual report, Company C stated that its reservation system enjoys the lowest cost per reservation and the highest call conversion rates in the industry. The present reservation system, first introduced in 1982, is mainframe-based using IBM's Transaction Processing Facility (TPF). In 1994, Company C completed a major overhaul of its CRS. Some of the many enhancements included more integrated yield management functionality, better cross-selling

capabilities among properties and brands, upgraded two-way and seamless interfaces, and the development of a graphical user interface as a front-end to facilitate agent training and ease of use. Today, the system regularly processes 200 messages per second and has the potential of processing well over 1,200 messages per second.

A schematic view of Company C's reservation system is depicted in Figure 4-10. Distribution channels include the company's numerous worldwide and regional reservations offices, its more than 1,800 properties, its web site, and the four airline GDSs, which provide access to the travel agent community and most of the booking services available on the Internet. While Company C uses a universal switch vendor to interface with most of the major airline GDSs, it maintains a direct interface with SABRE, since it is SABRE's largest hotel customer. This direct interface saves Company C money due to the favorable rate (approximately \$2 US per transaction) negotiated for transaction fees. It also allows the company to enjoy additional benefits by providing unique functionality and better access to inventory that cannot be offered through a generic switch.

Figure 4-10: Schematic of Company C's Reservation System



A third-party booking engine provides the booking capabilities behind the company's web site and enables interfaces to other web sites. The lack of standards and conventions for interfacing to web sites makes interface development costly and problematic. Therefore,

Company C uses one of the universal switch vendors to provide booking connectivity to the various Internet web sites.

The company's average cost per reservation has declined over the years as both the company (in terms of number of hotel units) and the volume of reservations grow. This growth provides a broader base over which Company C can allocate its costs. The average fee per reservation assessed to each property is approximately \$8 (US). Despite declining costs per reservation, Company C has kept this fee flat, reinvesting the proceeds for CRS enhancements.

The average cost per booking via Company C's web site is \$12 (US). As volumes increase and reach critical mass, the company anticipates that costs of web-based bookings will become substantially cheaper than call center bookings. The company projects that the cost of web-based reservations from its web site will ultimately stabilize around \$1 (US) per reservation.

The company's distribution channels ranked in terms of cost in descending order (i.e., from most expensive to cheapest) are as follows:

- Toll-free voice reservations (calls placed to one of the company's reservation call centers).
- Local voice reservations (i.e., direct to hotel properties).
- Gross reservations (i.e., commissionable) booked through a travel agent.
- Net reservations (i.e., non-commissionable negotiated rates) booked through a travel agent.
- Internet bookings via the company web site.
- Walk-in guests – people who arrive at a hotel without a reservation and request a room.

Company C reportedly offers the same rates and availability to every distribution channel it uses. The company boasts seamless, single-image inventory with last-room availability for all distribution channels and is one of the first in the industry to achieve this. When rooms and rates are available at a given property in the system, they can be displayed and accessed by each and every distribution channel. Frequent audits are conducted to ensure that is the case given set of variables (e.g., dates, length of stay, destination, etc.). Single-image inventory and last-room availability provide significant, although not sustainable, competitive advantage for Company C because few hotel companies to date have been able to duplicate this functionality. Most companies in the industry are still struggling to develop two-way CRS to PMS interfaces.

At the present time, inventory is not biased in one channel over another based on distribution costs. While the preference would be to sell rooms without the assistance of a travel agent whenever possible to avoid the travel agent commission, Company C will not use its yield

management system to close out rooms to them—at least not yet. One executive, however, indicated that he and his team are evaluating different pricing models and yield algorithms based on distribution channels used and their respective costs. While the details have yet to be defined, Company C recognizes the value of shifting booking volumes to lower-cost channels. Thus, it is possible in the not-to-distant future that Company C will use inventory biases and other incentives to motivate consumer usage of low-cost distribution channels.

Unlike many other companies, the CRS is the master keeper of all room inventory throughout the chain. Each property's PMS maintains a shadow database, a mirror image of what is stored in the CRS. Company C's reservation system handles guestroom inventory well but is less than capable when it comes to inventorying meeting rooms and processing catering requests. Company C's present and future focus is on better managing a hotel's total inventory (hotel accommodations, meeting space, etc.) and improving the yield management functionality to incorporate meeting space, catering, etc. This will require substantial rewrites to the company's reservation system and will top the priority list after the new millennium arrives. Presently, Y2K issues have been distracting the focus and consuming company resources that would otherwise be used to expand the company's capabilities.

Reservation System Value and Budget at Company C

Company C's reservation system represents the most expensive asset in the company's IT portfolio. The 1998 budget for enhancements, maintenance, and operations of Company C's reservation system was \$48 million (US), or 40% of the company's entire IT budget.

Company executives recognize the importance of its reservation system and are committed to investing in the system to maintain its leadership edge. The company will do what it takes, but this should not be misinterpreted to lead people to think there is a blank check. The system's value is significantly enhanced when it is coupled with the company's revenue (yield) management system. Concerning the net worth of Company C's reservation system, executives agreed that it is impossible to place a value on its reservation system technology. In the words of one brand executive:

“Having a great reservation system and network is one of the lifelines of the business. No one really knows the true value, and any number someone could provide is made up.”

The CFO suggested that trying to value the company's reservation system in terms of replacement costs would underestimate the true worth because it would omit the value of guest information. The true value of the system, though incalculable, would be the sum of the replacement costs and the value of the customer information network it creates. The true value is subjective and intangible, just like brand value.

While the true value of the company's reservation system is unknown, Company C uses an elaborate revenue opportunity model to assess the system's contribution. From statistics

tracked in its reservation system, Company C knows what was offered, what was accepted, and what was turned down. Using backcasting techniques and data from external sources (e.g., Smith Travel and the Graycon Group), the company tries to assess total demand and total potential revenue available in the marketplace. Value of the reservation system is then assessed in terms of the company's share of the total.

Reservation System Initiatives and Priorities at Company C

When asked about plans to replace Company C's reservation system, one executive shuttered at the thought. Another indicated that the company considered replacing the underlying technology in 1996 and again in 1998, but in both cases, the conclusions were the same. The initiative would be too costly, yet nothing major was wrong with the present system. Company C does not have a good track record in large-scale systems development, and the marketplace has few offerings that could handle the needs of Company C. The company is not looking to replace its reservation system any time soon. It tried once and failed, and one of its major competitors tried twice and failed both times. Although it is inevitable that the current system will reach the end of its useful life, executives in the company are not sure when this will be and are too busy with more immediate priorities to worry about it. For the time being, Company C will continue to enhance its reservation system to keep it current and on the leading edge—serving more and more of the company's business needs.

Some of the major changes planned over the next few years include the following:

- Uncoupling the inventory from TPF and putting it in an Oracle or DB2 relational database format for easier access.
- Expanding the CRSs inventory capabilities to handle meeting rooms.
- Enhancing the graphical front-end using the Forté toolkit.
- Creating an object-oriented environment with reusable modules for faster development and ease of maintenance.
- Enhancing PMS and sales automation integration.
- Creating a direct CRS-web link interface, taking the company's CRS directly to the consumer.
- Expanding its customer-relationship management (CRM) capabilities through the use of Siebel software.

Current Limitations to Company C's Reservation System

During a failed replacement effort, Company C stopped all major developments and enhancements to its reservation system. In hindsight, the company reported that this proved

to be a strategic blunder because the company lost many of its competitive advantages while its competitors' reservation technology continued to evolve, particularly in the areas of airline GDS interfaces and CRS to PMS interfacing. Fortunately for Company C, it has reclaimed its lead and learned an invaluable lesson. Moving forward, the company will continue to invest in its reservation system to keep it vibrant until a suitable replacement is ready.

Most of the criticisms associated with Company C's reservation system relate to difficulties in using the system and training new users on how to use the system due to the character nature of TPF. The company is continuing to expand the system's graphical front-end to enhance its user-friendliness and to reduce the amount of training time required. Technical concerns include the complexity of the TPF programming environment, making it difficult to modify the system in a timely manner, and the availability of TPF programmers. Since TPF programmers are in short supply, they command high salaries, thereby raising the overall costs for supporting this technical architecture.

Company C's Web Site

To win executive support and commitment for web site development required innovative methods and extensive education at the executive ranks. One approach taken by the vice president of interactive sales and marketing was to purchase 20 WebTVs for the homes of the company's top executives to introduce them to the Internet and to show them what others were embracing and using on a daily basis. He then spent countless hours meeting with executive to explain the Internet phenomenon and to surf the web with them, exposing them to sites that they would find useful and intriguing. The company also benchmarked several web sites, both within and outside the industry. Actual visits to leading technology companies provided further insight and education. Within a short time, according to the vice president of interactive sales and marketing, the web became very real to them. While some skepticism still exists, the company's executives are better informed and able to make decisions while accounting for this technology and its potential. Everyone is in agreement that the Internet is real, represents how consumers will shop and communicate with suppliers in the future, and requires significant funding and experimentation to climb the learning curve so that the company will be well positioned in this new medium. Moreover, the company's executive committee recognizes that to be successful in the Internet world requires creative thinking and the convergence of a variety of skills, including finance, technology, and sales and marketing.

According to the senior vice president of interactive sales and marketing, the interest level with respect to the Internet is high because this is a "defining moment." Although opportunities exist to define industry standards, the Internet presents several complex and challenging issues for Company C, especially when it comes to allocating resources and funding. No one knows just how much to allocate because it is difficult to predict or measure the impact. The situation is confounded because it is unclear within Company C where (i.e., what discipline) the responsibility for the Internet resides, who should fund it, how to

allocate the costs to each of Company C's properties, and how each brand should be represented. In a nutshell, there are many unresolved issues concerning the Internet and electronic commerce within Company C.

Company C's Web Strategy

In keeping with the company's overarching distribution strategy of providing easy access to book its room inventory, anywhere customers want to shop, Company C has made the Internet a top priority. This includes maintaining a fully functional web site as well as having a strong presence on other Internet booking sites. Company C has followed an evolutionary web strategy based largely on trial and error. Several lodging executives described Company C's involvement with the Internet to date as experimental with uncertain but promising outcomes. The vice president of interactive sales and marketing commented, "The Internet is a bit of a gamble—a roll of the dice." Another lodging executive noted, "We knew the Internet would do something, but we were not sure what." Reinforcing the company's conservative nature, another executive stated, "We look at the emerging players, watch what happens, and test the waters, but we never put all of our eggs in one basket." Finally, in the words of the company's CFO, "Company C's conclusion is that it cannot afford not to play, but the question is, to what extent?"

At Company C, the Internet is viewed as both an opportunity and as a threat. On one hand, the Internet is an opportunity because of the many remarkable things it can do, what it has to offer in terms of commerce, and the opportunities it provides for reaching and interacting with customers. On the other hand, the Internet poses a threat because infomediaries are gaining clout with its customers and taking away valuable relationship-building opportunities for Company C. Therefore, any strategy the company considered had to optimize the former and mitigate the latter.

The company considered two approaches with regards to investing in the Internet. The first was to try and guess at the potential ROI through a series of assumptions and analyses. The second was an incremental test-and-invest strategy, to make incremental investments to stay in the game and to see how they pan out. Given the many unknowns and the inability to quantify many of the aspects surrounding the Internet, Company C realized that extensive ROI analyses were not feasible and, thus, opted for an incremental approach with some preliminary analysis and projections. What the company did was assess the growth projections of the Internet in terms of number of users, number of homes with Internet access, and volume of electronic commerce, with particular emphasis on travel and hotels. The company also tried to forecast the incremental bookings it would achieve from the Internet, develop break-even projections, and estimate the impact to existing distribution channels in terms of channel churn and decreased talk-time. Considering all of these factors together, Company C concluded that investing in the Internet was a competitive necessity and must be done as a defensive measure, despite significant startup costs.

Taking a conservative posture, Company C started small, establishing a simple online presence in the form of an electronic brochure. Based on positive results in terms of volume of site visitors, the company then gravitated to a site that supported electronic bookings. Again, after positive impact was noted, further investments were made to enhance the functionality of the web site. Several iterations later, Company C has turned its site into a major information, booking, and customer service resource to supplement other company channels. Targeting frequent travelers and travel intermediaries alike, the web site makes use of customization capabilities and separate viewing areas to cater to each group's needs. Online surveys solicit feedback for fine-tuning the site and expanding the sites features and functionality.

Company C's web strategy is largely the result of competitive pressure and customer demands. Given the trends in the marketplace, Company C could no longer afford to stand on the sidelines. In 1996, the company, with the help of outside resources and a third-party booking engine, launched its first web site. Much to the company's astonishment, the web site grossed over \$1 million (US) in sales in its first year in operation, even though the company did little do promote its site. In 1997, Company C decided to get more serious about the Internet. It created a 12-person, interactive sales and marketing department headed by a vice president, and since the entire team reported directly to the executive vice president of sales and marketing, the team was ensured high visibility and access to corporate resources, namely the CIO and the IT staff. A strong partnership between the interactive sales and marketing team and the IT staff, a common vision and sense of purpose, a highly visible product champion, a well-formulated education strategy, and continuous internal support from the executive ranks became the underpinnings of the company's web success.

Using a destination-content strategy, Company C hopes its web site will become the first and primary source of information sought after by travelers on the web. The objectives of the web site are threefold: 1) to increase business, 2) to reduce costs, and 3) to improve customer service. Increased revenues are the result of incremental bookings and people booking accommodations at higher rates. Cost reductions result from fewer travel agent commissions and transaction fees, lower direct mail costs, and shorter talk-time on calls placed to the toll-free reservation centers. Customer service enhancements include more personalized interactions, tailored services, more convenience, and access to frequent travel account information and point balances. Company C sees its web site as a resource to complement and augment existing informational collateral and booking channels. Its goal is not to shift booking from one channel to another, but to extend relationships with its customers and travel agents. To stay in good favor with travel agents, Company C pays commissions on all reservations booked via its web site, further underscoring the company's commitment to the travel agent community.

The site has been designed to serve its most loyal customers, members of its frequent guest program and members of the travel agent community. With customer loyalty as its underpinning, the three pillars of the company's web strategy are the following:

- Convenient, fast, and easy-to-book.
- One-to-one marketing (push and pull).
- Integrated loyalty marketing.

Company C predicts that the web will continue to grow as it becomes a channel of convenience. One executive noted that, in his opinion, the Internet is akin to the hotel amenity wars of the 1980s. Time will be the greatest arbiter of success or failure. Company C is clear, however, that its Internet strategy is not meant to be an outlet for “firesales,” where bargain-hunters shop for the lowest price. Company C prefers not to compete on price, but rather follow the Nordstrom model where other criteria such as service, loyalty, and product quality overpower price as key attractions and reasons to select Company C over its competitors. To this end, the company is reluctant to promote this channel overtly through advertising or to attract consumers by offering Internet-only deals or additional frequent travel points. Instead, officials at Company C say the channel will sell itself based on convenience, service, and visibility through the inclusion of its web address in advertisements and on print collateral.

Company C’s Web Budget

Company C’s present Internet budget exceeds \$1.2 million (US). The company’s ROI model for Internet spending supercedes e-commerce revenue from accommodations booked via the web. Executives at Company C have come to recognize that maintaining a fully functional web site is a necessary cost of doing business in a digital economy. The company’s strong brand recognition has created many loyal followers who use the company’s web site extensively to shop for accommodations, provide feedback, and review the balance of their frequent travel account. Although the Internet accounts for only about 1% of all hotel bookings for Company C, the value of the Internet is far-reaching as it provides an additional channel to reach and correspond with customers, learn from them, and learn about them. The net results are better customer information and reduced costs of business in other areas. For example, the company’s web site attracts approximately one-third the volume of the company’s reservation call centers, and although not all of these visitors book online, many of them do book accommodations offline with Company C. The information collected online helps to streamline the booking process offline.

An Evolutionary Approach to Web Development

At first, like most companies new to the Internet, Company C took an informational approach, using the Internet as nothing more than an electronic brochure. Over time, the company began experimenting with online bookings using a third-party booking engine. While less than 1% of the total bookings comes from the web, the numbers continue to grow in terms of percentages, booking volumes, and revenue generation to a point where they can

no longer be overlooked. What's more, customers booking hotel accommodations online tend to outspend those booking via traditional channels. Today, Company C's web site is responsible for booking in excess of \$50 million (US) in room revenue, and using a straight-line projection, the company expects this number to grow significantly, making the Internet an important and viable booking channel for the future. Said one executive:

“Consumers want to book online. Everything points in this direction. Without question, this is the wave of the future...Generationally, the Internet will become more viable with today's youth as their economic buying power increases.”

Based on user feedback, operating results, and market trends, Company C made a decision to invest heavily to revamp and upgrade its web site. Improvements over the years since the company's first home page have emphasized commerce and a streamlined booking process. Accessing company information such as financial reports, news, and press releases or information about other aspects of Company C appear to take a secondary focus—almost an afterthought—to electronic commerce.

With a focus on increasing booking volumes, Company C introduced sophisticated tools for consumers to use to find hotels and book reservations at any one of the company's twelve brands or 1,800 hotels worldwide based on a number of criteria such as location, amenities, recreational facilities, proximity to local attractions, etc. The new design also features greater customer interactivity; a streamlined look for faster, easier transactions; new services for consumers to check frequent travel account balances, look up award levels, and redeem points; richer destination content and schedules of events; tools to obtain maps and driving directions (complete with a listing of all of Company C's properties along the route); multimedia capabilities that allow visitors to tour properties online and preview the company's product and service offerings; and a whole lot more.

Meeting planners now have access to online tools to help select and preview suitable sites, plan meetings, and request information and quotations using an online request for information (RFI) form. The company guarantees written proposals to all requests within a 24-hour period of receiving a request. A group desk at the company's reservation call centers is also available to answer questions and handle more involved requests. A special, secure travel agent area offers numerous benefits to travel agents including tools to book lodging accommodations and track commissions. The site also offers training modules for new travel agents, special tips on how travel agents can access the best available rates from Company C, news and announcements, and special familiarization trips and promotions.

Strong Brand Reputation Brings Traffic to Web Site

The hypothesis at Company C concerning web development is that consumers want convenience and choice when shopping. These are the underlying premises behind the success of shopping malls. Accordingly, executives at Company C assumed that consumers

would prefer one-stop shopping services like Microsoft Expedia and Travelocity to brand-specific web sites offering a limited scope of products and service offerings. However, the company's actual online experiences proved otherwise, favoring the reverse hypothesis. According to company officials, 80% of all Internet-based bookings are made through Company C's own web site. Company C is not entirely sure how to explain what it believes to be an anomaly, but executives at Company C suggest many possible explanations.

One possible explanation is Company C's strong brand reputation and customer loyalty. Some executives suggest that since airlines have become more commodity-like, hotel brand preference has replaced airline preference and drives travel planning and decisions. This thinking reasons that perhaps consumers first consider their destination and hotel needs before making other travel plans and arrangements. Another potential explanation pertains to the information on the web site, how it is displayed, and consumers' perceptions toward it. Perhaps they find more information or information of higher quality or perhaps the site itself invokes higher consumer confidence and trust due to the association with Company C and its reputation and how the information is depicted using graphics.

Despite these likely explanations, this observation is puzzling to Company C because, reportedly, the exact same information is available on other travel web sites. In any event, Company C is pleased that its web site has become a popular destination by its customers and plans to continually add new services to reward them, to build convenience, and to facilitate one-stop shopping for other travel needs including airline tickets and rental cars.

Keeping Pace with Demand

Over time, with more people joining the online world and with greater functionality of the web site, the number of visitors to the company's web site has grown exponentially. Today, the site, powered by the Microsoft BackOffice family of server products, plays host to thousands of visitors daily, or several million visitors each month. The growth in volume of visitors and in functionality of the web site, however, has created many technical challenges for Company C. The company is constantly re-architecting the site to handle the increased demand and volume of traffic by increasing bandwidth, using more powerful servers, and implementing site mirroring and load balancing technologies. Behind the scenes, the company has had to replace the server hardware multiple times—long before the equipment can be fully depreciated—to maintain acceptable service levels. This makes competing on the web a costly venture and creates speculation in the eyes of top executives concerning the overall benefits and value of the web. Since Company C's management team did not anticipate these ongoing costs of maintenance, support, and on-going developments, they thought the initial funding would last longer than it did. Needless to say, they were surprised when the vice president of interactive sales and marketing and the CIO came back to the budgeting table to request additional funding so they could keep up with market demand.

According to the vice president of interactive sales and marketing, Company C is still climbing the learning curve for an Internet-based economy. While the company has learned

a great deal concerning the technologies and technical issues surrounding the Internet, company executives admit that there is still much to learn and many outstanding issues to resolve. One of the company's biggest technical challenges is to find industrial strength software capable of providing enterprise-wide solutions that is scalable and flexible to accommodate growth and new business needs. The question facing Company C, as stated by the senior vice president of interactive sales and marketing, is: "How can it buy cost-effective, efficient, and sales-capable IT that is flexible and scalable to support the Internet?" The company must also develop better management processes, tools, and measurements for the Internet. Expressing dissatisfaction with the software products available in the marketplace, the senior vice president of interactive sales and marketing suggested that Company C may look at developing its own applications internally using the Microsoft Windows NT operating system and Oracle's relational database management system. This technology architecture was selected because of the availability of labor, its functionality and capabilities, and its reliability.

To help manage and control the level of funding earmarked for web-based initiatives, the company continues to use an incremental test-and-invest strategy and will do so until it can better predict the costs and measure the benefits associated with the Internet. As the company becomes more experienced in the web economy, it can begin planning further into the future. Presently, the company believes its technical architecture can sustain the company's needs for approximately one year. This will provide some cushion, albeit not much, in developing its next major release and in implementing a capable and adequate technology platform to support the backend processing.

Closing the Look-to-Book Gap Tops Company C's Web Priorities

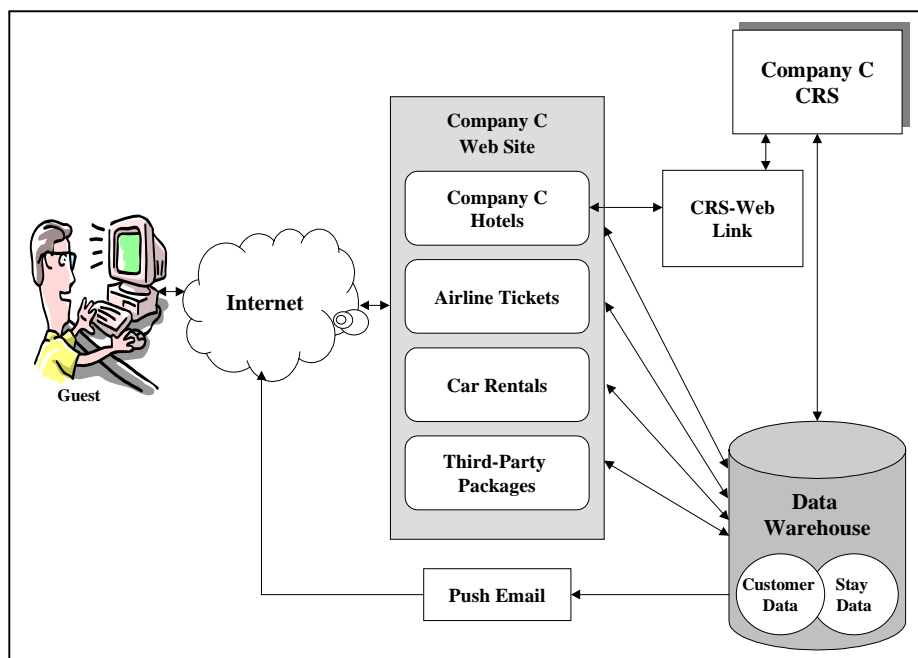
Company C's immediate challenge is to find ways to close the look-to-book ratio. The senior vice president of interactive sales and marketing attributes the look-to-book gap to two primary issues: security and price. The first issue results from the much hyped and widespread fear about security over the Internet. Because of consumer insecurities with the Internet, traditional channels are often the preferred vehicles for booking accommodations. With time, trial usage, and backing from well-known companies, this issue seems to be fading.

The issue of price relates to what the vice president of interactive sales and marketing calls the catalogue problem. This problem stems from catalogue orders for hard goods, where companies often charge more for a product than they do in stores to offset costs for handling and returns. While this problem does not apply in a service environment, the consumer perception carries over, with many consumers believing they will pay more online than via traditional channels. A greater consideration, though, is that when booking travel, consumers must commit to (i.e., pay for) the purchase at the time of the booking, and in most cases, the payment is non-refundable. To some, this can be a deterrent since traditional channels allow consumers to hold rooms and offer cancellation policies.

Future Web Enhancements and Developments

Presently, Company C's web-based reservations are processed via one of the major web-based booking engines. In the future, Company C intends to make its central reservation system web-enabled so that web users can book reservations directly in its CRS and use its data warehouse to create and target email (push) promotions to customers. These moves will increase efficiency, reduce transaction fees, and allow the company to take a more proactive sales approach. The company is also considering expanding its web services to provide booking capabilities for air, car, and third-party packages to offer additional value-adding services to its customers and convenience through one-stop shopping. Company C is hoping to eliminate comparison-shopping and preempt a customer's need to go elsewhere, to another booking service offering competing hotels and putting Company C's products at risk of losing the customer. This move may also be an attempt by Company C to usurp the role of online travel agents so it can reduce its overhead costs by avoiding commissions or third-party transaction fees. A schematic of Company C's future web site featuring the proposed functionality discussed here is presented in Figure 4-11.

Figure 4-11: Schematic of Company C's Future Web Site Strategy



Like online travel agents, Company C plans to charge airline and rental car suppliers a booking fee when customers book one of their products. One dilemma facing Company C is if it should develop an alternative to products like Microsoft's Expedia Travel and Travelocity and become a full-blown booking site or online travel agent. This topic has been heavily debated within the company. To do so would be risky since it is considered to be a

departure from the company's core competencies and since it would pose a threat to the travel agent community. As discussed earlier, Company C is overly cautious of its relationships with travel agents and does not want to do anything to jeopardize these ties or send signals that could be misconstrued as threats.

Another consideration is the reaction this move may invoke from the investment community. The investment required would be in the tens of millions of dollars (US). These costs and the fact that the Amazon.com concept has not proven profitable serve as major deterrents. In another example, the executive vice president of marketing turns to Microsoft and its Expedia Travel product. To paraphrase his words, Microsoft, arguably the most powerful company in the world, spends more money on research and development than Company C makes from hotel bookings. Yet, its Expedia product, although a frontrunner, is still not a glowing success and is struggling like most Internet companies to turn a profit. Since the investment community does not value Company C as it does an Internet company, most executives believe that the impact on earnings does not make sense at this time. Thus, Company C will not overly invest in the Internet because the investment will not be reflected in the company's stock value.

As an alternative strategy, Company C has become a minority stakeholder in one of the leading online travel booking services. Although the company's immediate plans have not been disclosed at this time, it is anticipated that this investment could better position the company in the online world, build stronger ties with the travel agent community, and become the vehicle to enable its future web strategy of adding booking services for airline tickets, rental cars, and third-party packages.

Primary Concerns for Company C Regarding Web-Based Distribution

Company C fears the role of electronic agents (e-agents) because of customer ownership issues, the loss of relationship-building opportunities, and relinquished control over important customer data. Executives from Company C reported that, in more than one case, they can point to situations where its major competitors are selling Company C's hotel rooms. In some cases, Company C even pays its competitors upwards of 10% commissions to sell its rooms. Naturally, Company C feels threatened by these companies as they build relationships with its own customers by collecting data and amassing this data in data warehouses and guest profiles. What is uncertain, explained executives from Company C, is how these companies may later use this data to "steal" customers and market share from Company C. They believe the threat to be very real and one for which the company has few defense mechanisms presently in place to eliminate the threat.

Discounting is another major concern for Company C. Specifically, a company like priceline.com is viewed as a major threat because of how it sells hotel accommodations. Its business model of allowing the customer to name his/her own price is completely different from other selling models, shifting the balance of power away from the brand in favor of the consumer. Moreover, since a hotel brand plays no part in a consumer's decision-making

process, priceline.com is driving the industry more towards commodity-like behavior. In the eyes of Company C, priceline.com devalues both the brand and the product itself. Much to the dismay of Company C, priceline.com's business approach runs counter to the customer loyalty-building that has contributed so greatly to Company C's success. Since price and location drive the decision, brand plays no role in the process and has no influence in the purchase decision. Therefore, hotels must resort to discounting, becoming the lowest cost provider, in order to win customer bookings—and they have only one chance to win a customer's bid because there is no opportunity for counter offers, trading down, or referrals to less expensive products in the company's lodging portfolio. This business model, officials at Company C fear, will lead to a cheapening of the product and the image associated with Company C. To make matters worse for Company C, Microsoft's Expedia Travel recently introduced a competing service to priceline.com called Hotel Price Matcher, further illustrating the competitive pressures facing not only Company C but also the industry as a whole. This also underscores consumer acceptance of this new business model.

Company C presently feels that people who shop for hotel accommodations based solely on price are not part of the company's target audience, since the company is not known for being the low-cost provider in any of the segments in which it competes. Nevertheless, the company cannot afford to underestimate the impacts of a service like priceline.com. Consequently, like all new ventures, Company C is proceeding with caution in this arena. It is testing the use of priceline.com to offload limited quantities of distressed inventory in hopes of boosting incremental revenue, encouraging trial usage of its products by those who may not yet be customers, and converting these consumers to loyal followers. It is fearful, however, that its involvement in this channel could weaken its brand image, reputation for quality, and rate integrity since consumers are able to buy the same product at steep discounts. Company C would prefer not to play in this arena, but it must because its customers are using this service to shop and because its competitors are also forcing its hand by offloading limited quantities of their own inventories with priceline.com.

A third major concern facing Company C is how to promote its web site to increase traffic and booking volumes without jeopardizing relationships with other channels, namely its travel agents. Within Company C, executives debate the issues surrounding embarking on an advertising campaign to promote its company web site. In addition to the potential adverse effects to travel agent relationships is a concern over the impacts this move could have on brand strategy. Marketing and brand executives have voiced the risk of further blurring brand identities as a result of joint advertising and a common web site. There are also issues regarding funding. Should the funding come from advertising, sales and marketing, reservations, information systems, or some combination? How will these expenditures be allocated across brands and ultimately be expensed to each property?

As these issues and concerns suggest, Company C clearly has some pressing issues it must address as it moves forward in a web-dominated world.

Commissions Versus Flat Fees for Electronic Bookings

One of the puzzling questions for Company C is why it continues to pay 10% commissions to travel agents. The standard was defined some time ago, but no one seems to know the rationale behind the amount set. Today, the 10% commission is being challenged as travel providers look to reduce costs and take advantage of a soaring electronic commerce market. Airlines have taken an aggressive stance towards reducing and capping travel agent commissions, especially in the on-line world. Travel providers view the role played by an electronic intermediary (sometimes referred to as e-agents) as that of facilitation in enabling the completion of a transaction. In their view, unlike transactions conducted by traditional travel agents, there is little by way of value-added service, suggestive selling, or consumer influencing taking place. Therefore, industry executives reason that since the level of effort is significantly less, travel providers should only be required to pay a small transaction fee, not a commission.

Executives at Company C hold these same beliefs. They view online booking transactions as analogous to ATM network fees and are willing to pay no more than \$2 (US) for each transaction. In the words of Company C's senior vice president of distribution sales and marketing:

“We value the contributions that travel agencies, corporate travel departments, and Internet providers make to our distribution system...The travel industry is currently in a state of flux regarding commissions. We do not believe that equal compensation is applicable for all distribution sources.”

However, due to Company C's conservative nature, it is reluctant to be the Delta Air Lines of the hotel industry in proposing new standards or in leading the way by imposing commission caps. In one executive's opinion, the industry is still too fragmented to attempt to set standards at this time. In the airline industry, lower commissions and commission caps worked because of the level of industry consolidation. Another executive's based his concerns on the impact this type of decision could have on the company's relationship with the travel agent community. In general, the executives at Company C believe the industry is too volatile to make any bold moves in this area without the risk of long-term repercussions. Since one of its major competitors went on public record stating that it would continue to pay 10% commissions, to challenge this at the present time would be risky.

To seek answers, to develop a potential course of action, and to better understand the market, Company C recently launched a study to investigate how much compensation it should provide to corporate travel departments and Internet booking services. Before making any decisions or bold moves, the company is seeking advice from industry experts and representatives from these intermediaries. Consequently, the company is proceeding with caution in this area and will play the roles of a strong follower and an aggressive market watcher.

Company C's Decision-Making Process for Resource Allocations

When it comes to resource allocation decisions, Company C uses an incremental test-and-invest strategy. The executive vice president of sales and marketing at Company C described the decision-making process for resource allocations as one of "hedging bets." For some projects, he admitted with candor that the company "just doesn't have a clue." The company's CFO concurred, noting that for many projects, funding is akin to placing bets. To paraphrase his words, the company's executives do their best in evaluating every project/funding decision to determine which one(s) will have the highest probability of succeeding, but in the end, the resulting decisions are nothing more than the executive committee's collective best guesses.

The process typically starts with the identification of an opportunity that the company could exploit or a business issue that must be resolved. At some point, someone in the organization (this could be at any level) formulates an idea, becomes passionate about it, and calls attention to it. That individual then sticks his/her neck out to seek seed money to develop the concept further. Many of these ideas are often formulated as part of the company's annual budget cycle when specific funding is earmarked for major initiatives and each discipline.

IT Project Classifications at Company C

Three classifications are used at Company C to categorize IT projects. These include 1) projects having strategic value (i.e., those that are necessary to stay competitive or those that enable new competitive advantage); 2) projects that are infrastructural in nature and generally focus on technology architecture standards and connectivity; and 3) projects that are mandatory or required for survival (e.g., Y2K, compliance to regulatory requirements, etc.).

The level of analysis is greatest for strategic projects. Here, executives must illustrate strategic value, links to the company's strategic objectives, competitive positioning, and ROI. Mandatory or regulatory projects are among the easiest to justify because the company has little choice, and the benefits are usually obvious. Infrastructural decisions, however, are often the most difficult to justify since many of their benefits are intangible or indirect and, therefore, hard to quantify. To simplify the process, the CIO frequently stresses the importance of continually updating and investing in the technology infrastructure to company executives to call attention to this area and to win their support. To emphasize his point, he relates these decisions to periodic and routine property refurbishments and replacement of a hotel's "soft goods."

Planning Horizon at Company C

The planning horizon used by Company C is five years. Shorter-range plans address windows of up to three years. Budgets are prepared annually with monthly updates. The company relies on several outside entities to provide data for forecasting that complements its internal projections and analyses. As trends emerge and as competitors' moves become more apparent, the plans are adjusted to reflect their impact. For technology developments, the company monitors the travel industry, with particular emphasis on the airline industry and key competitors in the lodging industry. The company also closely monitors customer trends and population demographics.

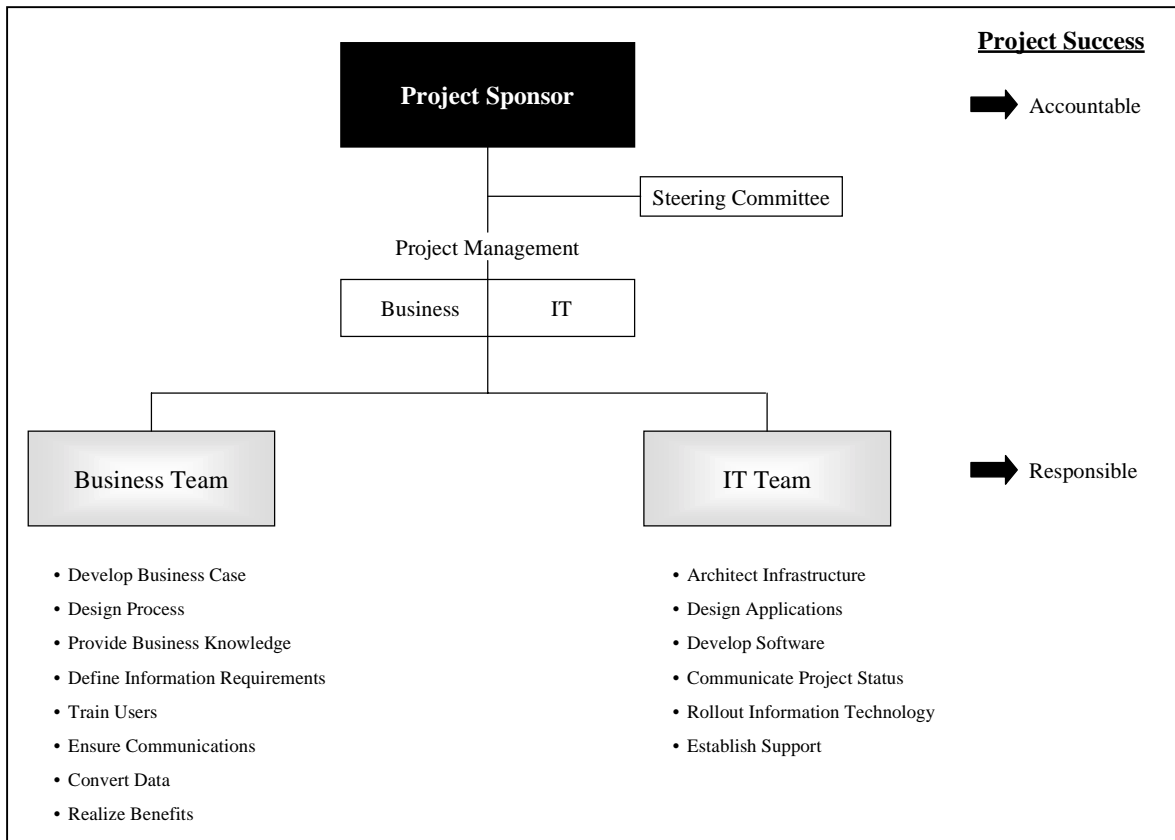
Technology projects are generally broken into small units of time, usually under nine months. After several large-scale project failures in the company's history, management at Company C prefers to keep tight reigns on IT projects. This helps to reduce the risk and scope of a project, making it more manageable while increasing the likelihood of success and reducing impacts from staffing changes (e.g., promotions, transfers, terminations).

Business Sponsorship Is Key

Company C has a strong financial focus and uses a rigorous and disciplined approach to evaluating each decision and funding request. Each project must have a well-defined business case that clearly articulates compelling rationale for investing in a project. Each project must also have business sponsorship, typically at the vice president level. Business cases are usually developed under a partnership between IT and the business discipline seeking the project. Once approved, the project is managed by the business sponsor and staffed with a joint team of resources representing both the business discipline and IT. The partnership that results between IT and the business unit and the ensuing responsibilities of each entity are illustrated in Figure 4-12.

According to the CIO, business leaders, not IT, must take the lead role in developing the business case, sponsoring a project, and pushing for its approval. Noted the CIO, "The IT department will do whatever it can to support the process, but project ownership must reside with the person controlling the P&L." Company C is clear on the responsibilities of the business sponsor, IT, and the business discipline. IT is viewed as the enabler but the business drives the decision. IT will help estimate the project, break the project into manageable components, and develop the project schedule. The business side of the house focuses on defining the project's benefits and financial returns. In the end, primary sponsorship must come from one of the company's business units, for Company C believes that ultimate accountability and fiscal responsibility belongs with the business. With support from the CIO and top IT executives, the business sponsor will present the business case to Company C's budget (growth) and executive committees.

Figure 4-12: Business-IT Partnership Enables Project Success at Company C



Building the IT Business Case at Company C

The business case must go beyond the financial aspects of the project to document the business trends in the marketplace (both within and outside the industry), competitive positioning, opportunities and threats, potential risks, etc. The company will attempt to quantify the pros and cons of a project to the extent possible; yet, in many cases—especially those involving IT—defining tangible benefits is difficult due to the many gross assumptions involved. Table 4-5 contains a listing of the major components of a typical business case at Company C.

Table 4-5: Key Components of a Typical Business Case at Company C

1. Executive Summary
2. Problem/Opportunity Statement
3. Background, Description, and Needs Analysis
4. Funding Request
5. Cost-Benefit Analysis
6. Financial Analysis, Cash Flows, and NPV
7. Risk Assessment
8. Competitor Activity Assessment and Industry Trends Analysis
9. Recommendations

The company's executive committee reviews and prioritizes all business cases. The business case is usually distributed to the company's executive committee prior to the meeting when it will be considered for funding. This gives company executives and their staffs ample time to read and analyze the business case, identify outstanding questions, and determine any shortcomings or objections. At the meeting, the business sponsor presents a brief summary of the project proposal and then addresses questions from each of the committee members. The line of questioning is usually structured to ensure the business case is carefully crafted, well-thought, and free from holes (i.e., bullet-proof). Discussion and deliberation then ensue, giving executives time to voice their support or objections concerning the project. At times, an executive committee member may become passionate about a project that will impact his/her discipline. This passion could be either in favor of or against the given proposal, but in the end, the committee weighs all of the facts and determines what it believes to be the course of action given the facts presented, the capital required, and the timing of the proposed project. All decisions are evaluated based on their forecasted impact to the company's

bottom line. A financial focus, however, does not always imply decisions based solely numbers or benefits that are measured only in terms of dollar value. This was a key theme that was repeatedly emphasized by the company's CFO. While the numbers and profitability impact are important, there are other factors that must be taken into account, including strategic positioning, new capabilities, competitive posturing, etc.

Company C's Decision Criteria

When making any type of capital investment decision, executives at Company C always look for direct links to value from the proposed project. Whenever possible, five key financial measures are used to evaluate project decisions. These include:

- NPV
- NPV as a percentage of present value invested
- Cash-on-cash invested (return on invested capital)
- Cash flows
- Impact on earnings per share (EPS) and stock multiples

To this criteria, the CIO adds his own list: the magnitude of the financial investment, the imposed hurdle rates, the project's alignment with the company's business strategy, the resources available to staff the project, and the business sponsorship.

As the above criteria suggest, Company C's decisions take on a financial orientation consistent with the company's financially-driven culture. Whenever possible, the company attempts to evaluate each project in terms of its impact on the share price of its stock, but according to the CFO, this is difficult to do for IT projects since the benefits are usually intangible or hard to quantify. To paraphrase his words, not all projects lend themselves to ROI or NPV analyses. Consequently, IT projects are often treated differently than other capital projects because seldom is there much hard data, supporting evidence, or industry benchmarks that can be used to evaluate a project. Each project is usually unique—unless, of course, it is a routine system enhancement.

Due to the amount of funding generally requested and Company C's prior history of funding unsuccessful IT projects, IT projects often face a considerable amount of scrutiny at Company C. The additional level of scrutiny also serves to test the logic underlying a project—especially since less emphasis is placed on an ROI analysis for IT projects. Thus, IT project decisions tend to be based more on subjective criteria and qualitative factors rather than objective, quantifiable data.

The CFO admitted that the decision-making and resource allocation processes are not entirely scientific. Financial calculations and analyses are important, but they are not the end-all. Noted the CFO, "There are always skeptics in the crowd, but in the end, the business case

and good judgement must prevail.” One vice president of IT echoes these sentiments. To paraphrase his words, it is more instinct rather than hard numbers or financials that drive many of the decisions. Not all projects lend themselves to the textbook approaches to cost-benefit analyses, and in some cases for those that do, the process would be too time-consuming to complete in a timely fashion. The competition is moving ahead quickly, and to keep ahead of them, Company C must keep moving. For this reason, Company C, at times, may dispense with a detailed cost-benefit assessment.

ROI analysis is only as good as the quality of the data used to calculate it. Since some of the data and assumptions used as input are suspect and untested for many IT projects, the quality and validity of the analysis are often called into question. Difficulties in quantifying benefits, however, do not negate the need to conduct an ROI assessment. An ROI analysis is expected for all IT projects, but because of the aforementioned reasons, it is frequently weighted less than for other projects. Instead, Company C often places greater emphasis on strategic value, competitive positioning, and competitor activity. The company also analyzes needs, opportunities, benefits, and risks while trying to balance the needs of its guests, associates, and shareholders. Ultimately, congruence with the company’s business strategy will be the deciding factor, but degree of risk, financial ROI, and sound business judgement can make or break a business case.

For comparison purposes of the treatment of different types of projects, the CFO referred to a construction project for a new hotel. According to the CFO, Company C considers these projects as routine. As such, company executives can apply cookie-cutter models to assess the merits of building a new facility. The company can draw upon experiences with similar projects, look at historical information, and compare the project with like hotels already open. With IT, however, the company has few reference points and little meaningful historical data that can be used for benchmarking. Downplaying ROI, Company C places greater emphasis on understanding how a given IT project will drive the business forward and contribute to the overall value of the firm.

When evaluating IT and GDS related projects or investments, the final decision boils down to access to customers. Company C considers incremental business, offensive and defensive positioning, and trends in the marketplace. Company C wants to maintain a leadership role in the industry, protect its market share, and be prepared for the future. It looks to consumer trends, what they are doing and what they want, and then determines how best to meet their needs. Other considerations include long-range positioning, competitive opportunities, new revenue, and removal of barriers for customers.

At Company C, projects compete within budgeted pools of capital for funding. For example, not long ago, a project was submitted to enhance the reservation system’s guest history and profiling capabilities. An Internet project, submitted around the same time, was for further development and enhancements to the company’s web site. Since the projects entered the decision queue around the same time, they competed with one another for capital. The company’s executive committee evaluated each project and established a set of priorities. In this case, the reservation project won the majority of the funding because the benefits were viewed as more immediate. The Internet project, since its impact was considered more

futuristic, was awarded minimal funding to continue its evolution and the company's preparation for the future. The company will increase its funding for the latter project at a later, more appropriate point in time when the project can demonstrate a more immediate impact to the firm's bottom line.

The Role of Company C's IT Steering Committee

At Company C, consensus-building is an important part of the decision-making process. Thus, the use of committees is common throughout the organization. Numerous committees meet regularly to discuss, plan, and prioritize IT initiatives and issues. The primary IT committees, in addition to the Office of the CIO are noted here.

An IT steering committee, comprised of representatives from each of its lodging brands and core disciplines, governs the organization's IT priorities, serves in an advisory capacity to the CIO, and ensures the alignment of IT with the company's corporate- and business-level strategies. A reservations steering committee comprised of individuals from IT, sales and marketing, revenue management, and reservations oversees and manages the company's CRS and prioritizes all enhancement requests. To oversee the company's web site, there is a web policy board consisting of representatives from interactive sales and marketing, IT, each of the hotel brands, franchising, legal, human resources, and corporate communications. An informal web council was also established to oversee web content and functionality.

Post-Decision Analysis at Company C

Post audits are conducted for all capital projects, including IT, to see how well they helped the company in achieving its business goals, as stated in the business case. For some projects, like the construction of a new hotel, the post audit process is straightforward. The actual operating statistics (e.g., occupancy, REVPAR, income, etc.) and project costs are compared with the initial projections. For marketing and IT projects, however, the post-audit process is usually more difficult due to the many confounding factors involved. In such cases, Company C uses a balanced scorecard approach to monitor trends within the company to see how performance changes. Key performance measurements include guest satisfaction scores, associate satisfaction scores, sales, market share, and profitability.

Leadership performance and effectiveness are also tracked to hold executives, project sponsors, and project managers accountable for results. If Company C is not pleased with the results, it will make changes in its leadership.

Defining Risk at Company C

Company C can be described as risk-averse. As such, the company is leery of new technologies. To paraphrase the words of Company C's senior vice president for IT strategy and planning, Company C cannot afford to take risks with frontier technologies, those that are in the early adoption stages. Although the company is willing to experiment at times, it is extremely cautious since it has a great deal at stake and cannot afford to blunder or put its reputation on the line. To this end, Company C does not want to be on the bleeding edge of IT. Instead, it will often play the role of an aggressive follower.

As is the case for Companies A and B, many dimensions define risk at Company C. One vice president of IT defines risk upon multiple dimensions. He described risk in terms of a technology's (or application's) reliability, flexibility, useful life, and project risk. The CFO defines risk in terms of financial risk and technology risk. The former relates to the company's ability to achieve its business objectives and realize the expected ROI for a project. The latter relates to the stability and proven track record of a given technology, the company's experience in using or developing solutions using that technical architecture, the degree of programming or customization required, and the extent to which the company will be out in front of a given technology.

Risky projects are treated differently at Company C and often receive less funding initially until the benefits are more proven. Projects are assigned a level of risk based on the factors cited above and a risk premium to be used when calculating ROI. The CFO concedes that there is some subjectivity involved in assigning risk premiums to projects. To reduce the impact of this subjectivity, the company conducts "what-if" analyses using different hurdle rates to ascertain the potential upsides and downsides under different conditions and to ensure that the benefits are commensurate with the level of risk associated with the project. The company's standard hurdle rate is 10.5%.

To reduce risks associated with IT projects, Company C closely manages IT projects to achieve the benefits it expects at reasonable costs. Strong project management, tight controls, accountability, short project time lines, and a clear definition of the project's scope help to mitigate project risks.

Challenges to IT Adoption and Implementation at Company C

One of the most significant challenges facing Company C's use and adoption of IT is its labor pool, particularly those staffing the line positions. Several executives noted that the hotel contact people are not adept at using IT due to educational levels and limited work experience. When new applications and technologies are introduced, the new tools can easily overwhelm line employees, causing service disruptions and employee turnover.

The availability of IT labor is another problem that stymies corporate initiatives. Presently, there is a shortage of IT talent, not just in the hospitality industry but in general business as

well. Attracting talented and skilled IT labor is difficult due to the competition, the comparatively low IT salary scales used by the hospitality industry, and the limited state-of-the-art applications used in hotel companies.

Another major hurdle facing Company C is the company's management structure. Company C is a hotel management firm and franchisor. As such, it does not own or control IT assets at each property. Since the owners of each hotel control the IT infrastructure at the hotel level, Company C's challenge in introducing new IT is to influence the decision-makers for each property and persuade them of the benefits of IT at the property level as well as the brand and corporate levels. Company C has been particularly effective in building clauses into its franchisee and management contracts stating certain minimum thresholds and specific systems from Company C that are required. However, with the pace of technology changing so quickly, it is difficult to forecast future technologies and build them into new and existing contracts.

One final and perhaps more subtle obstacle facing Company C is its organizational culture. Several individuals interviewed indicated the company's adversity towards risk, shyness concerning innovation, and a bureaucratic culture that is slow to change. Some also admitted that the corporate culture stifles creativity and discourages risk-taking and that the company is sometimes blinded by its past successes. These factors combined make it difficult for Company C to explore business improvements and new business ventures enabled by technology.

Company C's Outlook for the Future

With respect to the future, oversupply continues to haunt the industry, fueling discounting and driving the industry towards commodity-like behavior. Under these conditions, Company C's biggest concern is whether or not it can continue to maintain its strong brand identity, value, and customer loyalty while the industry moves more towards commoditization. Company C believes that service levels as well as its ability to use customer information to create custom-tailored experiences for its guests will be the differentiating factors that will provide its brands with a winning edge. At the heart of this strategy will be knowledge-based systems and the company's global distribution network.

Company C sees the industry in a state of transition, with several defining moments on the horizon. These defining moments relate to the Internet, the future roles of travel intermediaries, and the structure of the industry's distribution channels. Today, hotels pay transaction fees to airlines for hotel bookings that are processed in their systems. Some at Company C suggest that, in the near future, the reverse may be true. They foresee a time when airlines and other travel entities will pay transaction fees to hotel companies and compete for representation and favorable positioning on hotel web sites. One possible scenario of the future is that guests will first select their travel destinations and use a hotel web site to book not only their lodging accommodations but also their other travel needs such as airline tickets and rental cars. With this approach, hotel companies could charge

transaction fees to airlines and rental cars, reversing the present model. For Company C, a location-centric or destination-driven model represents tremendous opportunity and potential, given the company's vast distribution and strong presence in many of the world's top destination markets.

Company C predicts further industry consolidation to a point that there will be between two and four primary players owning and controlling most of the industry's worldwide room supply. A recent acquisition of two large, highly visible companies provides testimony of this consolidation at a time when size and scale are important to maintaining competitiveness. Company C also foresees consolidation of Internet booking entities. The present market space is too crowded with many companies offering overlapping and undistinguishable services. What remains to be determined is who will become the shakers and movers of the future, both online and offline. Company C hopes that it will be among this group. The strategic initiatives presently underway and its supporting IT infrastructure suggest that Company C is likely to be a strong contender in the years to come.

For Company C, the focus for the future is to expand the value proposition it provides to each of its stakeholders. Some of the initiatives presently underway to achieve this objective include the following:

- Continue building customer loyalty through better knowledge management systems.
- Expand the value-adding services it offers to the industry to help the company win new management contracts and franchisees and develop new sources of revenue.
- Use the company's strong balance sheet (financial strength) to grow the company at a rate of 15-20% per year.
- Establish critical mass in all markets to control the marketplace, leverage resources and the company's presence, and build greater efficiencies and economies of scale.
- Consolidate functions and activities within clusters and regions to reduce staffing requirements and overhead and create synergy.
- Better manage and integrate total hotel inventory and expand revenue management capabilities to include meeting space, catering, and ancillary revenues.
- Revamp the entire sales process and automated tools used to support the sales effort to boost market share and REVPAR, to make more effective use of resources, to reduce overhead, and to enhance customer-relationship management (CRM).

Recapitulation of Company C

Company C is a global giant and a recognized leader throughout the hospitality industry. It is known for its state-of-the-art technology and its leadership positioning. The company enjoys a strong lodging portfolio that is supported by an equally strong IT portfolio. Company C has many unique attributes that provide competitive advantage and make it the envy of the

industry. Its strategic orientation is operational excellence. Given the company's maturity level and leadership position, Company C is in a position to define new competitive space and take the industry to new heights. While other companies are trying to aggressively play a game of catch up, Company C is preparing to advance to the next level. This is evident in the company's approach to market saturation and dominance in all segments of the industry, its desire to tap revenues from other parts of the value chain, and its ability to aggressively challenge any competitor. Aggressive growth enabled by a strong financial position and a capable IT infrastructure leads the company's strategic initiatives.

Company C's distribution strategy, targeted towards consumers, travel agents, and other important influencers (e.g., secretaries/administrative assistants), is to make it as easy as possible to do business with the company. This means providing seamless, single-image inventory access with last-room availability to all distribution channels used by its customers. With strong but fragile ties to the travel agent community, Company C is extremely cautious to do anything that could undermine this working relationship.

Reflecting its conservative nature, Company C uses an incremental test-and-invest strategy for most major capital investment decisions involving IT. Without question, Company C is a financially-driven, consensus-building organization. All decisions are made by committee, require consensus, and are based heavily on financial impact, although this is not the sole criterion. Strategic implications and a project's alignment with the company's core strategies are also important and weigh significantly on all decisions. Oftentimes, these are the deciding factors, but in no case is technology ever implemented for technology's sake. IT projects are the result of teamwork and partnerships formed between IT and the company's business units. A business sponsor manages and oversees each project. Without a product champion, a project's request for funding will be rejected.

A new, seasoned CIO is bringing order and discipline to the IT function to gain greater acceptance and credibility and distance the department from its past failures. Serving as a change agent, the CIO is constantly pressuring his peers in the organization to become more innovative in their uses of IT. He is also working to create a more IT-friendly culture, one that embraces IT and seeks new uses of IT for competitiveness and new business ventures.

Y2K issues have preoccupied most of Company C's attention for the past 18 months. During this time, the company has backlogged a number of strategic priorities, including the inclusion of meeting room inventory in the company's reservation and yield management systems. After the turn of the century, additional resources will become available to embark on these and other priorities. All told, Company C will be one to watch as the competitive race intensifies, especially if the company can overcome its bureaucratic structure, which is known to stifle creativity, innovation, and an entrepreneurial spirit.

Inter-Company Comparisons and Analyses

One of the contributions of this study is an in-depth, comparative look at three of the world's leading hospitality organizations and their strategic investment in and uses of information technology, namely in the area of global distribution. In each of the companies studied, IT represented one of the largest corporate departments, both in terms of staff size and budgetary dollars. The three companies in this study are known for their leadership roles in the industry and for their successful implementation—and sometimes pioneering applications—of information technology, particularly in the areas of reservations processing and global distribution. Despite competing in the same industry, using similar approaches to evaluate and prioritize their IT needs, and following comparable processes for decision-making, these companies exhibit many differences regarding their strategies, objectives, and outlooks for the future, not to mention their current industry positioning, experiential levels, IT portfolios, and mastery of IT. These companies also demonstrate different strengths, levels of organizational maturity, organizational structures, size, and product/service offerings. These differences, summarized in Table 4-6, account for the different evaluation and decision-making criteria and priorities observed within each company and help explain variations in IT spending and needs.

Of the three companies studied, Company A is the largest, followed by Company C and, finally, Company B. Company A also enjoys the broadest geographic dispersion. Company C features the most impressive lodging portfolio of the three, with a product for virtually every segment of the industry. Company B's lodging portfolio, on the other hand, is the smallest and most limited of the three companies in terms of product offerings and segments represented. All three companies manage and franchise operations, are using franchising as a major growth vehicle, and are targeting international markets for expansion opportunities. Company C maintains the greatest consistency throughout its brands, not just for operations and quality but also for IT. This is due in part to its high percentage of managed properties to franchised properties. Another contributing factor is that its franchise agreements are probably among the strictest in the industry in terms of adherence to standards and use of technology, although Companies A and B are moving in this direction. All three companies seem to agree that IT can lead to competitive advantage but not through the IT itself. Instead, the competitive advantage comes from what the IT enables and how the organization uses the technology. There is also agreement that the future of competition will be based on knowledge and strong customer relationships. As such, each of the three companies is working to create a knowledge infrastructure through networking, data warehousing, data mining, and better guest profiling.

Table 4-6: Comparative Overview of the Three Companies Studied

	Company A	Company B	Company C
Present State	<ul style="list-style-type: none"> • Transition 	<ul style="list-style-type: none"> • Underdog 	<ul style="list-style-type: none"> • Mature
Strategy	<ul style="list-style-type: none"> • Turnaround Mode 	<ul style="list-style-type: none"> • Break the Rules, Innovator 	<ul style="list-style-type: none"> • Operational Excellence
Focus	<ul style="list-style-type: none"> • Market-Driven → Franchising 	<ul style="list-style-type: none"> • Market-Driven → Franchising • Shifting to Customer-Centric Focus → Customer Intimacy 	<ul style="list-style-type: none"> • Customer-Driven → Operations
Action	<ul style="list-style-type: none"> • Bias Toward Action: Triage, Remediation, and Catch-up 	<ul style="list-style-type: none"> • Dare to Be Different 	<ul style="list-style-type: none"> • Incremental Test-and-Invest
Strategic Priorities	<ul style="list-style-type: none"> • Catching up • Guest Preference/Loyalty • Quality and Consistency • Price/Value Relationship • Brand Re-Imaging • Growth and Global Expansion • Value Creation and Shareholder Satisfaction 	<ul style="list-style-type: none"> • Differentiation • Customer Intimacy to Build Loyalty • Brand Re-Imaging • Growth and Global Expansion • Value Creation and Shareholder Satisfaction 	<ul style="list-style-type: none"> • Defend Industry Position • Growth and Global Expansion • Operational Excellence • Value Creation and Shareholder Satisfaction
IT Priorities and Business Strategy Drivers	<ul style="list-style-type: none"> • Data/Knowledge Management: Collection, Dissemination, Analysis, and Reporting • Property-Level IT Infrastructure and Core Technologies • Company Performance through Increased Revenue, Decreased Costs, and Organizational Efficiencies • Organizational Turnaround: Triage and Remediation • Company Growth • Electronic Commerce • Usability/Ease-of-Use 	<ul style="list-style-type: none"> • Marketing with IT • Use of IT to Differentiate and Leverage Business • Data/Knowledge Management: Collection, Dissemination, Analysis, and Reporting • Guest Satisfaction and Loyalty through Customer Intimacy • Company Performance through Increased Revenue, Decreased Costs, and Organizational Efficiencies • Flexibility and Business Agility through Architecture • Company Growth 	<ul style="list-style-type: none"> • Guest Service and Loyalty • Data/Knowledge Management: Collection, Dissemination, Analysis, and Reporting • Company Performance through Increased Revenue, Decreased Costs, and Organizational Efficiencies • Company Growth • Company and Shareholder Value • Streamlined Processes • Speed to Market • Organizational Change • Education of End Users and Corporate Executives
Major Strengths	<ul style="list-style-type: none"> • Rooms Quantity • Internationalization • Global Infrastructure • IT Infrastructure • Franchising 	<ul style="list-style-type: none"> • Corporate Culture Promotes Innovation • Travel Agent Relationships • Booking Incentive Programs 	<ul style="list-style-type: none"> • Brand Identity • Customer Loyalty • Quality and Consistency • Portfolio of Products • Rooms Quantity • IT Portfolio • Financial Position/Resources • Influence on Properties
Major Weaknesses	<ul style="list-style-type: none"> • Heavily Franchised • Tarnished Image/Brand Identity • Lost Industry Position, Scurrying to Catch up 	<ul style="list-style-type: none"> • Heavily Franchised • Brand Identity • Size • Quality and Consistency • Gaps in Product Portfolio 	<ul style="list-style-type: none"> • Organizational Culture and Bureaucracy Stifle Creativity and Discourage Risk-Taking • Slow to Change/React • Blinded by Past Success • Paralysis by Analysis

Strategic Orientation

Company A, after suffering years of decline and turmoil, has embarked on a comeback campaign. Its strategy is short-term and, arguably, shortsighted because its sole focus at the present time is to achieve competitive parity within the industry. What's lacking is a long-term vision. Today, its properties suffer from age and consistency problems. Therefore, its efforts are largely centered on tactical moves to improve product/service quality and consistency and win guest loyalty. A company makeover that involves facility renovations and pruning is helping to accomplish these objectives. IT is another core component of this tactical strategy. It will provide the infrastructure upon which future growth and initiatives will be based and serve as the primary vehicle for communications and data sharing. Because Company A is coming from behind, it is working quickly to catch up to its major competitors to eventually regain and overtake the lead. Consequently, project evaluation and decision-making in Company A is often streamlined, especially if the project's business case can clearly link the project to competitive positioning.

Company B, based upon its present position in the industry among its competitive set, can best be classified as an industry underdog. Company B realizes that it is different—and often disadvantaged—compared to many of its major competitors, and in this case, Companies A and C. Because its product portfolio is weaker (i.e., less robust) and because the company lacks the size, brand identity/reputation, and customer loyalty of Companies A and C, Company B is looking to redefine the basis of competition rather than compete head-to-head with its direct competition in areas where the company would be at a definite disadvantage. As such, its strategy is focused on innovation, breaking industry rules, and creating new paradigms. This strategy has proved successful for Company B in many of its past initiatives related to GDS, booking incentives, and ties to the travel agent community. Moving forward, Company B, in keeping with its theme of marketing with IT, will deploy IT to enhance marketing initiatives, namely in the areas of customer intimacy and relationship building. Like Company A, Company B has also embarked on a re-imaging campaign in hopes of building stronger brand value.

Company C enjoys an enviable position built largely on history and an unending commitment to guest satisfaction. Over the years, Company C has rounded out its product portfolio, perfected its service delivery, tweaked its operating procedures, and tightened its standards—all while building a loyal customer following. It has grown to become an impressively large but conservative and bureaucratic organization. Enjoying one of the top positions in the industry, Company C's primary challenge is to protect and maintain its leadership role and competitive advantages. Thus, Company C's strategic focus is operational excellence—fine-tuning its existing capabilities while logically extending their reach into previously untapped areas. For example, while its competitors continue to wrestle with standardizing property management systems, mastering CRS connectivity and single-image inventory with last-room availability, and climbing the learning curve for revenue (yield) management, Company C is looking to apply its expertise in these areas to new applications and on new levels. These include meeting and banquet room reservations and inventory management and city clusters, or geographic groupings of properties treated and managed as one hotel. As

Company C perfects its own operations, it continues to push the industry to a new level of competition, constantly forcing others to be on the defensive and play catch-up. Looking to the future, Company C will likely avoid risk, assume a defensive posture to protect its lead, and make evolutionary versus revolutionary changes to its business model due to its conservative nature. Therefore, decisions will be committee-based and driven by consensus, result from extensive and in-depth analyses, and follow an incremental, test-and-invest strategy.

In all three companies, the guest, service delivery enhancements, and loyalty are important elements and key drivers for developing and implementing IT applications. However, subtleties exist in their approaches and priorities as a result of how the companies are organized; specifically, the ratio of managed to franchised operations. Since Companies A and B are primarily franchised organizations, their efforts reflect a market-driven focus. They place a great deal of emphasis on marketing functions, services, and technology applications to support these needs, enable growth, and strengthen their franchise enterprises. According to Company A, IT spending is lower in franchised companies compared to managed companies because franchising changes the economics of IT. This is because many of the benefits derived from IT benefit the properties directly. The franchisor only receives a percentage of the benefits based on royalties and franchise fees, whereas the management firm can experience all the benefits directly. Company C, while also a large franchisor, manages a higher percentage of properties in its lodging portfolio than the other two companies. As such, it realizes a higher percentage gain from each benefit derived from IT. Also, Company C assumes a more customer-centric posture, placing greater emphasis on the operation, management, and marketing of hotels. IT, in turn, supports and enables these functions, with an acute sense of focus on service delivery and consistency, customer tracking, and customer loyalty building.

IT Priorities

In each company, IT plays either as a support or enabling role since none of the companies choose to be in the software development business. Of the three companies studied, Company B is the only one to include any reference to technology in its corporate mission statement. Paraphrasing a portion of the company's mission statement, technology, combined with marketing and management, will enable Company B to carry out its mission and achieve its objectives.

The role of IT in the three companies studied becomes clearer when looking at their respective IT mission statements. In summary, the common elements of these IT mission statements underscore the supporting role IT is to play with respect to delivering customer service, creating value, facilitating data sharing, and enabling company growth. Company A's IT mission statement takes a pragmatic perspective with a data-centric focus, emphasizing information collection, dissemination, and sharing. It reads:

“To develop and maintain high quality systems on multiple hardware and software platforms linked together to allow both internal and external clients at headquarters, regional offices, and hotels to input and access data needed for reporting and decision-making and to do so efficiently and economically.”

The IT mission statements for Companies B and C are broader in scope. Company B’s IT mission statement addresses company positioning, focuses on the customer, and stresses financial performance. Company C’s IT mission statement, like that of Company B, discusses company positioning and financial performance. It also stresses achieving competitive advantage through the use of IT, and like that of Company A, stresses the importance of creating and maintaining a capable IT infrastructure. The IT mission statements for Companies B and C, respectively, are presented below:

“To support and enable each of our Brands to be the most successful brands on the planet, delivering satisfied customers and exceptional financial performance.”

“To contribute to Company C’s being the best company in all-industry segments in which it does business, by promoting competitive advantage through effective use of information technology and by deploying information technology to drive business profitability, an enabling infrastructure, and workforce effectiveness.”

Beneath the surface of each IT mission statement, one can find the articulation of more telling details regarding the roles, drivers, and key priorities for IT. In all cases, it is clear that the drivers of IT stem from the business objectives and overarching company strategies. All three of the companies share commonalities in terms of guest focus; service enhancement; and performance improvements through cost reductions, efficiencies, and increased revenues. They also share a common vision with respect to the importance of data/knowledge management, including the collection, sharing, and reporting of information throughout all levels of the organization and the need for a global infrastructure that will enable easy and timely access to accurate information. Finally, all three companies are focused on growth globally, value creation, and satisfying their owners and investors.

Many of the differences in company priorities and drivers reflect each company’s current state, organizational culture, and strategic objectives. At Company A, for example, the focus is one of turnaround. The IT department, like the company, is trying to get its house in order. Therefore, many of its top priorities involve triage and remediation. At the same time, the IT department is working on initiatives that will help the company improve quality and consistency and grow by providing better and more timely access to information as a result of architectural standards at the property level. These initiatives all tie well with Company A’s turnaround effort.

At Company B, the focus is marketing with IT. IT is used to help differentiate the company given its underdog status. It is also providing the basic building blocks that will support the company’s customer intimacy strategy. Another priority for Company B is achieving agility

and flexibility through its IT infrastructure. At Company C, many of the drivers reflect the company's mature state and strategy of operational excellence. The company is looking to perfect its systems and procedures, streamline or design processes, and enhance time-to-market. Company C, unlike the other two companies, has consciously stressed organizational culture and education, two common barriers it faces to IT adoption and deployment. Company C wants to promote organizational change and foster a climate that will embrace technology to bring its businesses to new heights, create new sources of competitive advantage, and to make its workforce (already in short supply) more productive.

Culture

Company culture plays an important role in each of the three companies. The culture at Company A is in a state of redefinition as the company's new management team gets established and refocuses the company. The dominating culture at the present time is focused on restoring the company's lead in the industry. In playing catch-up, the company is moving quickly to make things happen. To this end, little time is spent on overanalyzing situations.

The CEO and CIO at Company B are younger than their respective counterparts at Companies A and C. This generational difference may serve as one possible explanation for Company B's strong focus on and commitment to IT as a source of competitive differentiation. The culture at Company B promotes innovation and risk-taking, consistent with the company's break-the-rules philosophy. This is captured in the following statement made by the company's controller:

“Since we are in the age of technology, we spend money on IT. Our culture dictates that we spend money on IT, try new things, make information available, and use IT for competitive advantage.”

Conversely, Company C's culture reflects an organization steep in tradition and conservative in nature. Situations are carefully analyzed in their given context, almost to the point the company suffers from paralysis by analysis. Company C is clearly risk-averse—and perhaps rightly so. For Company C, the stakes are high for every decision it makes. It cannot afford to underestimate the impact or implications of any given decision on its empire for fear of losing its industry footing. Culture in these three organizations carries over to IT and the attitudes and views held in the organization towards IT. These, in turn, influence decision-making, organizational priorities, and adoption rates of IT.

In each company, the IT organization functions as an internal consulting entity and operates on a cost-recovery basis. The attitudes and cultures in the three companies are similar and run the gamut of highly satisfied to dissatisfied users. The mixed responses are the result of several factors and can usually be traced through an organization's history to past failures, project delays, cost overruns, unresponsiveness, or internal billing practices. With respect to reservations systems, Companies A and C have both experienced costly failures for

replacement projects within the past ten years. People within these organizations are slow to forget these negative experiences and tend to keep the organizations' institutional memory alive. Fortunately, with the passage of time, things change and memories fade. All three organizations reported that relationships and attitudes towards IT were improving as people within their organizations become more familiar with technology, gain an appreciation for its importance, and see greater management commitment and support. Talented management teams and capable individuals now staff IT at these companies, and as the result of recent project successes at each company, the reputation of IT is being restored. For example, Company B recently completed the development of its new CRS, and Companies A and C just finished overhauling their web sites. All of these projects were highly visible within their respective organizations and touted as huge successes, helping to restore some of IT's credibility. As organizational culture improves and becomes more accepting of IT, there is a greater proliferation of IT applications throughout these organizations. There are also better working relationships between IT, the business disciplines, and the end users. IT is now becoming recognized as a valuable asset versus an expense to be controlled. Executives are emphasizing the use of IT to add value to their firms.

At all three companies, support for IT comes from the top. Company A's CEO comes from a company where IT was a key component of that company's strategic advantage. At Company B, the CEO is said to be pushing technology to enable new things. Most of the company's past success can be attributed to technology and the company's use of IT to support and enable marketing. Company C's CEO also pushes for better, more effective uses of technology in his organization. While he may represent a bit of the "old-school thinking" at times, he reportedly maintains a grand vision of how IT can be used to win customers and competitive advantage. The executive committees in each of the three organizations also embrace technology, recognize its many contributions to their respective firms, and look for new ways to tap its potential, even though there can be some reluctance or skepticism from time to time. As a result of this support, growing comfort levels, more capable and affordable IT solutions, and greater competition, these companies recognize the need for more investment in IT.

In all three companies, the CIOs serve as primary change agents in their respective companies. The majority of their time is spent educating executives on the capabilities and limitations of IT, suggesting IT applications for the business, and socializing their ideas to gain acceptance. The three CIOs recognize that their companies are not in the software business but rather in the hospitality business. Thus, they refrain, where possible, from internal development. Instead, they favor purchasing capable off-the-shelf solutions and making modifications internally where necessary. Only in cases where applications are considered to be strategic in nature and offer competitive advantage do these companies consider embarking on internal software development. In such cases, the CIOs place a great deal of effort on project management and try to limit the project scope and timeline by modularizing these initiatives. They contend that projects that can be completed within a year are less risky and more likely to achieve success than those that extend beyond a year. Consultants and contractors are used to augment staff skills and supplement existing staffing levels. Outsourcing, although not widespread in these companies, is used for various non-strategic applications and services when there is economic feasibility.

All three companies recognize the growing importance of knowledge-based systems, which are essential for competing in a knowledge-based economy. This was an important theme stressed by each CIO and illustrated by their common goal of developing a global infrastructure that will foster a culture of information sharing within their respective organizations. Emphasis on knowledge management is also a visible component of the three companies' strategic initiatives. Subtle changes in titles or departmental names further reflect a commitment and focus on knowledge management. For example, the CIO's title in Company B is vice president of knowledge technologies, and the name of Company C's IT department is information resources. These name changes were deliberate to stress the importance of and focus on knowledge creation and dissemination throughout each organization.

Perhaps the remarks from one executive at Company A best capture the sentiment shared by the three companies in this study when it comes to IT. To paraphrase this individual, there is no such thing as an IT project; instead, IT is a tool or enabler for achieving a desired business goal. Correspondingly, the three CIOs interviewed see their roles firstly as businessmen and secondly as technologists. To this end, their priorities are to respond to business needs and to build value for their respective firms through the use of IT, common themes heard repeatedly throughout this study. They do not subscribe to the "technology for technology's sake" philosophy whereby companies continuously upgrade their IT or embark on IT projects simply to use state-of-the-art technology. Every project and decision related to IT must be strongly linked to their companies' strategies and objectives.

Organizational Structure

The IT departments at Companies A, B, and C are run by very capable and experienced CIOs. These individuals enjoy respect (both within their organizations and within the industry) and high-ranking, executive status in their respective organizations. In all three companies, the IT function has risen in organizational rank and is now on par with marketing, human resources, finance, operations, etc. While exact titles are not necessarily comparable across organizations given the differences in size of each company, reporting relationships and overall responsibilities seem comparable. The CIOs for Companies A and B report directly to the CEO, whereas in Company C, the CIO, along with his organizational peers, reports to the COO. Because of the vast array of responsibilities of each CIO, the role of committees in each organization, and the importance of relationship building, each company appears to operate in more of a matrix fashion, although the organizational structures, as depicted by the organizational charts, resemble a distinct hierarchical order.

The CIO for Company B is an industry veteran who rose through the ranks of the organization before assuming his IT responsibilities. Unlike the CIOs for Companies A and C, Company B's CIO is a self-made CIO who learned the profession whilst on the job. Of the three CIOs interviewed, the one from Company B has held his position the longest, giving his department a sense of stability not seen in Companies A and C due to turnover in

the upper ranks. He is also the youngest in age. In contrast, the CIOs at Companies A and C are seasoned CIOs who have spent most of their careers working in similar capacities for *Fortune 500* companies. Both of these individuals (as well as many of the top-ranking members of their staffs) are relatively new to their organizations and to the industry itself, after leaving similar posts in more high-tech oriented industries. Both classify themselves as turnaround CIOs who have been brought into their respective companies amidst chaos and change. They see their roles as short-lived. After restoring order and setting priorities, they believe they will turn the reigns over to others.

The three CIOs serve in equivalent capacities, overseeing IT organizations that function much like internal consulting organizations. The IT departments for each company are similar in terms of structure and responsibilities and tend to resemble typical IT departments found in most large organizations. The staffing levels and IT budgets, however, vary by company, as do the number of organizational levels and the degree of specialization. These variations can be attributed to many factors, including but not limited to company size, strategic orientation, relationship to the parent organization, and tasks/job functions provided by the parent and/or corporate levels versus the divisional level. Company B has the smallest and leanest department with 80 and a budget of \$7 million (US). A small department is consistent with a smaller organization and a strategic orientation of innovation. Company C, on the other hand, is the largest, with a staff of 1,200 and a budget of \$120 million (US). A large organization is expected given the company's relative size and maturity level compared to Companies A and B. Company A falls in between with an IT department comprised of 400 and an IT budget of \$80 million (US).

The IT budgets as a percentage of company revenue for Companies A, B, and C are 2%, 2.8%, and 1.5% respectively and seem to correspond with each company's present state and strategic orientation. For example, since Company B's strategic intent is to be an innovator, it seems to reason that its IT budget would represent a larger percent of sales than the others. Similarly, with Company C representing a more mature and conservative state, it seems only logical that its ratio of IT expenditures to company sales is the lowest of the three. Company A, in turnaround mode trying to play catch up, logically falls in between Companies A and C with respect to IT expenditures as a percent of company revenues.

While the CIOs share many of the same duties, there are some differences in their responsibilities and departmental structures. For example, Company A's CIO is unique in that he oversees a number of strategic services units in addition to his IT responsibilities. This is testimony of his credibility within his organization and shows that he is respected for his business acumen in addition to his technology expertise. From an organizational structure standpoint, Company C differs from the other two with its "Office of the CIO," an IT policy committee consisting of the CIO and the vice presidents of human resources, finance, strategic planning, consultancy, internal audit, and legal. Based on a review of the three companies' organizational charts, Company C appears to have a more formalized organization, given the size, number of levels, degree of specialization, and the "Office of the CIO," with a tendency to be more bureaucratic than the other two organizations studied.

Responsibilities related to reservations and global distribution vary by company but generally extend across multiple departments, including IT, sales and marketing, operations, and brand management. Company A differs from Companies B and C in that most aspects related to reservations and global distribution systems report to the CIO. These include technology development, on-going support, and maintenance; Internet; reservations (call centers); and revenue management. Sales and marketing also exert influence over and manage portions of Company A's distribution systems but do not fall under the CIO's domain. At Companies B and C, the CIO only oversees the technology components and applications development for reservations, distribution, the Internet, and revenue management. The remaining responsibilities are distributed across the organization, falling under a number of departments including sales (and interactive sales), marketing, distribution, brand management, reservations, and revenue management. In Company C, unlike Companies A and B, a steering committee comprised of individuals from IT, sales and marketing, revenue management, and reservations oversees and manages the company's CRS and Internet site.

From the above discussion, one can conclude that the structure of the IT organization in each company is a reflection of the company's current state, strategic orientation, priorities, and organizational culture.

Research Questions

This research study was guided by four research questions. What follows is a discussion of the findings from each of the three companies studied to shed light on the answers to these important questions. For convenience, the four research questions are listed below:

- 1) How do corporate-level hotel executives make investment decisions and establish IT priorities within the context of a hotel GDS?
- 2) What is the future outlook of hotel GDSs?
- 3) How is the success of IT investments in a hotel's GDS measured?
- 4) How is the net worth of a hotel GDS calculated or determined?

Research Question #1: Investment Decision-Making Process and Priorities

The three companies studied concur that IT is not part of their core businesses. In all cases, the primary focus is providing lodging services and hospitality to their clientele. These services span the gamut of industry offerings and include sleeping accommodations, meeting space, foodservice, and recreational amenities. IT in each of the companies supports and enables these services and each company's core mission and objectives. A common theme that emerged from the three companies study was the avoidance of technology for technology's sake. In other words, each company strives to employ IT based on sound

business decisions and logic rather than simply to migrate to state-of-the-art technology. All three companies continually stressed that IT must be linked to their business strategy and objectives. A financial executive at Company A best summarized the sentiments for all three companies when he said: “There is no such thing as an IT project.” All projects involving IT were somehow tied to business needs, and therefore, should be considered business projects. In other words, IT is a resource being used as a competitive method, and, like any other corporate resource, its use must be aligned with the firm’s strategy. This is what is meant by co-alignment. To achieve these linkages, IT strategy and project initiatives must clearly support or enable the firm to achieve its strategic objectives. Business cases must clearly articulate and map a project’s benefits to the company’s strategy and strategic thrusts. Each of the companies studied also considers IT in the context of a portfolio. Like a financial portfolio, a collection of assets must be managed to optimize returns while minimizing risk. Application of these concepts is visible in each of the three companies.

Table 4-7 on the next page provides a comparative summary of the IT investment decision-making process used by each of the three companies. The ensuing pages discuss and compare the processes followed by each company in greater detail.

Table 4-7: Comparing the IT Investment Decision-Making Process Across Companies

	Company A	Company B	Company C
Planning Horizon	• 5 years or less	• 10 years or less	• 5 years or less
Budget Cycle	• Annual	• Annual	• Annual
Documentation	• Capital Papers	• Authorized Form for Expenditure (AFE)	• Business Case
Lead Role	• Business sponsor	• CIO	• Business sponsor
Supporting Role	• IT	• Business discipline	• IT
Project Classifications	• Strategic • Regulatory or mandated • Infrastructural	• Strategic/Business • Infrastructural	• Strategic • Required/mandatory • Infrastructural
Hurdle Rate*	• 11%	• 15%	• 10.5%
Measures	• Blend of quantitative and qualitative measures	• Blend of quantitative and qualitative measures	• Blend of quantitative and qualitative measures
Focus	• Strategic and financial focus	• Strategic and financial focus	• Strategic and financial focus
Decision Criteria	<ul style="list-style-type: none"> • Link to business strategy • Financial performance (increased revenues or decreased costs) • Guest-centric initiatives • NPV • Payback – 5 years or less • Electronic commerce-based • Ease-of-use 	<ul style="list-style-type: none"> • Financial <ul style="list-style-type: none"> • NPV • Payback – 5 years or less • Business considerations <ul style="list-style-type: none"> • Competitive advantage • Financial performance • Economies of scale • Strategic alignment • Enabling capabilities • IT <ul style="list-style-type: none"> • Resource availability • Architectural fit • Sponsorship • Risk • Life cycle • External <ul style="list-style-type: none"> • Alternatives • Competitive positioning • Industry response • Value creation 	<ul style="list-style-type: none"> • NPV • NPV as a percentage of present value invested • Cash-on-cash invested • Cash flows • Impact on earnings per share and stock multiples • Strategic positioning • Strategic alignment • Sound business judgement • Guest/service enhancements • Financial performance (increased revenues, decreased costs)
Key Players	• Executive Committee	• Executive Committee	• Executive Committee
Critical Success Factors	<ul style="list-style-type: none"> • Deliver projects on time, within budget, according to specification • Business sponsorship • Strategic alignment • Steering committee • IT vision • Corporate understanding of IT 	<ul style="list-style-type: none"> • Deliver projects on time, within budget, that work as advertised • Business flexibility and agility through architecture • Strategic alignment • Project champion 	<ul style="list-style-type: none"> • Deliver projects on time, within budget, according to specification • Business sponsorship • Strategic alignment • Management support • Project champion • Open communications • Throughput
Steering Committee	• Yes	• No	• Yes
Approval Levels	<ul style="list-style-type: none"> • Executive Committee • Parent organization 	<ul style="list-style-type: none"> • Executive Committee • Parent-level IT Council • Parent organization 	<ul style="list-style-type: none"> • Executive Committee • Finance/Growth Committee

**Represents the standard or base hurdle rate used in calculating NPV for most capital projects, IT or otherwise. The true hurdle rates used may fluctuate by project based on the assessment of risk premiums, which are often defined on a project-by-project basis.*

Table 4-8 below presents a thematic overview of the priorities and goals of each department with respect to IT. There appears to be a high degree of consistency by discipline across companies. However, within each company, the variation is high, sometimes creating conflicting priorities and objectives. Needless to say, an organization's expectations of IT are many and great.

Table 4-8: Thematic Analysis of Organizational Focus and Priorities for IT

Discipline	Company A	Company B	Company C
Marketing	<ul style="list-style-type: none"> • Guest preference/loyalty • Brand focus 	<ul style="list-style-type: none"> • Guest preference/loyalty • Guest satisfaction • Brand focus • Database marketing 	<ul style="list-style-type: none"> • Guest preference and loyalty • Make it easy/convenient to do business with
Information Technology	<ul style="list-style-type: none"> • Triage, remediation, and catch-up • No technology for technology's sake • Business orientation 	<ul style="list-style-type: none"> • Marketing with IT • Break the rules/dare to be different • Leverage businesses through IT • No technology for technology's sake 	<ul style="list-style-type: none"> • No technology for technology's sake • Business orientation • IT for strategic enablement • Cultural changes • Business process reengineering • IT as change agent • Efficiencies • Economies of scale
Finance	<ul style="list-style-type: none"> • Business value/ROI • Growth 	<ul style="list-style-type: none"> • Business value/ROI • Growth 	<ul style="list-style-type: none"> • Business value/ROI • Growth • Incremental test-and-invest • Satisfy shareholders (earnings per share)
Operations	<ul style="list-style-type: none"> • Turnaround • Quality and consistency • Simplicity/ease-of-use 	<ul style="list-style-type: none"> • Rebuild image • Quality and consistency • Simplicity/ease-of-use 	<ul style="list-style-type: none"> • Operational excellence • Efficiency • Consistency and standardization

The planning horizon at each company varies slightly. Company B looks ten years into the future. This is greater than the planning windows used by Companies A and C and is consistent with Company B's strategic orientation as an innovator seeking first-mover advantages. Companies A and C both use five-year windows at the outset. All three companies also develop shorter-range plans that vary between one and five years. The one-year plans coincide with each company's annual budgeting cycle and are linked to the executive compensation. Naturally, these plans are the most specific and more tactical in nature.

All three companies expressed a growing trend towards increased competition for capital within their organizations. As the costs of doing business in the hospitality industry continue to rise, these companies are faced with numerous capital budgeting decisions, not all of which are IT related. Due to limited resources and, to a lesser extent, capital rationing, these IT projects are, more often than not, competing for funds and resources with other projects, IT and non-IT alike. Also, these companies are experiencing greater pressure from shareholders and investors to increase value, particularly in light of the recent surges in technology stocks and, most notably, Internet stocks. While growing emphasis is being placed on value creation, these three companies often weigh strategic considerations higher than short-term financial benefits. This represents an indication that companies are jockeying for position, trying to create new competitive advantages and compete in new industry space. In other words, there is evidence that these companies are working to modify their business models rather than rely on traditional approaches to competition. Many of the new ventures such as electronic commerce and data mining are capital intensive with undetermined ROI and payback. However, these companies recognize that these are essential to their long-term viability and competitiveness. Consequently, they are undertaking initiatives such as these with the hopes they will reap the rewards sometime in the future. It is also important to note that while all three companies have formalized processes and procedures, these companies recognize the competitive intensity and pressures of the marketplace. Therefore, in certain situations where speed to market is paramount, these companies will consider an abbreviated version of the process, placing less emphasis on analysis and rigor and relying more on a leap of faith.

Ownership and Lead Role in the Process

One of the ways that strategic alignment is achieved is to have the business disciplines develop and defend the business cases. This is standard practice in Companies A and C for all projects, unless the project is deemed to be an IT infrastructural project. Both companies identified business sponsorship and project champions as critical success factors and prerequisites for any IT project seeking funding. To underscore this importance, Company C has documented the roles and responsibilities of the project sponsor, the business team, and the IT resources (refer to Figure 4-12 on page 343). In these companies, IT is the enabler, but the business drives the decision.

To improve the likelihood of success and the adoption rate of IT, the CIOs at Companies A and C contend that business units must take ownership of IT, its development, and implementation. This ownership must go beyond talk or a figurehead to include some kind of financial or vested interest in seeing the project succeed. According to the CIO of Company C, “The IT department will do whatever it can to support the process, but project ownership must reside with the person controlling the P&L.” The underlying premise in each of these companies is that the heads of business know what is best for them to compete successfully in the marketplace. If they are going to stick their necks out, spend money that will affect their bottom lines, and risk their bonuses, they must be committed to the project and believe in its capabilities. In both companies, the IT department plays a supporting role. To encourage greater support and commitment, executive compensation is tied to a number of strategic initiatives, budgetary performance for their area, and overall company performance. Compensation plans are extended over multiple years to foster long-term thinking and visioning of the future. In both companies, executives report they have experienced a higher approval rate for funding requests and greater project success using this approach.

Company B, conversely, takes a slightly different approach. The most discernable difference is that the CIO himself almost always champions the process. In this company, the business disciplines generally play the supporting role while the IT department and the CIO lead in the business case development, presentation, and defense. Although each project typically has a business sponsor or product champion, this person assumes a much smaller role than those in Companies A and C and generally acts only as a figurehead. The opinions concerning this approach are mixed. Some implied that the CIO takes the lead role because he is the company’s primary change agent and is responsible for developing enterprise-wide solutions. The CIO suggested that he had to assume this role because his peers in the organization were less visionary and focused on tactical issues. Some business executives liked the arrangement because they preferred to delegate IT to those more knowledgeable and proficient than themselves to free them up to use their time to devote to other issues. Others, however, expressed dissatisfaction for being sidestepped by the process. For example, one marketing executive at Company B expressed the desire for greater involvement and a more visible role in IT-marketing initiatives. Needless to say, the company’s executives are divided on the issue, and the resulting friction is not healthy. In the end, the feeling by many is that IT projects, since driven by the IT staff rather than business resources, are, at times, misaligned with the needs of the business. There is a feeling that IT solutions are often bloated with technology features while lacking in areas of simplicity or key functionality. An outsider could conclude that there is little ownership by business and end users alike of the IT solutions once developed and implemented. Attitudes such as these can be dangerous, as they can slow adoption of IT or even inhibit acceptance altogether.

Another unique observation concerning Company B is that the CIO conducts biannual strategy sessions to review and align the business and IT strategies, to set priorities, and approve key IT initiatives or projects. Present at these meetings are the company’s CEO, CIO, brand presidents, and executive management team. While Companies A and C hold periodic strategy meetings, they do not focus exclusively on IT.

The Business Case

Each company follows a formal, standard, and rigorous process for justifying IT projects. Because each project tends to be unique in terms of purpose, objectives, scope, and objectives, decisions tend to be made on a case-by-case basis. Each company recognizes that a “cookie-cutter” approach is not always feasible. The general approval process and procedures are standard, but some ad hoc criteria or methods may be used, depending on the project and the circumstances surrounding that project. A number of factors are considered, including environmental trends, timing, and organizational readiness, among others.

All three companies report that IT investments are generally treated the same as any other capital investment decision. The differences most often cited related to the reliance on qualitative data and intangible benefits and a de-emphasis on quantitative aspects such as ROI. All companies were quick to stress, however, that the latter is no less important and is still a required component of the business case. It is just more difficult to calculate and less accurate for IT projects than for other capital investment decisions; for example, new property construction. Executives in all three companies believe there is value in going through the exercise of trying to quantify benefits and calculate a project’s ROI. This value comes from the rigorous analysis and the attention drawn to a project’s costs and benefits. The process creates a culture and attitudes that require focus on the company’s strategies and financial responsibilities to its investors/shareholders. Executives are sensitive, however, to the limitations and the array of assumptions that must be made for IT projects. They are also aware of the competitive pressures their organizations face and the pace of change, both of which require that their organizations take prompt and decisive action. Thus, they place less emphasis on ROI and greater emphasis on a project’s ability to help the company achieve its objectives.

Common to all three companies, the process begins, often informally, with an idea or recognition of an organizational need from someone in the organization. After the idea builds interest and momentum, it is channeled into the company’s budgeting process. When it comes time to appropriate funding to for a specific capital project, a formal business case must be developed, presented to the executive committee, and approved for funding. The process can become political at times, with individual executives becoming passionate over certain issues. One executive from Company A described the process: “interesting with lots of lobbying and horse trading taking place.” In the end, however, all three companies concede that reasoning and judgement prevail, allowing only the *best* projects to emerge and win funding.

Each company uses a similar approach, although nuances exist based on each company’s culture and structure. Also, some of the terminology used may differ. For example, in Company A, the documents comprising the business case are called capital papers, whereas in Company B, the terminology used is Authorization for Expenditure (AFE). In Company C, the process is simply referred to as the business case.

All three companies noted the difficulties involved in trying to win support for an IT initiative. The justification process is typically a multi-step process that involves multiple people, levels, and departments in the organization. The decisions are confounded by the number of different stakeholders (e.g., guests, employees, franchisees, and shareholders) that must be satisfied and their often conflicting needs. Decisions are most commonly committee-based, and the process itself can be difficult due to the many unknowns involved, the inability to quantify benefits, prior blunders and credibility issues, and limited history/benchmarks that can be used for reference. Frustrations in the process were often noted. For example, one financial executive at Company A expressed his discontent when he said: “I am not doing this for the glory.” The CIO at Company B compared the process to “raising other people’s children.” Fortunately, all three companies report that the organization’s culture and attitudes towards IT are improving, especially with more top-down support and as executives become more proficient in using and understanding IT.

Following a traditional approach to capital budgeting, the business case is similar in format and structure for all three organizations, as one can see from Table 4-9. Each business case begins with an executive overview or summary of the situation and includes a needs/benefits analysis. The business case goes on to state the objectives, scope, and timing of the project; provide rationale or justification for the project; assess the marketplace in terms of opportunities, threats, risks, and competitor activity; discuss the financial benefits and ROI; and suggest a recommended course of action.

Table 4-9: Comparison of Business Case Content and Structure

Company A	Company B	Company C
1. Project Overview and Summary of Benefits	1. Executive Summary	1. Executive Summary
2. Definition and Scope	2. Capital Requested and Expected Returns	2. Problem/Opportunity Statement
3. Needs and Benefits Analysis	3. Customer Benefits	3. Background, Description, and Needs Analysis
4. Project Budget and Funding Request	4. Current Conditions	4. Funding Request
5. Risk Assessment	5. Alternatives Considered	5. Cost-Benefit Analysis
6. Financial Analysis	6. Financial Analysis	6. Financial Analysis, Cash Flows, and NPV
7. Alternatives Considered	7. Critical Assumptions and Risk Factors	7. Risk Assessment
8. Competitor Activity and Assessment	8. Project Assumptions	8. Competitor Activity Assessment and Industry Trends Analysis
9. Recommendations	9. Project Plan (Timeline)	9. Recommendations
10. Signatures of Endorsement	10. Appendices (as Needed)	

Using the three formats outlined above, it is possible to take the union of each set to compile a more comprehensive format that might represent the best in class for all three companies. This combined perspective is illustrated in Table 4-10.

Table 4-10: Proposed Business Case Content/Structure

1.	Executive Summary
2.	Problem/Opportunity Statement
3.	Project Definition and Scope
4.	Needs Analysis and Alignment to Company Strategies
5.	Competitor Activity Assessment and Industry Trends Analysis
6.	Project Budget and Funding Request
7.	Key Assumptions
8.	Cost-Benefit Analysis, Including Financial Analysis, Cash Flows, and NPV
9.	Risk Assessment
10.	Alternatives Considered
11.	Recommendations
12.	Project Work Plan and Timeline
13.	Signatures of Approval
14.	Appendices (as Needed)

Decision Criteria

The three companies studied are clearly for-profit companies with an overriding motive to maximize shareholder wealth through value creation. While a financial focus is important, in today's competitive industry, financial measures often take backstage to more strategic considerations such as customer loyalty and competitive positioning. In most decisions involving IT, executives at all three companies implied that, in addition to the supporting data presented in a project's business case, there must be a leap of faith. The specific decision criteria used to assess each project differ somewhat by company and by project classification scheme, although the overall process is quite similar.

Each of the three companies studied is financially driven, focused on growth, and committed to value creation and shareholder satisfaction. NPV and payback were the most commonly cited financial measures and ROI techniques used. Surprisingly, however, no company reported the use of return on assets (ROA), a profitability ratio that addresses asset utilization and contribution to revenue, as an important performance measure or decision criterion. Given the fact many IT investments are capital intensive due to hardware and software acquisitions, one would expect to see the use of ROA to monitor and assess a firm's efficient use of capital. According to each company's annual report, ROA is calculated for the firm, but there is no evidence that it is considered at a project level. Also surprisingly, is that no

company mentioned cost avoidance, the costs associated with not undertaking a project, as an important consideration. Sometimes, a decision to forego a project can have a greater [negative] financial impact than approving the decision. No one company dwelled on this issue, other than to note it is a common practice and essential component of any business case to consider alternatives and moves by competitors.

Of the three companies studied, Company C exemplifies the greatest financial commitment and focus. Its key criteria include NPV, NPV as a percentage of present value invested, cash-on-cash invested, cash flows, and impact on earnings per share (EPS) and stock multiples. While financial criteria are important, little emphasis is placed on calculating economic value added (EVA) or impact to cash flow at the project level, with some exceptions in Company C. Generally, this sort of value assessment is performed by financial analysts and done at a macro level, where the effects of multiple projects are reported in aggregate. The findings of this study suggest that it is difficult to calculate contributions to value at the project level because the impact is so small, not to mention the intangibility of many of the benefits and the difficulty in quantifying many others. Additionally, in most cases, the IT professionals interviewed expressed limited knowledge and comfort in this area. Thus, their focus is limited to what they know: NPV and payback. For any other measures, they rely on the financial analysts of their companies.

This research clearly indicates that trying to translate the impacts of IT projects on company value as measured by cash flow per share can be a difficult and daunting task due to the following three reasons:

- 1) There is a definite lack of tools presently available to estimate the impact and measure intangible or qualitative benefits in quantifiable terms. This is especially true when considering the strategic benefits of IT and the intrinsic value of customer data.
- 2) Each project, treated in isolation, usually has an infinitesimal effect on the big picture. Oftentimes, it is not a single project, but rather, a portfolio of projects that collectively drive firm value at a measurable level. Thus, assessing the shifts in cash flow per share at the individual project level may prove futile. Efforts may be better served by grouping projects and assessing value at a more macro level in the firm.
- 3) The many confounding factors, the fact that the costs and benefits span multiple budgets and disciplines, and the time lapse between project implementation and realized benefits make it difficult to track and measure the costs and benefits, the true cause-and-effect relationships, and the subsequent impact to firm value.

Each company suggests that IT projects are treated in the same manner as all other capital investment decisions, at least in terms of the process. However, differences in treatment of IT were noted at all three companies due to the quality of data available to base decisions, the perceived risks associated with IT, and each company's prior track record with respect to IT investments. IT projects are often allotted greater leeway in terms of quantified benefits and

ROI so long as the qualitative benefits are well documented, supported by industry trends, and able to win consensus from the executive management committee. All three companies blend qualitative measures with quantitative ones in the decision-making process. In each case, heavy emphasis is placed on competitive positioning and direct linkages to the company's core strategies. Corporate executives reportedly do understand the difficulties in quantifying benefits for IT projects and the limitations of the ROI tools and techniques. Since the value of the calculation is subject to the quality of the inputs, executives, knowing the difficulty in making assumptions, often place less weight on ROI criteria like NPV and payback, although both are desired metrics and often required.

It is not uncommon for IT projects to face a high degree of scrutiny. This is a result of past failures, institutional memories that are slow to forget, some degree of distrust or skepticism, and concern that the associated risks have been mitigated. Because of the risks associated with IT (either perceived or actual), IT projects are more likely to be subject to risk premiums than other capital projects, such as the construction of a new hotel. From the three companies studied, it is clear that no single measure, criterion, or technique can be used to determine the suitability of a project or investment. In all cases, multiple measures reflecting multiple dimensions and an interdisciplinary focus are used in the evaluative stages. Considerations are given to improved financial performance through revenue generation and/or cost reductions, enhanced guest service and loyalty building, streamlined processes, strategic positioning, and competitive advantage. Studies of all three companies clearly indicate that the decision-making process is also multidimensional, multidisciplinary, and multivariate. As one can see from the structure and contents of the business cases (see Table 4-9 on page 368), these companies employ multiple methods to arrive at their decisions and package them into a single document or business case. Company B exemplifies the use of a scorecard approach to capture three perspectives: business considerations (internal), information technology considerations, and external considerations. Figure 4-7 on page 304 captures the richness of quantitative and qualitative, tangible and intangible variables considered for each IT decision.

While all three companies use multiple methods and measures to evaluate IT projects and investment decisions and place different weights on the criteria used, there is no clear evidence of a formal weighting scheme or process to develop one as suggested by Semich (1994) using nominal group techniques. It is apparent from this research that, in all three companies, some measures dominate others, but it is not clear how the weighting is established. It seems that in most cases, the weighting is subjective, contextual, and done on an ad hoc basis. In this research, the only indications of formal rankings by weighting criteria came from Company B's planning process with its "Big Rocks" Matrix depicted in Figure 4-6 on page 299.

The project approval process and criteria used to evaluate a project differs somewhat based on a project's classification. These differences are illustrated in Table 4-11. It is important to note that each IT project is unique and is, therefore, subject to ad hoc treatment and measures at times, although the general process remains the same. In this study, companies reported three common classifications used to describe IT projects: strategic, mandatory/regulatory, and infrastructural. The number of project classifications reported by

the three companies in this study is considerably less than the combined list of classifications found in the literature (see Weill and Olson, 1989; Weill, 1991; Weill and Broadbent, 1998; Grover et al., 1997, 1998). Strategic projects generally face the most scrutiny and involve the most analysis. For these projects, all three companies are looking for linkages to company strategy, competitive positioning, long-term capabilities, and ROI. Infrastructural projects are among the most difficult to justify because many of their benefits are indirect. Generally, the decision criteria is based on defined needs and enabling opportunities. Where possible, companies will attempt to articulate financial benefits such as cost savings (e.g., as a result of reductions in overhead) or revenue potential (if the company can charge for use of the infrastructure). Lastly, mandatory or regulatory projects are the easiest to evaluate and win approval. In essence, the company has no choice; the project is necessary to stay in business. Thus, the benefits are obvious and the decision becomes a “no-brainer.” Projects such as these include Y2K and the Euro.

Table 4-11: Comparison of IT Projects by Classification

Type of IT/GDS Investment	Driving Stimuli	Risk-Return Characteristics	Criteria for Evaluation	Evaluation Techniques
Strategic	<ul style="list-style-type: none"> Competitive pressures, market trends, and consumer demand Competitive advantage Differentiation and innovation Growth 	<ul style="list-style-type: none"> High risk/high return Many unknowns High costs High visibility 	<ul style="list-style-type: none"> Financial impact measured by ROI, NPV, and Payback Increased market share Alignment with strategic objectives 	<ul style="list-style-type: none"> Business case Use quantitative and qualitative measures Judgement Leap of faith
Infrastructural	<ul style="list-style-type: none"> Data collection, sharing, and analysis Organizational need Enabling capabilities Growth Leverage Economies of scale 	<ul style="list-style-type: none"> High costs Lower perceived risks and returns Difficult to quantify benefits Difficult to justify Back-of-the-house (behind-the-scenes) 	<ul style="list-style-type: none"> Organizational efficiencies Enabling capabilities Communications, collaboration, and connectivity Focus on utilitarian value 	<ul style="list-style-type: none"> Business case Greater emphasis on qualitative criteria given the difficulties of quantifying impact
Mandatory	<ul style="list-style-type: none"> Survival Compliance 	<ul style="list-style-type: none"> Context-specific 	<ul style="list-style-type: none"> No defined measures since project is essential to remain in business Focus on necessity 	<ul style="list-style-type: none"> Business case Projects receive less scrutiny; decisions are “no-brainers” Organization has no choice; tends to focus on most cost-effective solution possible

With respect to investment decisions in IT, executives from Company C provide the best summary of the process, the issues, and the difficulty involved. According to Company C's CFO, the decision-making and resource allocation processes are not entirely scientific. It is as much an art as it is a science. Financial calculations and analysis are important, but they are not the end-all. While traditional, rational, textbook methodologies are used, they are often insufficient in addressing the problem at hand because, as one vice president of IT from Company C pointed out, these are not always textbook cost-benefit analysis problems. For many of the projects under consideration, the process is too complex and time-consuming with little patience or forgiveness from the marketplace. Therefore, instinct rather than hard numbers drive most of the decisions. Executives must do their best to evaluate every project/funding decision to determine which one(s) will have the highest probability of succeeding. However, the resulting decisions are nothing more than collective best guess, akin to hedging bets. Thus, Company C uses an incremental test-and-invest strategy to see how their bets will pan out. According to Company C's CFO: "In the end, the business case and good business judgement must prevail." In other words, management judgement is informed by measurements, forecasts, and the business case in hopes that both rationality and integrity of the process can be upheld, which, in turn, leads to greater confidence in the decision.

Executives from each company recognize the frailties of the various financial analysis techniques such as NPV in use in their companies. However, they seem to be at a loss in terms of how to handle these inadequacies and quantify the intangible benefits of each IT project. Although they endeavor to follow a rational approach when making IT investment decisions, they are often trying to apply textbook techniques to situations that are typically much more complex than textbook problems. While traditional approaches are used at the onset and throughout the process, much uncertainty surrounding an investment decision still exists, resulting in unsubstantiated, or shaky, assumptions and leaps of faith. Consequently, the rational process may be compromised. As subjective elements, opinions, and emotions are introduced into the process, the dynamics of decision-making change, leading to the horse trading described by one executive at Company B and the hedging of bets described repeatedly by executives at Company C.

What can be concluded from this research is that seldom is the IT decision-making process entirely rational. Perhaps the term rational is better described by degrees of rationality rather than in absolute terms. It is extremely difficult if not impossible to achieve perfection and exactness when calculating the financial returns and benefits of IT projects. Therefore, some element of subjectivity will always come into play. Accuracy, like rationality, comes in degrees or orders of magnitude. It is important to come as close as possible—or at least get in the ballpark—and improve the process with each new project. What the three firms in this study seem to value most is the process and the rigor it requires. What the three companies report as the most significant benefits are 1) a culture that fosters rational decision-making; 2) an emphasis on value creation, linking actions and resources to strategic objectives; and 3) attention to costs and benefits. Additionally, the structure, process, and rigor create accountability. Finally, as a result of following the process, an organization develops targets

and a baseline for subsequent measurement; thus leading to greater focus, better project management, cost containment, and ultimately, a higher probability of success.

Use of Steering Committees

Steering committees are commonly used in Companies A and C to develop priorities and make recommendations to their respective executive committees. These committees are comprised of high-ranking managers, typically the heads of each functional area. These committees help to focus IT on business needs and issues so that their companies can address those of most importance or greatest impact first. They also raise awareness of cross-functional issues and call attention to enterprise-wide solutions that break down departmental barriers and achieve greater efficiencies and economies of scale for the organization.

At Company B, there is no formal IT steering committee per se to advise the CIO and his management team on priorities and projects. Instead, the CIO calls together the executive management team twice a year to conduct strategy review sessions. The goals of these strategy sessions are to establish priorities, align IT and business strategy, create awareness, educate management on potential uses of IT to enable the business, and to foster creative thinking that will lead to new innovations.

It is important to note that the benefits of having an active steering committee are not unilateral, centered solely on provided guidance to the IT department or managing/controlling their activities and expenditures. Steering committees foster a culture of awareness regarding IT issues and applications, helping to educate management in the organization and open their eyes and thinking to new possibilities and solutions driven by IT. The CIOs and IT staffs of these organizations often will use meetings with their respective steering committees and executive management team to socialize ideas, plant the seeds of change in terms of how technology can better serve and enable the business, publicize major accomplishments, and gain visibility. Ultimately, the steering committee members feel more involved in the process, play an ownership role in all decisions, and develop a vested interest in seeing projects succeed.

Post-Decision Analysis

None of the companies studied indicated the use of a formal benefits-tracking system to monitor and record the benefits derived from IT projects within their companies and to compare them with pre-implementation projections that were included in a project's business case. Some systems will have enhanced tracking capabilities or better reporting that will provide some indications. However, it is not uncommon for organizations to lack a set of before measures which can be later compared to post-implementation measures. Thus, the before and after picture is not always clear, making it more difficult to ascertain the true impact and benefits of a new IT application.

Each company indicated that post-mortem audits are regularly conducted for all capital projects, usually on a randomized basis. Accountability is generally managed through each company's bonus and rewards system, which ties executive compensation to individual, departmental, and company performance. In each company, the IT department conducts its own analysis after the completion of a project to identify process improvement opportunities. However, in all three cases, there was little evidence that findings from post-decision audits were used for instructional purposes to improve the accuracy and reliability of forecasting benefits, projecting ROI, and making better decisions. It seems that once a project is completed and implemented, each company moves on to another task at hand.

Risk

Not surprisingly, the majority of the companies studied, with the exception of Company B, described themselves as being risk-averse. This is common of most companies in the hospitality industry. Evidence of this could be seen in each company in terms of the emphasis they placed on analyzing decisions and building consensus before acting or committing. Clearly, a tendency towards risk avoidance is evident in Company C based on its conservative nature, reputation for careful and well-calculated analyses before acting, and its defender status. Oddly, however, Company C, demonstrably the most conservative company in this study, has the lowest base hurdle rate for calculating NPV compared to Companies A and B. Although the exact reasons for this are not known, it is possible that Company C's strong financial position and rich balance sheet allow the company access to capital at more favorable interest rates or reduce the company's need to borrow money.

Company B departs from the risk avoidance culture seen in Companies A and C due to its underdog status. To gain market share, Company B is positioning itself to compete differently, using innovation to develop first-mover advantages. To pursue this type of strategy, risk is expected. To be successful, the company's culture must be accepting of risk, and employees must be willing to assume risk without fear of repercussions, so long as the proper procedures and channels are followed. In fact, executives at Company B expect periodic failures. In the words of one IT executive, "If someone doesn't fail once in a while, that individual isn't trying hard enough."

The three companies studied share a multidimensional definition of risk consistent with what has been reported in the literature (Appelgate et al., 1996; Clemons and Weber, 1990). A summary of risk as it was reported in this study can be found in Table 4-12. Although the definitions provided by the executives interviewed are many and broad, they can be grouped by three broad categories: project risk, technical risk, and business risk. Project risk pertains to issues of project size, complexity, reach, scope, and schedule. The consequences usually involve missed deadlines or project delays, scope creep, cost overruns, or a failure to meet the expected functionality. Technical risk is associated with the technical aspects of a project. These include a firm's experience with the underlying technology being used to develop the project, the technology's life cycle, stability, reliability, portability and scalability, etc. Finally, business risk relates to the impact, financial or otherwise, a given

project may have on the company and its reputation, especially in the event of a system outage or other mishap. Business risk also includes a firm's ability to recover its investment and realize the expected benefits of the IT being implemented. Lastly, it considers flexibility and a firm's ability to adapt to a changing marketplace.

Table 4-12: Grand Summary for One Dimension (Risk) for All Companies

Element of Risk	Description
Risk Assessment	<ul style="list-style-type: none"> • A formal risk assessment is conducted for each IT project and investment decision. This risk assessment is a required component of a project's business case. For each risk identified, project requestors must enumerate their impact, and present solutions for mitigating their effects.
Definition of Risk	<ul style="list-style-type: none"> • Risk is a multi-dimensional term. With respect to technology projects, there are three primary types of risk: project risk, technical risk, and business risk.
Level of Risk in IT Projects	<ul style="list-style-type: none"> • Hotel executives believe there is a high degree of risk with IT projects due to their company's previous mistakes or poor performance, the lack of industry-wide benchmarks, the costs and stakes involved, the uncertainty, their lack of IT knowledge, the complexity and reach of most IT projects, past projects' inability to deliver what was promised, and industry-wide statistics that indicate high failure rates and cost overruns.
Use of Risk Premiums	<ul style="list-style-type: none"> • Due to the high level of perceived or actual risk associated with IT projects, companies commonly apply risk premiums to raise the hurdle rate.
Analysis and Treatment of IT Projects	<ul style="list-style-type: none"> • IT projects generally involve a high degree of scrutiny due to the many risks, uncertainties, and high investment costs. Companies will look to reduce risk through shorter and smaller projects, tight control, strict project management, frequent milestones, and incremental funding using a test-and-invest strategy.

All three companies agreed that IT projects tend to involve more risk than other capital projects, especially given their prior histories in developing and implementing IT and industry-wide statistics publicizing high failure rates and cost overruns. Thus, it is not uncommon to see the use of risk premiums when calculating NPV for IT projects. Risks are often viewed as obstacles. For that reason, a risk assessment is a common element of each company's business case. Where possible, each company identifies the risks associated with a given project, enumerates their impact, and details its treatment of these risks to help mitigate them. Techniques used by each of the three companies to reduce risk include extensive project management and detailed tracking; documents of understanding that serve as a contract for work to be performed and expectations of that work; an effective change management process; frequent communications; modularization of projects into smaller chunks and shorter timeframes; use of open architecture, commonly available and widely used technologies, and technologies with proven track records (i.e., avoid frontier technologies); training; and the hiring of competent people with expertise in the technologies being used.

Forces Driving and Limiting the Use of IT

Many factors influence the use of technology in the hospitality industry. Table 4-13 contains a force field analysis outlining the major aspects identified by each of the three companies that drive and inhibit the use of technology.

Table 4-13: IT Force Field Analysis

	Forces Driving and Supporting IT Usage	Forces Limiting or Preventing IT Usage
Company A	<ul style="list-style-type: none"> • Competitive forces • Catch up • Customer demand • Quality and consistency • Financial performance (revenue generation, cost reduction) • Electronic commerce trends • Top management • Data sharing • Competing on knowledge • Growth 	<ul style="list-style-type: none"> • Franchisees • Investment costs • Risks • Complexity • Past history, mistakes • Lack of consensus on priorities • Resistance to change • Complexity • User education/skills levels
Company B	<ul style="list-style-type: none"> • Marketing with IT • Differentiation • Customer-centric focus • Competitive forces • Customer demand • Top management • CIO • Electronic commerce trends • Financial performance (revenue generation, cost reduction) • Business leverage • Competing on knowledge • Growth 	<ul style="list-style-type: none"> • Franchisees • Time • Resources and capital • User education/skills levels • Shortage of skilled IT workers • Lack of vendor offerings • Concern over brand blurring when common solutions are used • Inconsistent property-level architecture
Company C	<ul style="list-style-type: none"> • Guest-centric/service focus • Competitive forces • Customer demand • Financial performance (revenue generation, cost reduction) • Economies of scale • Productivity • Growth • Shareholder value • Competing on knowledge • Data sharing 	<ul style="list-style-type: none"> • Y2K • User education/skills levels • Shortage of skilled IT workers • Organizational bureaucracy and culture • Does not own property-level IT assets • Prior history, past mistakes

Collectively, all three companies recognize the growing competitive pressures and consumer demands requiring the use of IT. Consequently, for all three companies, IT is an important strategic focus in terms of enhancing financial performance, sharing information, competing on knowledge, electronic commerce, and building better customer relationships to promote loyalty. All three companies recognize the growing value of technology and its essentialness to long-term survivability. Going forward, IT is slated to play a major role in enabling growth, differentiation, and customer management in all three companies studied. Each company will continue pursuing a global IT infrastructure that supports data collection, dissemination, analysis, and interpretation in order to arm employees with easy and timely access to accurate information for better decision-making.

Despite all of these positive driving forces and top management support and commitment for IT in each company, there are several factors that inhibit the use of IT or greatly slow adoption rates. Each company cited its fragmented ownership structure as a major obstacle. Because these companies franchise many of their hotels or hold management contracts, they do not own or directly control any of the IT assets or infrastructure at the property-level. Consequently, proposing a new technology application or solution requires extensive promoting and selling to each franchisee and property owner. This process is time-consuming and energy draining, and it takes resources away from other important initiatives. The challenge faced by these companies is how to influence IT investment decisions and IT assets that they do not own or control. The problems that stem from franchised operations, and to a lesser extent, management contracts, include inconsistent applications and technology architectures, making it difficult to implement chain-wide programs and maintain uniformity. These problems become more pronounced when it comes to GDS, inventory management, and why many hotels have not yet achieved single-image inventory with last-room availability.

Education/skill levels of field users pose another inhibitor to IT adoption in each of the three companies studied. Users continue to complain that the IT applications being pushed on them from corporate are too complex, too hard to use, and require too much training time. In an industry plagued by high turnover, simplicity and ease-of-use are important in maintaining a productive workforce. However, achieving this level of simplicity is difficult given the complexity of many of today's applications, guest needs, and business requirements.

Corporate culture is another frequently cited barrier to the adoption of IT. Organizational learning is slow in an industry steep in tradition. People tend to be resistant to change, an inherent human trait. Bureaucracy and attitudes like "not invented here" also create obstacles to IT uses. Lastly, past failures and institutional mistakes have created a culture weary of IT projects.

Rising costs associated with IT projects is a growing concern for all companies and executives, yet the benefits are not always calculable or obvious. Moreover, there are no guarantees. The web, for instance, is a great technological advance offering new methods for interacting with and servicing the customer. However, it is a financial drain to most companies and their IT budgets—with no end in sight. Today, executives recognize that this is a strategic necessity. They are struggling to find ways to profit from the Internet while

minimizing their investment. This is not an easy task, especially when the payoffs are not immediate. In fact, the exact timing is unknown in most cases. Trying to build support for the inevitable leap of faith is a lengthy process.

Y2K issues were cited by some as a distraction. However, this distraction is temporary and will disappear soon. This will allow companies to refocus their efforts and begin addressing the backlog of projects that have accumulated over the past 18 or more months. The last major obstacle is a growing shortage of skilled IT staff. The popularity of the IT sector has created a boom in jobs and salaries. Unfortunately, there are not enough applicants available to fill the many open positions, and those who are available command top dollar.

These problems, if not managed, will continue to plague companies in the industry and slow their use of IT. Fortunately, more executives are becoming IT-enlightened and willing to explore the uses of IT for strategic purposes. The industry appears to be slowly moving away from viewing IT as an expense to be controlled in favor of a strategic asset that can enable the business to achieve new competitive advantage. So long as the competitive pressure is great and the consumer demand is high, IT will gain greater attention and grow in usage.

Research Question #2: Future Outlook of Hotel GDSs

According to the findings of this study, the future of hospitality technology and hotel GDSs promises to be exciting. Technology is clearly changing the competitive landscape and rules of the game, and is now considered to be one of the single most important competitive methods for companies in the industry. As one senior sales and marketing executive at Company C indicated, “This is a defining moment.” As the preoccupation with Y2K compliance subsides, Companies A, B, and C will begin addressing a backlog of IT projects, allowing them to channel resources to more strategic initiatives and objectives. For example, Company A is preparing to embark on a major enhancement and modernization effort to its CRS and revenue (yield) management system while concurrently updating its property-level IT infrastructure to enable better data sharing.

Company B is channeling its efforts towards revenue (yield) management and the assessment of a customer’s lifetime value. It is also working on developing a “one-button” rate loader and update feature to transmit rates and selling restrictions to all distribution channels, adding cross-selling capabilities, and including geo-coding to locate properties and attractions.

Finally, Company C is preparing to expand its CRS focus to include meeting room inventory as well as sleeping accommodations while also improving the system’s group handling functionality. Another initiative for Company C is to focus a great deal of resources on enhancing its sales force automation and decision support tools to enhance customer-relationship management (CRM). Lastly, Company C will continue to fine-tune its reservations processing, revenue management system, and rational pricing models.

All three companies continue to expand the use of relational database management systems, shift towards client-server architectures, and enhance the ease-of-use of their CRSs through the developments of graphical user interfaces. They are also emphasizing data mining and web developments as key strategic initiatives for the next few years. These improvements will strengthen the quality of each company's GDS and distribution channels by providing better access to more complete, timely, and accurate information. They will also provide content that is more detailed, graphically rich, and multimedia based, making it easier to shop for and book hotel accommodations, not to mention create an experience for consumers that is deemed more fun and of greater value than what the present channels and technologies can provide.

While no one knows for sure what is in store for the future, several common themes emerged during the interviews for this study. These include industry consolidation, erosion of brand value, competing through knowledge management, electronic commerce, and increased pressure to reduce commissions. Each is discussed in turn below.

Industry Consolidation

The first major theme is that of consolidation. Almost everyone interviewed predicts that the industry will see a tremendous amount of consolidation at several levels. Hotel companies will continue to merge, a trend that has become more popular over the past decade. In the past year alone, the industry has witnessed Accor's acquisition of Red Roof Inns and Hilton's purchase of Promus, giving credence to this prediction. Some went out on a limb to predict that the bulk of the industry's inventory will be controlled by three to five major players. This consolidation frenzy is illustrative of the advantages of economies of scale that can be achieved through size, especially in complex technology applications like GDS, yield management, data warehousing and mining, and frequency marketing.

Airline GDSs will likely consolidate further, creating three major players. Travel agencies, too, will continue to merge as the "mom and pop" entities fall victim to disintermediation and as the larger players focus on corporate travel, aggregation, and volume purchasing. Their size and clout will make them strong contenders and reinforce the value they can provide their clientele by passing on discounts or price breaks as a result of volume purchasing agreements. Finally, the Internet will see consolidation as well, introducing mega shopping sites (i.e., the equivalent of Amazon.com in the retail world). The Internet playing field for online agencies and booking engines is becoming too crowded and undifferentiated with too few customers to go around. The fact that no one is making any money is further indication that only those with the deepest of pockets can survive. Internet sites will be forced to either pool resources to become more competitive or else fold. Already, interesting alliances are being formed by online booking engines and services, search engines, travel providers, and travel agents. For example, Rosenbluth International just acquired Biztravel.com, a leading Internet-based travel agency, to strengthen its reach and online presence. In another major deal, SABRE's Travelocity announced plans to purchase competitor Preview Travel. Once completed, this move will make Travelocity the undisputed leader in the world of Internet

travel. Most forecast that this is just the beginning of a major shakeout yet to occur, as the industry watches with anticipation to see what retaliation moves or responses other leading players like Microsoft's Expedia Travel and GetThere.com (formerly Internet Travel Network) will make. Company B's CIO predicts that the number of players will be reduced to two or three "one-click" mega sites equipped with sophisticated shopping tools, search engines, and shopping "bots," or smart agents.

Erosion of Brand Value

The second major theme that emerged from interviews for this research is the erosion of brand value. Without questions, consumer allegiance to a particular brand is fleeting and can be bought on a whim as though the consumer were a mercenary for hire. To the chagrin of the hospitality companies studied, their brand loyalty is eroding as other entities step in and find ways to win consumers' attention and loyalty, in part through their own data mining efforts. The three companies included in this study know this and recognize it; hence, their commitment to customer loyalty and intimacy. Clearly, they are grasping for ways to reverse the trend. Companies A and B, in particular, have each embarked on a multi-million-dollar (US) re-imaging/makeover campaign in hopes of rebuilding and strengthening value of their brands. Only time will tell if they are able to salvage their brand identities.

As the industry becomes more commodity-like and suffers from oversupply, there is greater pressure for companies to turn to discounting to protect market share. The Internet is providing consumers with better tools to quickly and easily comparison-shop. As such, consumers are becoming more informed and more familiar with the choices available to them. The rising popularity, capabilities, and usage of the Internet, coupled with the industry's present state of oversaturation, shift the balance of power in favor of the consumer. The effect will only worsen with the rise in popularity, sophistication, and capability of the many software agents or shopping bots now entering the marketplace and expected to dominate decision-making and purchases in the future. Many popular Internet travel services feature fare shoppers and comparison tools, and others allow customers to name their own prices or place bids for travel and accommodations. In effect, these services sell hotel rooms based on price and location, not brand. As consumers flock to these services to locate the *best* deal available, they are alienating their brand affinities. What's worse, many of these Internet companies are emerging as brands themselves in what is called e-branding. Recent moves by Microsoft's Expedia Travel (www.expedia.com) and TheTrip.com (www.thetrip.com) to offer their own forms of frequent travel programs threaten the stability of well-established frequent travel programs offered by leading travel providers by giving consumers more flexibility and options to accumulate and cash in free travel awards. Since these new programs are not tied to any program, consumers can select any product or service offered by these mega, one-stop shopping services. The net effect is further erosion of customer allegiance to these hotel companies.

Competing through Knowledge Management

The third theme is a growing focus on the importance of knowledge, and specifically, competing on knowledge. It is expected that those who can translate this knowledge into unique, value-adding experiences will be the winners of tomorrow. All three companies are working to build global infrastructures that can support data collection, analysis, and dissemination throughout all levels of the organizations—all because of their recognition of the importance of knowledge capital. While IT is important, what is most important is what it can enable or what people can do with the information it provides. These companies are emphasizing data warehousing and mining as important components of their IT portfolios.

Success of these initiatives, however, begins with a company's GDS, the first point of contact and data collection point in the value chain. Armed with this data, companies hope to ascertain the lifetime value of each customer. These companies also hope to build lasting relationships with their customers, customize services and amenities, create unique experiences, offer keenly targeted push promotions, and become exemplars in leading the industry in the segment-of-one concept. Initial signals suggest that these companies are desperately seeking ways to maintain control of the consumer relationship, fearing the consequences if this control is relinquished to the likes of Microsoft (Expedia), priceline, SABRE (Travelocity), and others. One can expect that these companies will soon begin tapping the capabilities of collaborative filtering on their web sites and expanding their uses of push promotions.

Electronic Commerce

The fourth theme is increased attention to electronic commerce and the effects of transformations (sometimes called e-transformations) of the entire business model that result as companies race to implement an electronic commerce strategy. Electronic commerce is not a new concept. While it has been around for years, the Internet has popularized it. Now, companies are looking for ways to “web-enable” their applications and systems. This is true for the hotel companies studied here. Each company is working to connect their property management systems, central reservations systems, and sales and catering systems directly to the Internet. Although the volume of bookings delivered by the Internet remain small (approximately 1% for each company studied), each company expects their Internet booking volume to escalate and reach critical mass. The three companies are excited about this because, as booking volumes increase, the Internet will become the cheapest distribution channel in terms of operational overhead and transaction costs. Companies A, B, and C continue to struggle with closing the look-to-book gap. This issue remains a top priority for all three companies as they continue to experiment with different ways to promote visitation to and usage of their sites. These include increased advertising, promotions, booking incentives, special discounts, and “hot deals.” However, a great deal of concern remains over cannibalizing—and ultimately alienating—existing channels, most notably travel agents. No one wants to disastrous move made by Compaq Computer when its shifted distribution to the web to compete with Dell Computers direct-to-consumer model. In doing so, Compaq

alienated its retail distribution channel by competing directly with its resellers. Consequently, Compaq suffered major losses on all fronts. In this study, Company C exercises extreme caution in this area so as to avoid the same mistakes made by Compaq and so that none of its steps will be misconstrued as a threat to the travel agent community. In fact, Company C prides itself in its many initiatives and programs geared specifically towards travel agents, including a secure intranet site.

As the web continues to evolve and as the technologies for web development become more sophisticated and capable, Companies A, B, and C will continue to explore new uses, applications, and features. Presently, all three companies are placing much of their emphasis on meetings and conventions. They have all added tools for meeting and convention planners to facilitate and expedite site selection, meeting planning, and bookings. Online requests for information (RFIs) and requests for proposals (RFPs) are emerging, but they are still in their first wave of evolution. Frequent travel programs and destination content information are also areas that are growing in importance. Each company has begun expanding its information offerings to help consumers research areas, plan things to do, and map directions.

Surprisingly, there was little mention of intranet developments to facilitate business-to-business bookings and commerce. Apparently, all three companies are monitoring this area but taking a conservative posture until future trends become clearer. Once there appears to be sufficient demand in this area and as the costs of technology become more affordable for mass-developing and managing intranet services for multiple companies, activities in this area will begin to take shape. In the meantime, intranet developments are limited to internal usage and bookings only.

There are some differences in opinion in how the web will evolve. According to the CIO at Company B, consumers will flock to mega booking sites to research, plan, comparison-shop, and book travel accommodations. He predicts that these mega sites will negate the need for each company to maintain its own web page with booking services. Executives at Company C, however, believe that destination decisions, in general, and lodging accommodations, in particular, will drive consumer travel decisions in the future much in the same way airline travel has driven decisions in the past and in the present. Therefore, the company is considering expanding its booking services to include other travel-related entities such as air, car, and third-party vacation packages. In effect, Company C hopes that it will become one of the mega booking sites to which Company B's CIO referred—and possibly charge booking fees to airlines and others, thereby reversing the present-day model. Company C's partnership with a major travel agency to become a minority stakeholder in its acquisition of a leading online travel service may play a key role in enabling this strategy in the near future. Company A, on the other hand, is just plain bullish on the web. Hoping to lead the industry in electronic commerce, Company A is focusing a great deal of its attention and resources on improving its web site capabilities and functionality.

Regardless of the different perspectives shared, Companies A, B, and C alike recognize great potential with the Internet in terms of interaction with their guests and functionality offered. With time and technology advancements, the Internet will only get better, faster, and more

secure. Soon, the Internet will fully integrate voice, data, and multimedia content. The consensus of these three companies—based on their experiences, the observed market trends, and industry forecasts—is that the Internet will soon become consumers’ channel of choice for interacting with hotel companies to research accommodations, comparison-shop, book reservations, and check frequent travel account balances. For these hotel companies, the Internet offers not only a cheaper means of disseminating information but also a means to strengthen relationships with consumers, learn more about them, and improve service and personalization levels. Here again, collaborative filtering, data mining, and push technologies will be used to fuel this level of personalization and customer intimacy. Each company concedes, however, that there are no guarantees with the Internet. There are still a number of unknowns, making the Internet “a bit of a gamble,” according to one senior sales and marketing executive at Company C. While the Internet may shift booking traffic from other channels, it is unlikely that any of these companies will discontinue any of their traditional distribution channels any time soon. The risks are too great at the present time given the volume of traffic and booking revenue these channels generate for each company.

Clearly, no one knows for sure who will emerge as the victors of all these mergers. Each company is working fervently, though, to jockey for position and ensure its place in tomorrow’s model. It is expected that tomorrow will bring many changes, including new companies, mergers, innovative strategic alliances, and competition based on co-opetition. Competitive intensity is increasing and invoking moves both within and outside the industry, especially in response to Travelocity’s acquisition of Preview Travel making it the industry Goliath. For example, in a bold departure from traditional competitive rivalry, four major US airlines (United, Delta, Northwest, and Continental) are joining forces in a strategic alliance to launch a new, but unnamed, travel portal initiative that is expected to go into service in the first quarter of 2000. In other moves, Microsoft recently announced it will spin off its Expedia Travel to create a separate entity, and the retail giant Wal-Mart announced plans to enter the online travel market with its own Internet service (supported by Amadeus on the backend) designed to rival the likes of Expedia, GetThere.com, and the newly combined Travelocity/Preview Travel. These initiatives by major companies are just a few of the many signs that the competitive landscape will continue to change at a brisk pace and be influenced by companies with deep pockets.

Increased Pressure to Reduce Commissions

The fifth and final theme that emerged from this research question pertains to increased pressure to reduce and control overhead. Specifically, companies are targeting the reduction of booking commissions. The traditional 10% commission is being challenged for online bookings from Internet sites as these companies look to take advantage of a soaring electronic commerce market. The role played by an electronic intermediary is viewed as that of facilitation in enabling the completion of a transaction. Unlike transactions conducted by traditional travel agents, there is little by way of value-added service, suggestive selling, or consumer influencing taking place with electronic agents. Therefore, industry executives reason that since the level of effort is significantly less, travel providers should only be

required to pay a small transaction fee like an ATM network fee of \$2 (US) rather than a 10% commission.

Companies A and C have both taken aggressive stands against one or more online travel services and prevailed. Their actions continue to call attention to this issue. However, it is unlikely that any one hotel company will emerge as a maverick and impose travel agent commission caps like Delta Air Lines did for the airline industry. This is especially true given the fragile nature of hotel company/travel agent relationships and the fact that one major hospitality giant went on public record stating that it would continue to pay 10% commissions to travel agents.

Research Question #3: Measuring the Success of IT Investments in a Hotel's GDS

Strategies followed by each of the three companies studied here reflect a traditional orientation in which the goal is simply to put inventory in as many channels as economically feasible to get it in front of as many people as possible in order to sell it. Channel selection is usually based on a match between channel demographics and those of a company's targeted audience. Top priorities for Companies A, B, and C are to improve profitability, expand market share, and win everlasting customer loyalty. To achieve these objectives, these three companies are willing to explore any distribution channel available so long as there is a chance to win incremental business or reduce overhead costs. One marketing executive at Company C best described the criteria for evaluating distribution channels in terms of 1) how customers want to book (i.e., customer demand) and 2) the overall ROI, after accounting for investment and ongoing operational costs. Typically, so long as the revenue potential outweighs the costs, so long as the concept is technically feasible, and so long as there is sufficient market demand, the decision will be approved.

As stated previously, none of the three companies studied employ formal benefit-tracking systems. While post-mortem audits are often conducted to address financial impacts and compare pre- and post-measures, the results are generally imprecise due to the limited or poor tracking of the beforehand situation, the lack of tools and techniques for capturing and assessing intangible and qualitative benefits, and the difficulties in measuring contributions from IT when the costs and benefits span multiple departments and budgets and when the true causal relationships are unknown.

All three companies agree that a hotel GDS has evolved from a tactical tool for managing inventory counts and availability to a strategic tool for winning and maintaining customers, management contracts, and franchises. Without question, the hotel GDS is the cornerstone of each company's IT portfolio and the lifeline of each organization. It is important not only to survival but also growth and long-term viability. Each company looks to its GDS as a source for competitive advantage. While the functionality of each company's GDS is comparable, differences remain between the three GDSs that give each company unique advantages. For example, Company A's GDS has an international reach and communications infrastructure that are unmatched by any other company in the industry. Its capacity and speed are also

among the highest in the industry, and Company A is positioning itself to be a leader in web-based commerce. Executives at Company A do concede, however, that its GDS has lost many of its competitive advantages during its years of turmoil and mismanagement and as a result of changes in technology that made it more affordable for its competitors to implement many of the same features. Company B has enjoyed unique advantages through its booking incentives programs, sweepstakes, and strong ties to the travel agent community, and the company's three-tier client-server architecture provides cost advantages. Lastly, Company C enjoys unique advantages as the result of its tight integration with its property management systems, its yield management system, its customer loyalty programs, and airline GDSs. It also gains competitive advantage through seamless access, single-image inventory, and last-room availability, and, finally, the company's bifurcated strategy that appeals directly to both consumers and travel agents (or other influencers such as secretaries/administrative assistants) has proven to be a key advantage in today's competitive industry.

When evaluating new or proposed GDS channels, companies will consider several factors; most of which consider the fundamental business decision and its ability to produce revenues that outweigh project costs. Specific variables include initial investment required, costs for ongoing maintenance and operations, overall return on investment, incremental business, booking volumes, industry trends, competitors' moves, payback, and net present value.

Success in the GDS arena is measured by a number of different variables related to its contributions to the business and its ability to enhance brand value. In particular, each of these three companies looks at revenue generation, gain in market share, performance improvements, and alignment with strategic objectives. Revenue generation looks at things like incremental revenues, increased REVPAR, rate lift, etc. Market share improvements consider boosts in occupancy, booking volumes, fair share of the market relative to a competitive set, etc. Performance improvements address efficiency, speed, conversion rates, and reduction in overhead, and alignment with strategic objectives considers additional functionality and capabilities that will help each company attain its strategic goals. Some examples include ease-of-use, single-image inventory, last-room availability, cross-selling capabilities, yield management, data mining, etc.

Success from an IT perspective in all three companies is measured in terms of the IT department's ability to complete a project on time, within budget, and in accordance with the project's specifications (i.e., meet the required functionality). Additional considerations deal with ease of support and maintenance, flexibility to adapt to changing business conditions, migration to other technology platforms, technical feasibility, throughput, speed, costs, etc.

Research Question #4: Hotel GDS Net Worth

Companies A, B, and C collectively agree that the true value of their GDSs is unknown and incalculable due to many intrinsic factors. GDS value is intangible, just like brand value. Although some executives suggested one could look at value in terms of investment (i.e., development) costs or in terms of replacement costs, all conceded that these values

would underestimate a system's true value. The consensus for all three organizations is that GDS is a priceless asset and the most significant mission-critical application in their IT portfolios. The words of one executive at Company C say it best: "No one really knows the true value [of GDS], and any number someone could provide is made up." The knowledge encoded into the system, the experience in developing it, the richness of customer information, the geographic reach, and the strategic capabilities of each system are immeasurable. All three companies report that the GDS is the most expensive and most valued asset in their IT portfolio. Ongoing operations, maintenance, and enhancements as well as future developments make GDS the largest consumer of IT and marketing resources (people and budget) in all three companies—and its growing do to the extended reach of GDS and blurring boundaries, the increased attention on the web and e-commerce, and the rising costs of distribution in traditional channels.

Executives at all three companies recognize the inherent value of GDS and are, therefore, committed to investing in it to maintain competitive advantage. They also recognize the inability to positively calculate ROI for some GDS-related initiatives such as Internet-based bookings. However, because they recognize the long-term potential in areas such as these, they continue to invest in them.

The three companies conclude that value is not just in the technology, but rather, in what the technology enables the business and its resources (namely its people) to accomplish. This sentiment is best captured by one IT executive from Company B:

"It isn't IT that must be better than the competition. It is the business that must be better. The question is, which IT will support the business to make it better than the competition?"

Summary

This chapter presented in-depth case analyses of three leading, multinational hotel companies. It also provided detailed comparative analyses between each of the three companies studied. Finally, it concluded with a summary of answers to each of the four major research questions that launched this study. These questions, along with their answers are presented in Table 4-14. Through the richness of the case study method, these questions could be studied in their natural context, allowing for the capture of important observations not otherwise possible. These details provide a better, more holistic understanding of the phenomena in question: the IT investment and decision-making processes. It is safe to say that the wealth of information captured through the interviews and field studies and the ensuing analyses shed important light not only on the research questions posed for this study but also on many unasked questions. Surely, the contributions made by this study will fulfill a wide literary void and serve as a much-needed beacon to researchers that follow.

The findings of this chapter suggest that GDS is an important and dynamic topic that cannot be overlooked when defining and setting strategy. GDS is a competitive method or

collection of competitive methods that, when used appropriately, provides its organization with competitive and strategic advantages. These come from increased revenue, cost reductions, and stronger relationships with consumers.

The findings presented here provide strong support for the co-alignment principle, the theoretical underpinning of this study, and demonstrate this theory in action. The results also suggest that the industry is quickly approaching a defining moment with respect to GDS and the Internet. Many interesting developments are under way that will likely change the competitive landscape for years to come—in terms the major players, the technological capabilities, and the business model of the future. Companies are aggressively jockeying for position, but what remains to be seen is who will emerge as the leaders for tomorrow. What is known for sure is that tomorrow will be different and that the race to get there will be exciting.

Table 4-14: Grand Summary – Answers to the Research Questions

1) How do corporate-level hotel executives make investment decisions and establish IT priorities with the context of a hotel GDS?

- The decision-making process for IT investment decisions is based upon a traditional capital budgeting model. Under this model, a business case is developed for the project at hand. This business case provides the underlying justification of a project. It lists the project's objectives and scope, merits, risks, financial implications, and competitive threats. Slight variations and ad hoc rules/criteria will be applied depending on the nature or classification of the IT project. Risk premiums are commonly applied to set higher hurdles for projects with high levels of either actual or perceived risk. In building the business case, input is sought from IT and the affected business disciplines or functional areas. A visible, involved, and high-ranking member of the organization, preferably from the business side versus IT, must sponsor the project. The decision is based on a number of quantitative and qualitative variables that address financial issues such as NPV and payback, alignment with the firm's strategy, competitive positioning, impact to the business, timing, risk, and required investment. The decision-making process is clearly financially driven, involves committees (e.g., steering committee and executive committee), and is motivated by consensus. The process is usually tied to the company's budgetary cycle and is subject to a post-mortem audit, either scheduled or randomized depending upon the company. Project accountability is enforced through linkages to executive compensation. It is important to note, however, that while companies endeavor to follow a rational approach using textbook methodologies and financial techniques, the decisions with which they are faced are often complex, involve numerous factors, and require the evaluation of many intangible benefits. The limitations of the various financial techniques and a company's inability to quantify the intangible aspects introduce subjective elements, opinions, and emotions which tend to change the dynamics of the process (i.e., horse trading). Consequently, decision-makers must rely on unsubstantiated, or shaky, assumptions and leaps of faith. Thus, the rationality of the process or a particular decision may be compromised, leading to a feeling of hedging bets or guesswork.

2) What is the future outlook of hotel GDSs?

- Future developments for hotel GDS will focus on functional enhancements, yield management, graphical user interfaces for ease-of-use, and interfaces to achieve single-image inventory with last-room availability. Additionally, capabilities will be expanded to incorporate (or improve where already present) meeting rooms and conventions, electronic requests for proposal, better group handling, Internet integration, geo-coding, and cross-selling. Companies will also allocate resources to enhance and expand sales force automation with decision support tools. The technology will continue to be dominated by two- and three-tier client-server architectures. The growing number and complexity of distribution channels will require "one-button" rate loading and updating.

**Table 4-14: Grand Summary – Answers to the Research Questions
(Continued)**

Finally, the industry will see further industry consolidation of airline GDSs, travel agents, and Internet booking services; increased investment in building knowledge-based systems, data warehouses, and data mining capabilities; continued erosion of brand value and a growing trend towards discounting; a growing emphasis on electronic commerce (i.e., the Internet, intranets, and extranets) and business transformations in transitioning to an electronic commerce model; a greater role being played by smart agents and shopping bots; and increased attention on reducing or capping commissions (especially for online agents). Many of these changes will result in customer-centric service improvements, more choices, and a shift in power that favors consumers.

3) How is the success of IT investments in a hotel's GDS measured?

- The companies interviewed use a generic GDS strategy based on attaining shelf space and visibility. The primary goal is to be represented in as many channels as possible and as economically feasible to win market exposure and bookings. Channel demographics are matched to customer demographics and hotel companies' profiles. Success is measured in terms of the following criteria: incremental revenue, REVPAR, rate lift, number of bookings, occupancy, market share, customer loyalty, overhead costs, conversion rates, overall ROI, speed, efficiency, flexibility, and strategic alignment. Critical success factors from a technology development standpoint include on time, within budget, and according to project specifications. In summary, so long as the revenue potential outweighs the costs, so long as the concept is technically feasible, and so long as there is sufficient market demand, the decision will be approved.

4) How is the net worth of a hotel GDS calculated or determined?

- Clearly, a hotel GDS is the most expensive and most valued asset in a hotel company's IT and marketing portfolios. It is not only a mission-critical application but also the primary lifeline of any large hotel company. Valuation models that address total investment or replacement costs underestimate the true net worth of a GDS because of the strategic nature of the system, what it enables, and the rich knowledge (i.e., programming logic and guest information) that has been captured and encoded in the system. Therefore, the true net worth of a GDS is unknown and incalculable with the valuation tools presently available. In summary, the value of a hotel GDS is priceless.

CHAPTER FIVE: CONCLUSIONS

Introduction

This chapter brings this study on IT investment decision-making in the context of hotel GDS to a close. It presents the major research findings, contributions, and conclusions of this study. It also set forth an aggressive research agenda with research questions and propositions for those wishing to join the author in pursuit of a better understanding on this complex, yet important and timely topic.

This study investigated what three large, multinational hospitality companies do in practice when evaluating and making IT investment decisions. This study was launched in an attempt to 1) learn more about how multinational hospitality companies evaluate, prioritize, and select IT investments in the context of hotel GDS; 2) call attention to an important and costly topic in hopes of improving current practices; and 3) fill a noticeable literary void so that future researchers on IT and hotel GDS would have a foundation and starting point.

The available literature is replete with examples and studies illustrating the inadequacies of financial tools and models when attempting to predict and measure the benefits from a strategic investment, in this case IT. The deficiencies stem from one's inability to quantify the many intangible aspects of strategic IT investments. Without question, striving to find a balance between tangible and intangible benefits or quantitative and qualitative factors is perplexing; yet, it is the absence of suitable methods that begged the question: "What criteria and methods do hotel company executives use to evaluate IT investments and base their decisions?" To answer this question, this study explored the processes, methods, and measures used by three leading hospitality companies using a multiple-case study design.

Given the present predicament and difficulties surrounding the current tools and techniques, executives are faced with an important choice. They can 1) continue to use the present methods despite their shortcomings, 2) dispense with ROI, cost-benefit, and discounted cash flow analyses altogether for IT projects, or 3) develop new methods, tools, and measures that can accommodate the complexities of IT and quantify the intangibles. The author finds merit in conducting rigorous analysis and a financial assessment for IT projects and is not in favor of dispensing with the process. However, the inadequacies of the present methods suggest the time is right to begin the pursuit of more appropriate alternatives. This study is an exploratory study meant to serve as the first step in discovering new techniques and measures that will resolve today's dilemmas when evaluating IT projects and investment decisions.

Discussion of Results/Contributions to the Field

At a time when information technology is transforming a hotel company's distribution channels, sales models, and customer service, one must look toward technological sophistication to remain competitive. Yet, information technology is one of the most perplexing issues facing hospitality organizations. The reasons for this are threefold. First, IT requires a significant, on-going investment which seems to be spiraling out of control and raising the costs of doing business as well as the capital intensity of the entire industry. Furthermore, companies are faced with a paradox of success. It seems that the more successful a company is, the more it must invest to protect its competitive edge and maintain its leadership position. If a company does not destroy its competitive advantages and recreate them, others will beat them to the punch (D'Aveni, 1994).

Executives are being pressured daily to invest more in IT, yet they are overwhelmed by choices and are at a loss for measuring value derived from IT. Today, IT ranks within the top three capital expense items for most companies (Weill and Olson, 1989; Weill, 1991) and is falling victim to what Thorp et al., (1998) term the "information paradox" in a recent book by the same name. Although most companies' investment in IT is growing annually, IT departments are faced with increased scrutiny and questions concerning the value resulting from IT because these technology dollars are not consistently leading to demonstrated business value. While executives recognize a greater dependence on and need for IT, they continue to be puzzled by the dubious or elusive tangible contributions and return on investment derived from IT. Thorp et al. (1998) blame this paradox on the heightened risk and lack of predictability surrounding business applications of IT.

Second, most executives lack a solid understanding of IT and related issues. This includes knowing the capabilities and limitations of IT and the use of IT to enable their businesses. The complexities of technology, the speed in which it changes, and the inability to effectively measure IT exacerbate their lack of understanding and add to their frustration and confusion. Today, since technology is inextricably interwoven throughout any hotel company, it is nearly impossible to make any business decision without involving or considering IT and vice versa. Therefore, it behooves executives to become IT-enlightened, play a more active role in IT decisions, and learn to leverage IT to achieve business goals (Bresnahan, 1998; Caldwell, 1998a).

Third are the pervasive effects of IT. IT impacts all aspects of the organization and people's lifestyles. Consequently, it is impossible to escape technology, the never-ending change it brings, and the anxieties it often creates. Moreover, technology is somehow embedded in every major macro driver identified by Olsen (1996) shaping the hospitality industry. Therefore, one must begin to master technology in order to be successful and lead his/her firm to long-term prosperity.

With Y2K issues and distractions fading, hospitality companies will begin shifting their attention and resources to the backlog of projects that formed. As companies begin to address this backlog, attempt to prioritize IT projects and investment decisions, and consider

important resource allocation decisions, the issues of tools, criteria, and measures will continue to dominate the spotlight and require attention. Therefore, this study is timely.

Frailties of Existing Methods

The findings of this study shed new light on the frailties of financial techniques like NPV when dealing with strategic hotel IT applications and the frustrations they cause when used within hospitality organizations since not all benefits are tangible or can be expressed in monetary terms. This frustration is echoed in the business and IT literature as well. As Thorp et al. (1998) point out, these are business problems, not just technology ones and lead to great management challenges when faced with important decisions that will inevitably impact the future health of a company. Therefore, these issues should be addressed collectively by IT and the business community as a whole.

Executives' inability to effectively estimate cash flows, timing, and an IT project's useful life increases the uncertainty—and, hence, the risk—surrounding each investment. Consequently, they tend to shy away from important IT investment decisions, but when they do choose to select an IT project, the results are often mixed despite their best efforts. Commonly published statistics for IT across industries suggest that upwards of three-fourths of all IT projects are late, over budget, or unable to deliver the proposed functionality (O'Brien, 1997) or offer no appreciable business returns (Neelakantan, 1996). The hospitality industry's track record as a whole—and for the three companies included in this study in particular—with respect to IT is no exception and adds to management's skepticism towards IT. Certainly with these kinds of statistics, for every success story, one can easily find evidence of project failures such as the Confirm project, a collaborative effort embarked on by AMR (parent company of American Airlines), Marriott, Hilton, and Budget Rent A Car to develop a global distribution system.

Industry-wide, it is difficult, if not impossible, to illustrate a definitive causal relationship between IT spending and improved firm performance or economic value creation. Researchers have tried but have had little success (Brynjolfsson and Hitt, 1996; Hitt and Brynjolfsson, 1996; Mahmood and Mann, 1993). Unfortunately, valuing IT investment decisions a priori continues to rely as much on luck as it does on skill as illustrated by the companies included in this study. Thus, using the present tools, predicting the success of IT investments or projects and the economic returns they provide is as much an art as it is a science. Hubbard (1999, p. 26) captures the essence of the problem experienced by executives everywhere:

“Almost every variable in a cost-benefit analysis is uncertain. We don't know exactly what initial costs will be or how much an improvement in productivity will yield. Yet typically in the analysis of IT investments, every cost or benefit is shown as a single, precise number. This implies that the exact number is known, which is almost never the case.”

For the reasons cited above, many executives liken the process to one of hedging bets. This was particularly evident in Company C and the primary reason the company pursues a conservative, test-and-invest strategy when it comes to IT.

NPV's roots, and those of other discounted cash flow techniques, are in the manufacturing sector, which tends to place a great deal of focus on production costs, labor, productivity, and output rather than on strategic factors (Semich, 1994). While NPV models and discounted cash flow techniques are commonly used in the service sector, they have never been able to adequately capture all the costs and benefits associated with a given project or investment. This research confirms this observation. The overarching problem is how one should address and treat intangibles associated with a given project or investment. The dilemma, of course, is if these approaches are inadequate, what can or should be used in their place so that companies may consistently realize more value from their investment decisions?

Technological evolution has outpaced changes in management thinking and practices (Thorpe et al., 1998). Needless to say, industrial-age thinking is no longer valid in making the complex IT decisions that transform the business value chain required of today's—and undoubtedly tomorrow's—executives, but in the absence of better tools or methodologies, the industry continues to rely on outmoded approaches. At a time when increased emphasis is being placed on managing to create value, valuation tools used to estimate cash flows, timing, risk, and the useful lives of investments are coming into the limelight. The opportunity for future research in this area is more pronounced than ever in the hopes of developing a new model that can account for and value the many complex variables involved in today's decisions. This new thinking requires industry executives to shift and broaden their focus from IT- to business-level outcomes (Thorpe et al., 1998).

This study has captured how IT investment decisions are handled in the context of a hotel GDS. The findings provide a conceptual understanding, clarify the intangible factors, and document the present state of knowledge and industry practices so that future research can begin to explore ways to improve the evaluation process, measures (or criteria), and the quality of assumptions that serve as the basis for any project or investment decision. Clearly, the focus of future research must be on the measurement and quantification of intangible aspects (benefits as well as costs) associated with IT investments. To accomplish this objective will require further disaggregation of the value-adding model to modify it or create a new one with greater reliability and validity. Once this objective can be achieved, hotel executives can become more skillful in building business cases that present compelling and indisputable arguments for accepting or declining IT projects or investments.

Adding to executives' frustration with these traditional methods and their inevitable obsolescence is the rapidity in which Internet start-up companies are entering the marketplace with their unconventional ways. Traditional valuation models, financial measures like profitability, and controls take a back seat to growth, speed, agility, and change. Moving forward, the hospitality industry needs more reliable methods and models that can be used to better predict and measure the benefits derived from IT, especially given the rising costs and high failure rates typically associated with IT investments. The new models must find ways to quantify and value intangible aspects as well as the tangible facets. Since executives'

attention on value creation will endure and grow in visibility, it will become a business imperative to address these issues in a timely manner. There is no escape.

Process and Measures

On the surface, IT investment decisions seem straightforward. Intuitively, all projects should be accepted that add value to the firm. In reality, however, the process is much more complex due to the difficulties in defining and measuring value and the expected and actual contributions provided by IT.

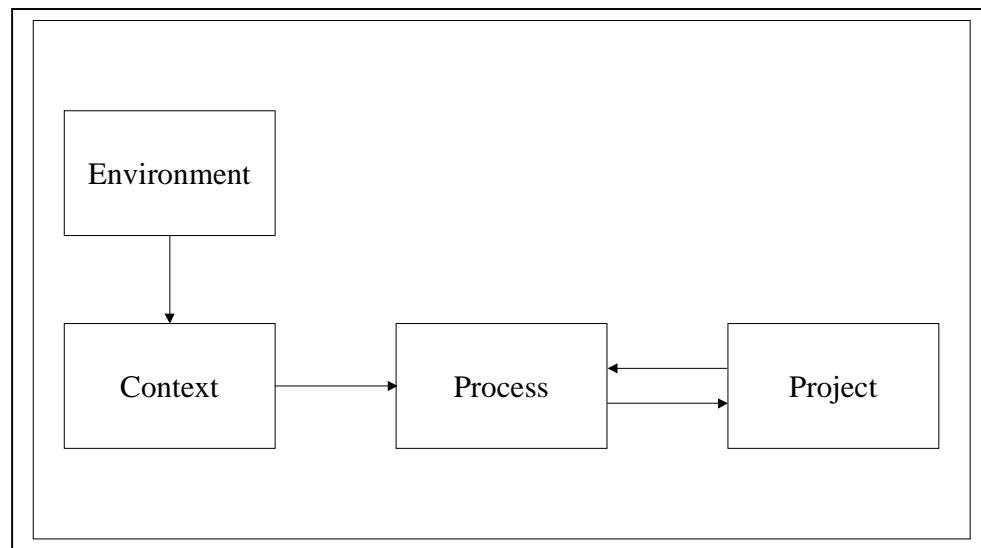
The evaluation processes used by each of the three hospitality companies included in this study are similar to what was found in the extant literature and discussed in Chapter Two. In all three firms, the process resembles a traditional capital budgeting approach described by Bacon (1992), is financially focused, and dominated by financial measures like NPV and payback. The business case guides executives through the analysis process and is the basis for informing executive judgement used in making the ultimate decision. The degree of rigor in the process and reliance on tangible measures tends to vary by company and appears to be a function of many things; namely, organizational attributes such as size, structure, culture, firm strategy, and industry positioning. These variables can be labeled under the construct *context variables*, which are moderating variables that frame the situation in which an IT decision is to be made and the circumstances surrounding that situation and decision. Context variables, derived from the environment in which a firm operates, set the stage for how the process is carried out, moderating both the evaluation process and the final decision.

Context variables give rise to another category or construct of variables called *process variables*. Process variables define the actual evaluation and decision-making processes, which are governed by a number of factors. These include the methodology and techniques used to evaluate the alternatives and the ensuing decisions, the participants involved, the actual evaluation and decision criteria, the level of formality of the process, degree of rigor, etc. Process variables can vary according to IT project type or classification. Table 4-11 on page 372 illustrates how the process, evaluation criteria, and weights of this criteria vary according to three project classifications observed in Companies A, B, and C: strategic, infrastructural, and required/mandatory.

Process variables, in turn, influence project variables contained in the *project variables* construct. Project variables also influence process variables and can be directly tied to the IT project or investment decision under consideration. These are the specific attributes or characteristics of a project that define its strengths and weaknesses, opportunities, costs, benefits, and risk. Project variables are defined by the criteria established for the process and lead to a go/no-go decision for the project in question. These consist of quantitative and qualitative, tangible and intangible measures. For example, all of the companies studied indicate the importance of NPV, payback, and strategic alignment as three important decision criteria for any IT project.

The relationships between context, process, and project constructs are depicted in Figure 5-1. The external environment drives the context. This is consistent with the strategy literature which describes firms as living organisms, responsive to their environment. It also echoes one of the teachings of the co-alignment principle. Intuitively, the context should drive the process, which, in turn, guides the project. In reality, the relationship between process and project is likely to be dyadic, or two-way. Oftentimes, the project may drive the process (Farbey et al., 1992). For example, when a project's benefits are obvious, the evaluation process may be streamlined and relaxed. Alternatively, when a project is vague or exhibits a high degree of risk, the process used will likely be more deliberate and calculated.

Figure 5-1: The Relationship Between the Context, Process, and Project Constructs



In analyzing the findings of this study and going through the data reduction process, it was useful to group variables into categories or constructs, much in the way Bakos (1987) and Schmelzer (1992) did in their work. This study builds on the works of these authors using three logical groupings, or constructs: context, process, and project. The context variables construct and the variables comprising this construct first began to emerge as part of the literature review. They are included as moderating variables in the co-alignment research model depicted in Figure 2-13 on page 176. The process variables construct and its variables also materialized through the literature review and are illustrated in the resource allocation process model shown in Figure 2-14 on page 176. Both the context and the process constructs and their respective variables were validated by the findings of this study. Early indications of the project variables construct and its variables, those specific to a given IT or GDS project under consideration, first began emerging from the literature review, as reported in Table 2-6 (which begins on page 166), but the introduction of the project variables construct is new and a direct result of this research study.

Using the extant literature as a base, these three constructs (context, process, and project) and the variables comprising them were developed further and refined as a result of the empirical findings from studying three multinational hospitality firms, the subject cases for this research effort. Collectively, the identification, further development/refinement, and articulation of this triumvirate of constructs, their interrelationships, and the specific variables comprising each construct as they relate to IT projects in the context of hotel GDS are part of this study's major contributions.

Identification of the important and appropriate variables is a prerequisite step in closing the measurement gaps commonly found in IT projects, reported by leading scholars (e.g., Mahmood and Mann, 1993; Saunders and Jones, 1992), cited by industry practitioners, and discussed throughout this report. By clarifying what needs to be measured, industry researchers and practitioners can begin to explore how best to measure these variables; develop suitable tools, techniques, and instruments; and extend this new knowledge—from theory to application—to include all IT projects, hospitality and non-hospitality alike.

Table 5-1 provides a listing of the key context, process, and project constructs and variables associated with IT investment decision-making found in this study based on the exploration of IT projects in the context of hotel GDS. These constructs and variables represent a culmination of this research and bridge the literature review contained in Chapter Two with the empirical findings discussed in Chapter Four, linking theory with practice. Since the specific measures used may vary by company and, according to contingency theory, are contextual depending upon the nature of the project and the organization in which the project is under consideration, the variables listed in Table 5-1 represent a starting point for organizations wishing to develop a balanced scorecard approach (Kaplan and Norton, 1992, 1996) to project evaluation.

Table 5-1: Context, Process, and Project Constructs and Variables

Context Variables	Process Variables	Project Variables
<ul style="list-style-type: none"> • Firm Strategy • Organizational Structure • Organizational Infrastructure • Degree of Fragmented Ownership • Organizational Culture • Internal Politics • Company Size and Geographic Dispersion • Organizational Maturity (Life Cycle Stage) • Industry Positioning • Resources, Capabilities, and Core Competencies • Portfolio of Products and Services • IT Portfolio and Infrastructure • Perceived Level of Environmental Uncertainty • Perceived Level of Competitive Intensity • Attitudes Towards Risk • Timing • Compensation and Rewards Structure 	<ul style="list-style-type: none"> • Evaluation and Approval Processes: Methodology, Techniques, and Measures • Critical Success Factors • Process Formality • Participants and Decision-Makers • Level of Analysis • Degree of Rigor • Levels of Approval • Evaluation and Decision Criteria • Role of Quantitative vs. Qualitative Data • Length of Evaluation Period • Business Case Format and Content • Ranking Process 	<ul style="list-style-type: none"> • Business Considerations <ul style="list-style-type: none"> – Competitive Advantage – Financial Performance – Growth Rate – Leverage/Economies of Scale – Strategic Alignment – Enabling Capabilities – Customer Service – Customer Satisfaction and Loyalty – Opportunity Costs and Cost Avoidance Impacts – Improved Quality of Information – Enhanced Decision-Making • Financial <ul style="list-style-type: none"> – Net Present Value (NPV) – NPV as a Percentage of Present Value Invested – Payback – Cost-Benefit Analysis – Cash-on-Cash Invested – Cash Flows – Impact on Earnings Per Share (EPS) and Stock Multiples – Value Creation/Economic Value Added (EVA) • IT <ul style="list-style-type: none"> – Resource Availability – Architectural Fit – Technology Life Cycle – Functional and Technical Requirements – Reliability – Response Time – Ease of Use – Flexibility, Growth, and Migration Paths • Project <ul style="list-style-type: none"> – Perceived Need – Classification of Project – Measurement and Evaluation Criteria – Project Sponsor/Champion – Organizational Readiness – Staffing – Costs – Benefits – Useful Life • Risk <ul style="list-style-type: none"> – Project Risk – Technical Risk – Business Risk – Hurdle Rate • External <ul style="list-style-type: none"> – Alternatives – Competitive Positioning and Market Share – Competitors' Moves and Industry Response

These findings stem from the research question designed to understand the evaluation and decision-making processes and variables. The next logical research question becomes how to measure these variables, particularly when intangibles are involved. Moving forward, measuring and quantifying the intangibles will be important. This study takes only the first step in clarifying the measures, many of which are intangible. However, to improve the processes and techniques used by industry practitioners, pursuit of the next step is in order as a follow on to this study.

Research Question 1: *What methods and measures can be used to quantify intangible benefits derived from IT projects, both a priori and a posteriori?*

Research Question 2: *What processes link IT investments to the business results?*

The discussion in Chapter Four provides a detailed account of these variables at work, illustrating how they influence each firm's priorities, goals, and decisions. One key contribution of this study is the identification of this tripartite taxonomy of variables. Identification of the primary variables is the first step in determining appropriate measures. This classification will improve industry's understanding and benefit subsequent research aimed at improving the measurement, quantification, and adoption of these variables.

An emerging theme from this research, which is also gaining support in the literature, is that while short-term, tangible cost savings and benefits from an IT project or investment are important, what matters most are the long-term strategic enabling features of the IT project or investment (Mathe and Dagi, 1996; Thorp et al., 1998; Weill and Broadbent, 1998). Unfortunately, these enabling capabilities can be elusive and difficult to measure, especially a priori; thus, complicating the evaluation and decision-making processes. Consequently, other, more qualitative or subjective measures are beginning to emerge and find their way into IT project business cases. These include linkage to strategic objectives, enhancements to customer service, customer loyalty building, improved access to information, etc. Many of these are depicted in Table 5-1 under the business considerations heading.

Ownership of IT Projects

One of the recurring themes of this study is that executives of all three companies avoid the use of technology for technology's sake. The focus has shifted away from technological innovations in favor of greater concentration on business benefits. The three hotel companies studied first identify business needs or goals they wish to achieve and then look at how technology might help in enabling them to accomplish their objectives. As was reported by one financial executive at Company A, IT should not be treated outside the context of business problems or needs. There should be no such thing as IT projects, only business projects. This thinking is often confirmed in the literature (e.g., see Bensaou and Earl, 1998; Thorp et al., 1998).

What is less clear, however, is who should own projects involving IT in terms of project sponsorship, business case development, and day-to-day management. This study reveals mixed results. CIOs and other executives at Companies A and C suggest that the ultimate authority and responsibilities should reside within the business units. In their views, projects involving IT should reside within the business units that are most likely to derive the benefits and see the impact on their profit and loss statements. Company C believes so strongly in this that it has documented and formalized the process. The hypotheses underlying the approaches used by Companies A and C are that projects championed by the business are more likely to receive funding, be successful, and gain adoption by the business. A contrasting perspective comes from Company B, where ownership of projects involving IT typically resides with and is championed by the CIO and the IT department. While this study produces insufficient evidence as to which approach is better, the author's prior work experience suggests that there is considerable merit to the approach espoused by Companies A and C. To be sure, however, further research and testing is warranted. This leads to the following research proposition:

Proposition 1: *In hotel companies where projects involving IT are proposed, championed, and managed by business sponsors, there will be a higher degree of project acceptance, funding, user adoption, and benefits realized than for projects submitted and led by IT executives.*

Rationality Compromised by Internal Politics and "Gut Feel"

In accordance with the existing literature, the process for Companies A, B, and C tends to begin rationally, with focus on the development of a detailed business case. However, along the way, the process can become political and less rational, as was observed in all three companies. Recall the lobbying and horse trading that takes place in Company A, the infighting and resentment witnessed in Company B, and the internal bureaucracy reported in Company C. The three CIOs interviewed also recognize the importance of planting their ideas or seeds of change and then socializing them through the organization to win support and commitment long before formal consideration and evaluation.

While multiple measures or a composite of measures tend to be used, there is little evidence from this research supporting the work by Semich (1994), where measures are categorized, grouped, and formally weighted using nominal group techniques so that projects can be more easily and objectively compared and ranked. It is apparent from this research that, in all three companies, some measures dominate others, but it is not clear how the weighting is established. It seems that in most cases, the weighting is subjective, done on an ad hoc basis, and based on intuition or gut feel. In this research, the only indications of formally ranking IT projects using explicitly weighted criteria came from Company B's planning process with its "Big Rocks" planning matrix depicted in Figure 4-6 on page 299. Likewise, Company B was the only company to illustrate the grouping of evaluative measures by category as

depicted in Figure 4-7 on page 304. The company's three groupings include business (internal) considerations, IT considerations, and other (external) considerations.

Political influence is a common observation reported in the literature (e.g., see Farbey et al., 1992; Weill and Olson, 1989). However, as executives at Company C pointed out, a project's business case and good judgement must prevail in all IT decisions. A number of perspectives, a well-defined business case, and a series of measures inform this judgement so that the decision is not a total leap of faith and so that a sense of rationality and integrity in the process are upheld. The process also leads to a sense of confidence in the decision. It also ties the decision to the firm's strategic objectives.

One conclusion that may be drawn from this research and the findings discussed in Chapter Four is, that while the actual measures are important and influential, the process of determining those measures and the ensuing rigor are often more valuable because they call attention to the role of the technology in the organization, the anticipated benefits, and the linkages of a technology project or investment decision to the company's strategic objectives. Through this process, management expectations are formed, and criteria are established for the purposes of management, control, and accountability to increase the firm's likelihood of realized the forecasted benefits. This observation leads to one important question that should be explored further to determine if the process itself is more important than the actual measures or the results of those measures. Accordingly, the research question may be stated as this:

Research Question 3: *Is it the process itself, the criteria used, or the actual measurement results that have the greatest influence on the IT project/investment decision in terms of guiding management action?*

Organizational Culture, Structure, and Industry Positioning

The literature suggests that organizational culture in addition to political factors can influence the decision-making process and the measures used in the evaluation and selection processes (Boynton, Zmud, and Jacobs, 1994; Farbey et al., 1992; Radosevich, 1998; Weill and Olsen, 1989). In this study, the role of corporate culture and its subsequent effects on IT decisions were explored. All three companies have had their share of project successes and failures over the years which have been committed to institutional memory and haunt the IT organization for many years. For example, both Companies A and C sank millions of dollars (US) in central reservation systems projects that turned out to be abysmal failures. Although management has since turned over, the reputations and credibility of these companies' IT departments is tarnished. Given the number of failures and the magnitude of unrecoverable investment dollars in IT in each of the three companies and the industry as a whole, confidence in IT is low and skepticism is high.

To be successful, all three CIOs indicated the need to develop a culture accepting of IT. Building an embracing culture requires education, patience, and a strong track record of project successes. As indicated by Company C's CIO, there are many reasons used to explain why IT projects fail. However, seldom is the problem due to the technology itself. The problems more likely stem from cultural issues, miscommunications, and the company's internal resistance to change.

In Company B, the corporate culture is supportive of IT due to commitment from top executives, namely the CEO, and the IT department's strong track record under the leadership of its present CIO. In Company A, the culture is in a state of redefinition as an entirely new executive management team seeks to make its mark. The present culture is dominated by a sense of urgency to get back on track and attain competitive parity. In the cases of Companies A and C, the CIOs inherited negative situations and are faced with rebuilding relationships, reputations, and confidence levels in IT that were damaged by their predecessors. In these companies, a great deal of the CIOs' efforts are consumed by tasks associated with developing and fostering a culture that will understand, support, and embrace IT. These CIOs believe that in a more supportive environment, IT projects will have a higher likelihood of success. They believe a more supportive environment will allow their firms to realize greater benefits. Also, these cultural improvements will assist executives in recognizing the value of IT so that they will begin to factor important IT issues into their decision-making and invite IT staff to key strategy meetings, thereby involving them earlier in the process.

Company A views its position as lagging many of its arch rivals. It perceives a higher degree of competitive intensity than other firms like Company C because of its position and is working quickly in hopes of remedying the situation. Time is of the essence as it attempts to catch up to industry leaders. Consequently, its evaluation and decision-making processes are streamlined. Many of its decisions appear obvious, are of intuitive value, and required for competitive survival. Also, with top executives coming from high-tech industries who recognize and understand the strategic value and use of IT, decisions seem to come more easily than at a company like Company C and require little convincing. Without question, there is a bias towards action.

In many ways, Company C represents the antithesis of Company A. Its top management and cultural heritage have its roots based in hospitality and service, not in technology. While the CEO and other top executives are supportive of IT and recognize its value, they seem slower to grasp the concepts and require more education and convincing than executives at Companies A and B. The company's leadership position puts it in a defensive posture rather than an offensive role. This is not to say that Company C does not find the industry competitive. However, it is more reactive than proactive or preemptive, especially with respect to IT. Its structure is more formal and more rigid. Every move is carefully made and calculated. Therefore, projects tend to require greater analysis and longer approval times. This was clearly evident given the company's bureaucratic tendencies and more sophisticated set of financial measurement criteria as compared to Companies A and B.

In contrast to Companies A and C, Company B appears to be the most streamlined of the three. It is also the smallest. In terms of IT leadership, Company B has had the most stability. IT credibility is high in the organization due to a well-defined track record of successes by the CIO and the CIO's rise through the company ranks. In a 15 year period, Company B has been able to successfully implement two central reservation systems, both large-scale and complex undertakings, and numerous technologies to support major marketing initiatives that have resulted in competitive differentiation. In all cases, these projects were touted within the company as huge successes. Additionally, executives at Company B, notably the CEO and CIO, are much younger than their counterparts at Companies A and C. This generational difference could help explain why Company B's CEO is so adamant about his company's use of IT for competitive differentiation and the company's high-tech focus. Collectively, all of these points contribute to a positive and supportive culture within Company B when it comes to embracing and using IT. With a strategy towards innovation, Company B cannot afford a large, bureaucratic or overly formal structure like what is seen in Companies A and C.

Another important element of structure worth noting is the degree to which a lodging company is franchised. All of the companies included in this study use franchising as a primary growth vehicle, yet franchising leads to fragmented ownership. Companies A and B are almost exclusively franchised, whereas Company C has a large base of managed properties. Company C also demonstrates greater control through over its franchisees and the IT they use through contractual agreements. This relationship appears to give Company C infrastructural advantages in terms of standardization, economies of scale, and data sharing. From this study, it is apparent that franchising is the single biggest obstacle to implementing IT in the three hospitality organizations. All three companies—even Company C despite its more rigid contracts and standards—indicated problems in winning approval from franchisees. An IT professional from Company C articulated the problem best when he talked about his frustrations for trying to influence a strategic direction for IT when many of the assets and property infrastructure fall outside his span of control.

These important observations lead to four additional research propositions:

Proposition 2: *Firms that invest heavily in IT will demonstrate more supportive organizational cultures, structures, personnel, and IT infrastructures than those demonstrating only modest investment.*

Proposition 3: *The formality of the evaluation and decision-making processes for IT investments will be directly correlated with the formality of a firm's organizational structure.*

Proposition 4: *The perceived competitive intensity and industry position will dictate the level of structure, rigor, and analysis of the evaluation and decision-making processes. In firms where the competitive intensity is perceived as high or their industry positioning is viewed as lagging behind*

rivals, the evaluation and decision-making processes will be less formal and faster than for those firms holding and defending leadership positions.

Proposition 5: *Higher levels of management involvement, coupled with demonstrated and visible commitment and support from the executive ranks, will positively influence a firm's use of IT and the benefits derived from IT.*

Proposition 6: *Hospitality firms that are heavily franchised and demonstrate a high degree of fragmented ownership will have a more difficult time of adopting, implementing, and gaining competitive advantage from IT than those firms having a homogenous ownership structure or a high concentration of owned and/or managed properties.*

Risk

Risk plays a key role in the IT decision-making process (Applegate et al., 1996; Clemons and Weber, 1990, Farbey et al., 1992; McFarlan, 1981). Whenever possible, executives try to reduce risks and uncertainty. Risk is highly correlated with uncertainty because the cash flows and project outcome are unpredictable within a desired confidence interval. Risk increases with ambiguity surrounding a project, especially if there is lack of clarity concerning its scope and objectives.

According to the results of this study, the analytical process and rigor applied to the process during the business case development and the ensuing defense are designed to reduce uncertainty and risk associated with an IT project. In the end, executives base their decisions on the basis of what can be explained versus what cannot be explained.

In this study, Company B is more prone to accept risks given its innovation and differentiation strategy and its entrepreneurial tendencies. Company C is less prone to take risks given its size, mature culture that is steep in tradition, and its leadership position. Instead, Company C carefully analyzes each decision and attempts to calculate its impact, competitive reaction, and other possible alternatives. Company A falls in the middle. While its executives indicate a risk-averse attitude, Company A tends to streamline the evaluation and analysis process for many IT projects. However, since the company is in catch-up mode, it demonstrates a bias towards action. Lagging its competitors, many of the initiatives Company A is embarking on have already been implemented elsewhere in the industry. Thus, the perceived level of risk is low since the desired outcome is already known and since successful implementations exist to serve as benchmarks.

Based on the results of this study, it can be concluded that a company's tolerance for risk and the perceived level of risk associated with a project will impact the evaluation process in

terms of rigor, level of analysis, and time spent. In other words, risk will influence the process variables described earlier in Table 5-1 on page 398. The findings of this research lead to the following multi-part proposition, which is put forth for further consideration and research:

Proposition 7: *The amount of time and level of analysis (including the techniques, criteria, and applied rigor) required to evaluate an IT project/investment will depend on:*

- 1) The clarity of a project's scope, objectives, and benefits.*
- 2) The perceived risk, environmental uncertainty, lack of information, and degree of ambiguity between cause-and-effect relationships of the IT project and its proposed benefits.*
- 3) A firm's knowledge of and comfort level with the technology under consideration.*

Multiple Measures Based on Contingency Theory

The literature suggests that the measures used to evaluate IT projects are contextual, determined by the type of IT project under consideration, and subject to contingency theory (King and McAulay, 1997). The literature and the findings of this study, however, disagree on the number of types or classes of IT projects. Weill and Olson (1989), Weill (1991), Weill and Broadbent (1998), and Grover et al. (1997, 1998) collectively identify nine classification schemes: strategic, infrastructure, transactional, informational/decision support, business process redesign, maintenance/support, threshold/competitive parity, regulatory/mandated, and experimental. These authors also suggest the use of different measurement criteria for each type or class of IT project. Yet, the findings of this study reveal the use of only three classification schemes: strategic, regulatory/mandatory, and infrastructural.

Additionally, as reflected in Table 4-11 on page 372, all three companies tend to apply the same basic approach and processes, albeit with varying degrees of analysis, measures, and weights placed on the measures used, depending upon the type of project and their ability to quantify the benefits. These observations are significant because it may mean that many worthwhile projects are being needlessly screened out because the set of measures or criteria against which they are evaluated may be inappropriate given the type of project and its objectives.

The literature suggests that IT decisions must be based on a firm's key business drivers, not merely technical elegance (Weill and Broadbent, 1998) and that business strategy and IT strategy must go hand in hand (Mahmood and Mann, 1993; Bacon, 1992; Kantrow, 1980;

Benjamin et al., 1984). This study shows that companies are placing a greater emphasis on the strategic value of IT. CIOs are tasked with not only understanding the business but also using IT to drive business goals. The reward structures and incentives used by the three companies in this study reinforce the link between IT and business objectives, and one important evaluation criterion that has emerged is the linkage between the IT project and the firm's strategic objectives. This is a major shift from industrial-aged thinking where the emphasis was placed solely on financial measures, cost reductions, and productivity gains.

Clearly, estimating the benefits of any IT application or solution a priori is a difficult task for which there is no easy answer or magic bullet. Because of the complexities involved and the multidimensional aspects of any proposed IT project, companies are increasingly relying on a series of metrics rather than one domineering one and bringing together executives in the form of committees to evaluate decisions from multiple perspectives.

The literature and the findings of this research agree that a cluster of metrics reflecting multiple dimensions and disciplines is better than a single measure when evaluating IT to provide a more robust assessment. These metrics can be quantitative as well as qualitative and are beginning to take a greater look at strategic implications. Kaplan and Norton (1992, 1996) present a balanced scorecard approach, comprised of both quantitative and qualitative measures, to measuring and monitoring a firm's health. It seems only fitting that if both types of measures are used to assess the overall health and performance of a firm, they should be used as criteria in evaluating IT projects designed to help the firm achieve its strategic objectives and boost these performance measures. In this study, Company B presented the most comprehensive and well-rounded set of measurement criteria, while Company C demonstrated adoption of the most sophisticated financial measures of the three companies considered.

While many researchers have attempted to link IT expenditures with firm performance, the results are inconclusive. These linkages are fraught with ambiguity, and at best, only correlation, not causality can be determined. The problems of establishing causal links are further confounded by the fact that many IT spans multiple budgets and is not always categorized appropriately. The findings of this research do not address this linkage directly since this was not the focus of this study. However, this study does clarify the measures used to evaluate IT projects. These measures are important because they are used not only to determine whether or not an investment should be made but also to evaluate the success of a project after implementation (Bacon, 1992; Farbey et al., 1992).

Co-Alignment

This study provides an in-depth conceptual framework for how executives at three multinational hospitality firms evaluate and make IT investment decisions. This study was based upon the co-alignment principle, a theoretical underpinning of strategic management (Chandler, 1962; Thompson, 1967; Bourgeois, 1980; Venkatraman and Prescott, 1990; Venkatraman et al., 1993; Murthy, 1994; Olsen et al., 1998). Firms that seek to understand

the environments in which they compete, develop strategies to exploit the opportunities and minimize the threats presented in these environments, and consistently allocate firm resources (e.g., people, capital, IT) to create appropriate and effective competitive methods, will achieve competitive advantage (as measured by profitability, cash flow per share, and market share in their industries). Success at achieving co-alignment is a function of many things, namely a firm's ability to recognize patterns of change in the environment before others do and its ability to position itself appropriately to exploit these changes. The results of the study provide clear affirmation of the co-alignment principle and document linkages and co-alignment between strategy and IT. Thus, this study is a validation study.

In this study, three elements of alignment were observed: internal alignment, external alignment, and misalignment. Each type of alignment is explained in turn below.

Internal Alignment

Of the three companies included in this study, Company C is the industry front-runner, a fact acknowledged by executives from both Companies A and B as well as from other companies not included in this study. Based on factors like reputation, market share, resource capabilities and know-how, size, revenues, product portfolio, IT, etc., Company C presently enjoys an enviable position—one that can be easily lost if not careful. Therefore, Company C exhibits a cautious and conservative demeanor and takes on an internal versus external focus geared to building operational excellence. Rarely in the company's history has the company launched a bold, innovative or preemptive move. The company is simply not a pioneer willing to live on the edge. Instead, the company is characterized by its reactive tendencies and describes itself as a cautious follower.

For Company C, size has a mixed effect. On one hand, size affords Company C with numerous advantages which can be leveraged to create clout, economies of scale, barriers to entry, etc. On the other hand, however, size introduces a constraining effect. The company is more bureaucratic, less agile, and slower to react to environmental opportunities and threats. In addition, the stakes, impact, and risk are sometimes much greater for a large company than for a smaller one. Since a great deal is at stake with every decision the company is required to make, these decisions are methodically and carefully calculated so that the impacts can be well-known to the extent possible before implementation.

Of the three companies studied, Company C has the most advanced decision-making process and portfolio of measures for evaluating each IT decision and determining how and to what the company should allocate its resources. These measures are rooted in financial terms, with a strong focus on company performance and shareholder value. The overall performance of Company C across the board suggests that there is likely to be a cause-and-effect relationship between the selection of competitive methods, resource allocations, and firm performance despite the inadequacies of the financial tools and the numerous intangible factors. However, the definitive relationships of causality remain as outstanding issues for subsequent research.

Because Company C is out in front, it must defend its leadership position. To do so, the company is focusing primarily on its operational excellence strategy, which represents internal co-alignment with respect to its resource allocation decisions and strategic moves. The company's size and industry position have forced Company C to carefully analyze each opportunity and the affects of each decision. In doing so, the company incrementalizes its decision-making using a test-and-invest strategy. It cannot afford any serendipitous behavior out of fear of risking its leadership position and dominance. History has proven that empires that have taken years to build can be toppled or dismantled overnight. Determined not to let this happen, Company C carefully analyzes all major decisions, anticipating moves and counter-moves of its competitors, to protect its core. One can be fairly certain that any innovation is the result of careful study and premeditation. Hence, Company C is more likely to react to environmental changes rather than to preempt them through industry-altering moves.

External Alignment

In many ways, Company B is the antithesis of Company C. It is smaller in size and more agile yet lacks the brand reputation, product portfolio, and resources of Company C. Consequently, it is an underdog in the industry with little to lose but lots to gain. Therefore, its preemptive tendencies and an external focus characterize its posture, and as a privately-held company, Company B is less constrained by Wall Street than Companies A and C since it does not have to publicly answer to or get scrutinized by investment analysts for every move it makes. Executives at Company B understand their company's predicament and have opted to explore an innovation or break-the-rules strategy because under the present terms, Company B is faced with an uneven playing field.

Company size, in the case of Company B, provides an enabling effect versus a constraining effect observed in Company C. While Company B does not enjoy the same economies of scale as Company C, its structure is more nimble, and its culture is more entrepreneurial. Unlike Company C, Company B is willing to assume risk, preempt the marketplace, and seek to alter industry structure to negate the advantages of the likes of Company C and others. Hence, Company B demonstrates external co-alignment. It is seeking to shape the industry rather than be shaped by it. To accomplish this, it must develop a solid understanding of the future, predict the customer needs, and then seek and implement solutions long before any of its competitors. Its focus is more external than either of the two other companies studied. Moreover, as a division of a larger, more diverse entity, Company B exhibits a better structural arrangement for the cross-pollination of ideas and technologies outside the hotel industry. Its relationships with its parent company and sister companies allow for greater knowledge sharing and transfer. Since Company A is an autonomous subsidiary of its parent organization and since Company C has shows little diversification, Company B can use capitalize on this unique advantage to seek greater external co-alignment.

One important observation gleaned from comparing the differences between Companies B and C is a relationship between company size, resource allocations, and environmental response. Based on the findings of this study, a less structured company appears to be more freely able to take advantage of opportunities presented by the external environment. While it would be inappropriate to generalize this relationship due to the limited sample size and the case study method, this finding could be worded in the form of a proposition that could become the basis of further study:

Proposition 8: *A firm's structure impacts its ability to capitalize on opportunities presented in the external environment. The more structured a firm is or the more structure a firm exhibits, the less likely it is to exploit environmental opportunities and the more conservative its IT strategic tendencies will be.*

Misalignment

Company A is in a state of transition. Over the years, Company A fell out of alignment and is now in a state of misalignment. Presently, Company A is at risk of becoming dysfunctional because it resembles neither internal nor external alignment. It is scrambling to catch up through triage and remediation and an emphasis on tactical versus strategic moves. Systemic problems—problems with product quality and consistency, franchise relationships, and IT architecture—prohibit the company from adopting certain strategies, catching up to industry competitors, and advancing beyond the competition. These problems will continue to present obstacles for Company A until they can be resolved.

In recent years, new leadership has been installed at Company A to rebuild the company and put it back on course. This rebuilding effort is a multi-year effort with the immediate attention being given to stopping the hemorrhaging, redefining structure, and introducing more formalization throughout the organization. The goal is to resolve internal issues—to get its house in order—before attempting to tackle external issues and the future. The present thinking in Company A is that it must first develop a solid foundation and infrastructure internally upon which it can build and use to fuel growth before it can begin addressing external issues. While based on valid reasoning, this strategy assumes that the industry structure will go unaltered and that the company can catch up by playing to the same set of rules that have guided the industry for years. In following this approach, executives at Company A are basing their moves on the past—what has made the industry successful, not on the future—what customers will want and what will inevitably become tomorrow's basis of competition.

Faced with a difficult choice—to fix the present problems (i.e., tactical, short-term focus) and then move forward or to ignore the present problems and address the future (i.e., long-range visioning) knowing that the present problems will ultimately resolve themselves or be negated through obsolescence, executives at Company A chose the easier and more

conservative path. While it is easier to address and control internal versus external factors, this may not necessarily be in the best interest of Company A long-term. Applying normative thinking, structure should follow strategy (Chandler, 1962; Thompson, 1967). This implies that Company A's primary and immediate focus should be the external environment. At present, Company A is pursuing a short-term, tactical strategy, not a long-term vision. Thus, it is possible that in improving the present state, Company A is putting its future at risk because it is basing its decisions on yesterday's success factors versus those of tomorrow. This approach violates the teachings of Hamel and Prahalad (1994a), two of today's most influential and respected strategists, in their book *Competing for the Future*.

Clearly, Company A is caught in a quandary of trying to concurrently drive top and bottom-line revenue, but attempting to tackle both simultaneously can be potentially disastrous as it will inevitably lead the company to a distracted focus. Consequently, Company A finds itself in a bit of a "catch-22" and will be forced to run a lot just to stay in place. Given the present situation and strategy, competitive parity rather than superiority may be the best Company A can hope to achieve. Needless to say, misalignment is a no-win proposition, promotes short-term thinking, and presents an undesirable predicament. It should be avoided at all costs. To catch the competition and move ahead, Company A must act quickly to realign itself with the environment, both internal and external.

Firm Strategy

In each company studied, firm strategy played an important role as a contextual variable in influencing IT decisions. This is consistent with the co-alignment principle. As illustrated in Table 4-6 on page 353, each hospitality company in this study is pursuing a different strategy and a different set of organizational priorities. Company A's strategy is one of turnaround and is short-term focused given the company's present predicament of misalignment and industry laggard. Company B's strategy is innovation and differentiation, of which IT plays an important and dominant role. Finally, Company C's strategy is to achieve operational excellence while defending its industry lead. From this observation, the following proposition can be put forth:

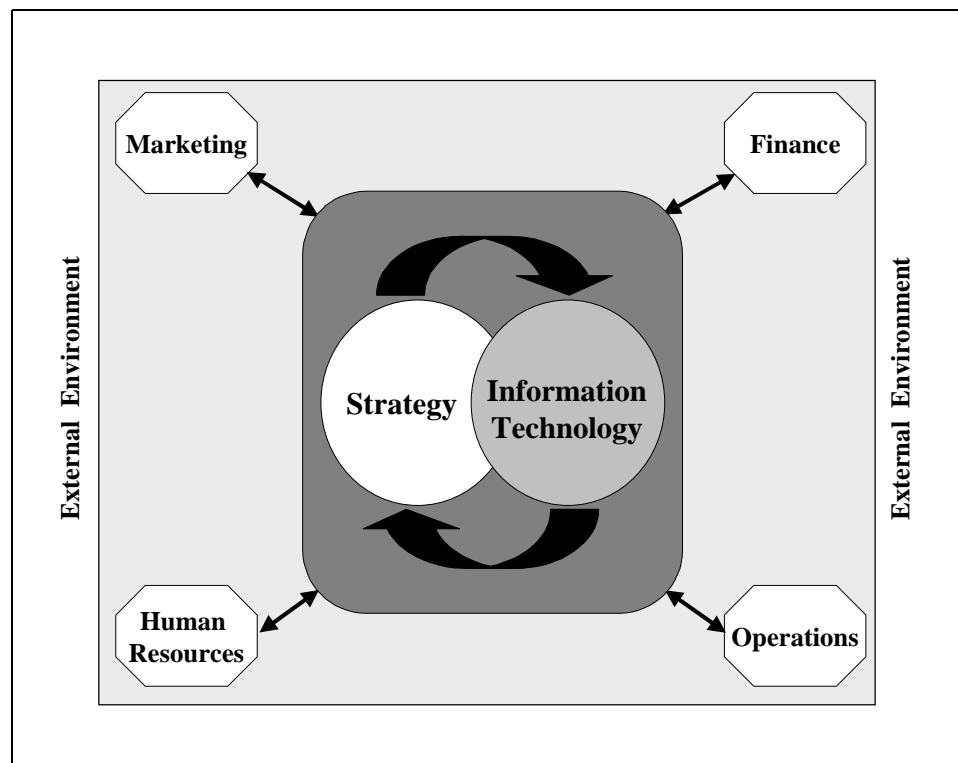
Proposition 9: *Hotel firms differ on their IT investment priorities based on their strategic orientation, industry positioning, and unique resources and capabilities.*

Linking Technology and Strategy

Information technology is an important firm asset that can be used as a competitive method to gain some advantage in the marketplace. Today, it is nearly impossible to make a business decision that does not involve IT and vice versa. Hence, IT strategy must be aligned with business strategy, and benefits must be measured in terms of the business strategy (Gordon, 1999). In order to realize benefits from information technology, organizations must

achieve the alignment suggested by the co-alignment principle. To achieve this requires linking business strategy and technology strategy throughout all aspects of the organization, a theme supported by this research and commonly echoed in the literature (Bacon, 1992; Benjamin et al., 1984; Kantrow, 1980; Mahmood and Mann, 1993; Neo, 1988; Reich and Benbasat, 1996). This relationship is depicted in Figure 5-2.

Figure 5-2: Linking Strategy and Information Technology



Each company's CIO works closely with CEOs and other top executives to build strategic alignment with the firm strategy. Additional efforts are made to create alignment with the strategies of each of the key disciplines. For example, in Company A, IT and operations are aligned to improve product quality and consistency throughout the company through a more capable and standardized IT infrastructure. IT is also aligned with the company's financial goals of improving company performance and supporting company growth.

In Company B, marketing and IT are aligned as evident from its slogan "Marketing with IT." IT's roots are embedded in all of the company's major marketing initiatives to build customer intimacy and loyalty and serves as the enabling agent. Company B also exhibits some characteristics of IT misalignment with each of the core disciplines. During the interview

process, some executives expressed sentiments of frustration and concern that IT alignment had not been met. Many executives felt that since IT owned the process, the projects were biased in favor of technological solutions rather than business needs. Here is an example where misalignment can prove unhealthy and disruptive to IT adoption within the organization.

In Company C, IT is aligned with the company's financial objectives, to maximize shareholder wealth and grow globally; operations' objectives, to enhance guest service and achieve efficiencies and economies of scale; and marketing objectives, to build customer loyalty.

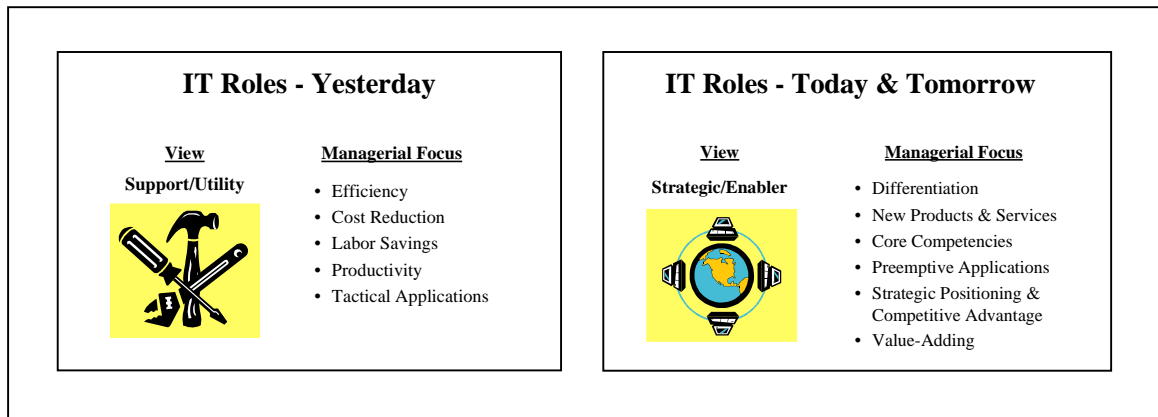
Evidence of a Paradigm Shift

Information technology is an important resource vital to a firm's success. No longer can it be viewed simply for its support and utility roles dominant in tactical applications, which focus on the use of IT to gain efficiencies, reduce costs, decrease labor, and improve productivity. Instead, IT is increasingly playing a strategic role in organizations, where it either creates competitive advantage or enables new business opportunities. Attention is now being given to IT's ability to differentiate products and services, to create new product and service offerings, and to build and sustain core competencies. Evidence from this research suggests that attitudes and thinking regarding the use of IT in the hospitality industry are, indeed, changing. This transformation in management thinking is depicted in Figure 5-3.

Under this new paradigm, hospitality executives are positively changing their attitudes towards IT. Instead of being reactive to environmental changes and competitive thrusts, executives are now looking to IT to create competitive advantage and achieve strategic positioning through preemptive strikes. Executives in all three companies recognize that the basis of future competition will be on knowledge and electronic commerce. Therefore, each company is investing heavily in these areas to create a capable infrastructure, to master the learning curve, and to position itself so as capitalize on the promises of these technologies to win customer loyalty and market share.

Without question, IT can be value adding. However, to realize this value, the IT function must be well-aligned with the firm's overall strategic initiatives and those of each of the core disciplines, namely marketing, finance, human resources, and operations. One must remember that it is not the technology itself that provides the competitive advantage in a firm but rather how that technology is used in the firm and what that technology can deliver in the future that makes a competitive difference. One must also remember that there is a significant lead-time associated with IT development and implementation. Therefore, the earlier IT can be brought in on a project, the greater the likelihood the organization will achieve success from IT.

Figure 5-3: Shifting IT Roles in Organizations

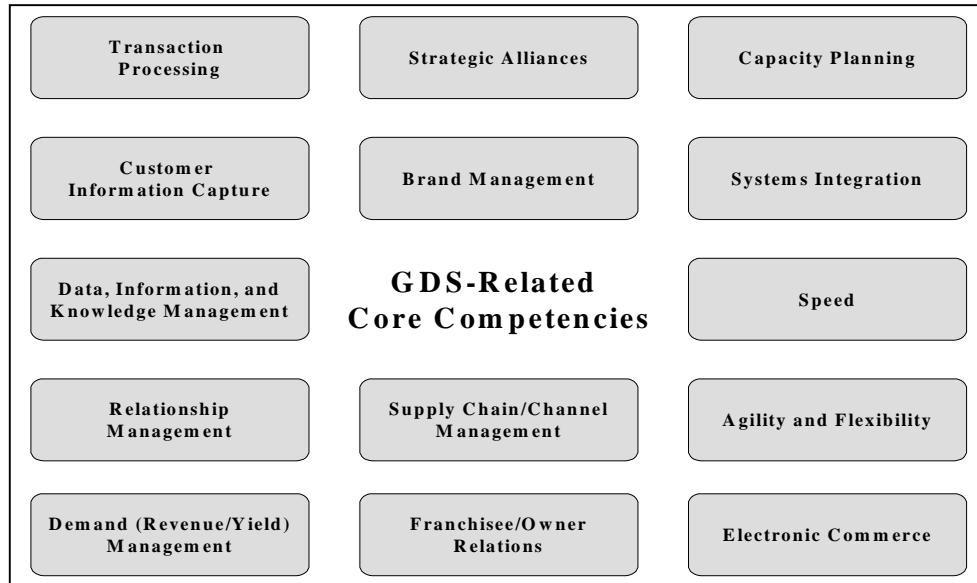


Prescriptions for Achieving Best Practices

Given the richness of detail captured by this study, it seems only fitting to include a series of recommendations based upon observable relationships gleaned from the three companies studied, and reported in Chapter Four, that could lead to best practices and become the subject of further research inquiry and measurement development. By many accounts and measures, the three companies included in this study are recognized industry leaders and technology pacesetters. The company attributes and practices reported on in the previous chapter seem to play a significant role in the successes enjoyed by each company, IT or otherwise. Therefore, these companies can serve as role models to others in the industry. Thus, the recommendations that follow represent a culmination of observations and findings of this study that appear to contribute to the successful adoption of IT and strong industry performance. Companies may wish to consider these measures as part of their endeavors to achieve co-alignment.

The world of GDS is highly complex and requires that hospitality organizations master a number of competencies if they are to be successful in this arena. Hamel and Prahalad (1994a) stress the strategic importance of core competencies and competency-building to achieve competitive advantage. The core competencies captured from investigating the three companies in this study are included in Figure 5-4. Essentially, competitive advantage stems from excellence in and mastery of several key areas, including technology development and deployment, supply chain management, customer relationship building, knowledge management, electronic commerce, speed, agility, and flexibility.

Figure 5-4: GDS-Related Core Competencies Essential for Competitive Advantage



Based on the observed relationships and patterns of the three multinational hospitality companies included in this study, the following list of prescriptions is provided as a pathway to best practices with respect to IT, GDS, and IT investment decision-making:

1. IT requires top-down commitment and support. This includes active participation in the management of IT, goal-setting, and promoting the use of IT in the organization.
2. The CIO should be included in a company's executive committee and enjoy the same status and reporting relationship as any other top-level executive heading up a major discipline or functional area in the organization. The CIO should also be viewed as a business partner when embarking on any strategic initiative.
3. The CIO and IT staff must understand the business. They should be business people first and technologists second.
4. IT is a catalyst for change, and CIOs play the role of change agents in their respective organizations. CIOs must plant the seeds of change and help them germinate by socializing concepts, ideas, and applications throughout their organizations.
5. IT and strategy must be aligned. Getting technology right is important, but what matters more are getting the business strategy right and properly aligning the two. Uses of IT should be directly tied to a company's strategic objectives and focus on enterprise-wide solutions.

6. IT is an important competitive method. It should be treated like any other resource in the firm using a portfolio metaphor. Each organization should align and allocate resources according to strategy and find the appropriate mix of technologies and projects to balance the organizations risks and expected returns.
7. Organizations should consider the adoption of an incremental, test-and-invest strategy, especially when the outcomes are not immediately known or easily forecasted. This approach requires the use of a suitable and reliable measurement program to detect changes and provide early indications of improvements or raise warning flags. One must note, however, that for each newly implemented project, a sufficient period of time must be allotted for impacts to be felt.
8. Organizations should develop strategic alliances supported by technology linkages to profit from data sharing, lead referrals, and other strategic gains.
9. IT should be involved at the conceptualization level of any new project or idea. The more lead time IT has and the more input it can share in the process, the higher the likelihood of success will be.
10. Business disciplines should own the process of developing IT business cases, and they should fight the cases to win their approval. The project authority and responsibility should reside with the sponsoring business.
11. The priority-setting, decision-making, and approval processes should involve rigor, detailed analysis (both quantitative and qualitative), and a well-articulated business case with defined objectives, measures, and linkages to the company's strategy. However, companies should avoid excessive analysis and unnecessary time delays. Time to market (i.e., speed) is an important competitive advantage in today's marketplace.
12. A financially-driven focus does not need to imply that all decisions are based solely on ROI. Rich, qualitative data should be combined with quantitative data and ROI when possible to provide a greater perspective with the long-term in mind. Also, the a priori measures used should be well documented so that they can be used as a posteriori measures to track a project's success.
13. All projects should have an active and visible sponsor/product champion. This person must be someone other than in name only who has an ownership stake and vested interest in seeing the project succeed.
14. Hotel companies should avoid the use of IT for technology's sake by combining IT projects with business projects and by aligning IT priorities with business goals and objectives.
15. In-house IT development and customization should be limited to strategic applications. Wherever possible, off-the-shelf applications that adhere to open systems standards

- should be purchased. This approach will allow hotel companies to focus on their core business (i.e., “stick to their knitting”) and not get distracted by IT development efforts.
16. Wherever possible, organizations should look to achieve economies of scale and leverage resources and data through IT.
 17. Individuals should be held accountable for their decisions and actions in such a way that discipline is enforced but creativity, innovation, and risk-taking are not squashed.
 18. Executive compensation should be tied in part to the overall performance of the business as well as the successful implementation of an IT project and spread over multiple years to encourage long-term thinking and commitment.
 19. Organizations and managers alike must foster and promote both individual and organizational learning, as these will become critical determinants for success and long-term viability.
 20. Organizations must foster a culture that is accepting and supportive of IT. This includes providing training and education at all levels.
 21. Organizations should encourage innovation, risk-taking, and IT research and development to create new business models and forms of competitive advantage by redefining the industry playing field.
 22. Organizations must develop long-term vision. It is time to look beyond tactical issues like Y2K and recognize the strategic potential of IT.
 23. Organizational structure should reinforce strategic objectives and goals.
 24. The core applications of any hotel IT portfolio include GDS (reservations and revenue management), PMS, and customer information (frequency marketing, data warehousing/mining, and guest history/profiles), sales and catering, and accounting. All systems should be well-integrated with a global data network to allow easy and timely access to information, anywhere in the organization whenever it is needed.
 25. Hotel organizations should develop a global, flexible, scalable, and capable IT infrastructure that facilitates data collection, analysis, and dissemination throughout all levels of the organization. Moving forward, knowledge management and sharing of this knowledge should become top priorities of any organization.
 26. All applications must be guest-centric, support electronic commerce, and focus on knowledge management.
 27. Hotel companies must provide seamless, single-image inventory and last-room availability to all distribution channels used in its GDS unless a particular channel advertises otherwise; for example, Internet-only deals.

28. Hotels companies should develop a well-defined distribution strategy that takes into account distribution channel contributions and share, costs, and technical feasibility. Hotel companies, like Southwest Airlines, should only enter and promote channels that promise the highest returns and lowest cost to operate. Where possible, companies should steer traffic towards lower cost channels of distribution.
29. The use of IT steering committees helps to establish priorities, align goals and strategy, and educate executives on IT/business issues. Committees also help to provide a multi-dimensional perspective with input and expertise from various disciplines.
30. Relationships are absolutely critical to the success of IT. IT departments and staff must establish and maintain solid working relationships with each of their constituencies, including end users, franchisees, owners, and other departments/functional areas in the organization.
31. Non-IT management must become "IT-enlightened" if they are to understand the benefits and limitations of IT, deploy IT for strategic advantages, seek enabling opportunities and applications of IT. They must also become involved in IT projects and take ownership of them and the results derived from them.
32. Competent project managers, strong project management skills, and discipline are essential to completing projects on time, within budget, and according to project specifications. Projects should be modularized and kept under a one-year timeframe when possible. It is important to develop a positive track record for completing IT projects that meet project deadlines, budgets, and specifications. Successive accomplishments will enhance credibility and a positive culture that fosters the use of IT throughout the organization to achieve business benefits.
33. Companies should conduct post-mortem audits on all IT projects and business cases and track benefits derived from IT through a well-defined measurement program for the purposes of monitoring success, improving forecasting, bettering processes, and ensuring accountability.
34. Organizations should consider assessing technologies fees akin to marketing fees to offset the rising costs of IT and to amass funding that can be earmarked for IT research and development activities.
35. Management contracts and franchise agreements must address the use of IT, including baseline standards, consistency, upgrade policies, and fees.

Where Are the Hospitality Marketing Researchers?

A hotel GDS is the lifeline, or what Gates (1997, 1999) calls the “digital nervous system,” for most hotel chains. While its very essence or definition, as explored in Chapter Two, is broader than a single system or technology, the core technologies comprising a hotel GDS are clearly the most critical and valued assets in any hotel firm’s IT portfolio. Generally, a hotel GDS represents the first point of customer contact; the keeper of rates and availability; and the primary collection, storage, and communications vehicle for vital guest information required by nearly every other core process of the hotel organization, which range from guest check-in to data mining.

The rapid change of technology, the capital intensity of IT required to support a hotel GDS, and the number of new distribution options emerging make managing in this environment difficult and confusing. The hotel GDS arena is clearly in a state of transition with a vastly changing landscape as a result of new technologies, distribution paths, and attempts to restructure the existing channels of distribution (e.g., bypass theories) to reduce the high fixed and variable costs associated with distribution. As executives at Company C pointed out, the industry is approaching a defining moment. With many choices and few tools available to evaluate these choices, hotel executives find themselves in a difficult predicament. For all of these reasons, the topics of IT investment decision-making and hotel GDS were explored in this study. The purpose of this study was not to dwell on IT per se but rather on business issues and applications of IT within the context of hotel GDS to achieve strategic advantage.

Stern and Weitz (1997) call for greater attention and research on global distribution systems. Surprisingly, however, few in the hospitality industry have heeded this call for action. This study is one of the first comprehensive undertakings on this topic and builds substantially on the understanding of GDSs first developed by Emmer et al. (1993) and Schulz (1994). Much has changed since these works were first published, yet conspicuous by their absence in tracking this phenomenon are the marketing researchers. This is particularly troublesome because GDSs are not just about technology; they are about marketing, which is enabled by technology.

Given the many changes in technology, the very essence of marketing and the supply chain network are also changing. It is unclear why marketing researchers have not aggressively pursued a research agenda on a topic so vital to their discipline. One can only surmise that it has to do with their inability to recognize the technological impacts, their lack of IT understanding, or their grounding in traditional marketing paradigms that blind them from the implications of the changes presently underway. What’s even more puzzling in light of these deficiencies is the suggestion that IT report to the marketing discipline (Dev and Olsen, 1998). While it is true that IT enables marketing, a point exemplified by Companies B and C, and that the two are inseparable, IT is a corporate resource that needs to focus on enterprise-wide solutions and optimization of the entire firm, not just one discipline—marketing or otherwise. Industry executives must heed such drastic steps, especially if marketing executives are ill equipped to manage technological change. Perhaps

just the opposite is better suited, where marketing functions, enabled by technology, report to the IT discipline. This is a recent—and bold—organizational shift at Company A in an attempt to capitalize on the synergistic relationship between IT and marketing. If successful, it is possible that other companies will follow with similar restructuring moves. Certainly this point will be contentious, especially with the jury still out; yet, regardless of organizational structures and reporting relationships, it is important for marketing and IT resources to work closely together to accomplish their firm's strategic objectives.

With rising distribution costs, new channels entering the marketplace, and additional intermediaries gaining access to important customer information, hotel companies must carefully evaluate distribution options, select appropriate partners and channels, and measure and monitor effectiveness (i.e., contributions in terms of *incremental* room-nights and revenues). Where possible, the number of channels should be simplified to ease the management and maintenance of them, to reduce the overlaps, and to reduce overhead costs associated with them.

The three companies in this study demonstrated conservative attitudes that are believed to be prevalent in the industry. Under these circumstances, no one company is prepared or ready to make bold moves like Southwest Airlines or Delta Air Lines to take control of their distribution channels. Of particular concern, as expressed by Company C, is the fragile nature of relationships with the travel agent community. Overly cautious about channel cannibalization and concerns of severing ties with travel agents, these companies will continue to manage distribution channels tactically, not strategically. This is not to say that these issues are insignificant and should be ignored. However, one should not lose sight of the big picture and the future. As executives at Company C pointed out, the industry is approaching a defining moment, an opportunity for a risk-taker to take the lead, change the face of competition, and reduce the dominating effect airline GDSs have had on hotel distribution

Hospitality firms must begin to develop a comprehensive distribution strategy. The marketplace is getting too complex with its distribution channel offerings and too costly for companies to serendipitously choose which channels to which it should subscribe. Likewise, it cannot leave these decisions to chance or defensive responses to competitors' moves. Gaining representation in as many channels as possible is a noble goal, but at what cost?

Today, most hospitality organizations treat distribution channels as analogous to shelf space in a grocery store. Under this type of thinking, more is better because it increases product visibility and the chances of customer selection. The reality, however, is that the costs and complexity to enter and maintain these channels can sometimes outweigh the costs. Companies like Southwest Airlines and Delta Air Lines recognize these issues and have taken proactive steps to reduce distribution costs while maintaining market visibility and customer access. While some missteps have been experiences along the way, particularly by Delta Air Lines, it is evident that these companies recognize the value of a global distribution strategy and channel cost differentials. In this study, with the exception of Company C, there was little evidence that a global distribution strategy even exists, and in the case of

Company C, the strategy is so generic that it provides little insight or guidance to executives faced with these important decisions.

Hospitality firms must make a strategic commitment to global distribution systems. This implies defining, developing, and implementing a strategy as well as investing in the corresponding technology to support this strategy. No longer can one afford to gratuitously spend money on marketing or distribution channels without knowing the appropriate target markets and anticipating the expected returns. To help hoteliers in developing a global distribution strategy and evaluate various distribution channel options, a list of criteria has been provided in Table 5-2.

Table 5-2: Distribution Channel Evaluation Criteria

<p>Can the new distribution channel:</p> <ul style="list-style-type: none">▪ Gain access to new markets and new customers and drive top-line revenues?▪ Strengthen customer relations and build lasting loyalty?▪ Provide incremental bookings and revenue?▪ Improve yield through rate lift or increases in ADR and REVPAR?▪ Create switching costs?▪ Build barriers to entry?▪ Offer unique and sustainable advantages?▪ Yield better information that can be used for competitive advantage or for creating or enhancing products and services?▪ Provide easy and convenient access to single-image inventory and last-room availability?▪ Be easily updated with rate changes, selling rules, restrictions, etc.?▪ Be easily integrated into the company's GDS network and managed on an on-going basis?▪ Simplify the technological complexity or management of existing distribution channels?▪ Reduce the number distribution channels required?▪ Eliminate potential points of failure and third-party intermediaries?▪ Provide economies of scale?▪ Reduce operating costs or transaction fees and shift traffic to a channel of lower cost?▪ Change the balance of power in customer or supplier relationships?▪ Alter the basis of competition or change the nature of intra-industry competitive rivalries?▪ Enable new business opportunities?▪ Track sources of origination for each reservation?▪ Protect customer data and ensure privacy?▪ Support multiple formats of content (i.e., text, graphics, sound, video, etc.)?

The dynamics of distribution have changed drastically over the years as a result of segmentation, greater competition, more demanding customers, and now, newer forms of technology. How a hotel company uses a GDS to win sales and marketing advantages, to gain access to new markets, and to build and strengthen customer relationships and how a company ensures effective representation (i.e., presentation of rates, availability, product amenities, etc.) in each channel using the prevailing technologies should become top priorities. The ultimate goal of a GDS strategy should be to fully automate the entire booking process. Currently, however, the industry is far from reaching this goal due to a number of inherent limitations. These include the age, inflexibility, and lack of hotel functionality contained in airline GDSs; the legacy systems used by hotels; the fragmentation of ownership within the hotel industry; inconsistent applications and technology hardware platforms in use throughout hotels; and the lack of standards for interfacing and data transfer.

Achieving competitive advantage through global distribution systems requires more automated links, links of higher quality, and links that are cheaper to maintain and operate than those for competing hotels. "Shelf space," visibility, and consumer convenience are important dimensions as is providing choices for customers so that they can select the booking method(s) most accessible and appropriate for their needs and comfort zone. Maintaining multiple distribution channels is essential in a highly complex business environment where customers have varying degrees of technological know-how. However, these channels become costly to create and maintain. Therefore, hoteliers must segment their markets and offer only those channels or access points most appropriate and cost-effective for the major segments served. Hotels that can control their overhead can gain a cost advantage over their competitors. One option for hotels to take a more active role in guiding consumer behavior is to provide incentives to use distribution channels that are more cost-effective and more reliable than those that are costly or traditionally create customer-service breakdowns. According to Mills, Chase, and Margulies (1983), consumers in a service environment can be considered "partial employees." As such, they will react to various incentives to replicate desired behaviors. Incentives can include special rates, additional frequent travel points, etc.

With improved IT, automated linkages will serve to develop new strategic alliances between travel providers and intermediaries. These linkages will form "virtual" organizations. As these alliances become more commonplace, control of room inventory, rates, and selling strategies will become more difficult to manage. As more and more third-parties join the selling network for hotel rooms, the likelihood of error expands exponentially, unless the appropriate controls and information technology are in place. The more removed a third-party agency is from the hotel (i.e., the source), the less complete (in terms of detail and accuracy) the information is. Therefore, the true source of competitive advantage for hotels will be the ability to provide access to unrestricted availability in real-time, anywhere in the world.

With the growing capabilities of technology and evidence of technology fulfilling traditional human roles, it seems inevitable that technology can replace the human dyad during the

reservations booking process. Therefore, it is believed that fully automated transactions will soon become a reality.

Hotel GDS is a highly complex topic that warrants further investigation and the involvement of the marketing discipline. The research presented here only scratches the surface and lays a foundation for more substantive, empirical work. There are numerous outstanding questions of interest to marketers as well as industry practitioners that would help explain customer behavior and aid in setting a global distribution strategy. Some important research questions include the following:

- Research Question 4:** *Which channels do consumers prefer to use to shop for and purchase hotel accommodations and why?*
- Research Question 5:** *What characteristics or attributes do consumers value most in a distribution channel?*
- Research Question 6:** *Which channels are most influential in selling hotel accommodations to consumers?*
- Research Question 7:** *What considerations go into consumer channel selection?*
- Research Question 8:** *How will customers book hotel accommodations in the future?*
- Research Question 9:** *Is there a typology or taxonomy that can be developed to explain channel usage and allow for market segmentation?*
- Research Question 10:** *What are the appropriate incentives to offer consumers in order to influence their behavior to use distribution channels of lower cost?*
- Research Question 11:** *What are the implications of distribution-based price differentiation and yielding by distribution channel?*
- Research Question 12:** *What impact do distribution channels have on a guest's overall perception of hotel quality?*
- Research Question 13:** *What are the long-term effects of real-time pricing strategies and auction-style pricing on hotel profitability and brand loyalty?*
- Research Question 14:** *How can hotels stand out in a crowded marketplace that is increasingly being shaped by commodity-like attributes and behavior, when emphasis is placed on tangible factors like location and price, and when shopping is done by technology products like smart agents rather than by people?*

Research Question 15: *How can the competitive advantage derived from a hotel GDS be empirically measured?*

Limitations of This Study

The most significant weakness of this study can be attributed to the chosen methodology, the case study technique. Yin (1994) cited several known limitations or criticisms of the case study method. These include lack of generalizability, perceived lack of rigor, subjectivity, and voluminous documents. This research study is subject to five limitations: 1) no basis for scientific generalization, 2) voluminous documentation, 3) imprecise units of analysis, 4) researcher as an indirect observer, and 5) CEOs unavailable for interviewing. Each are discussed briefly below.

No Basis for Scientific Generalization

This study was an exploratory case study with a limited sample size. Therefore, the findings cannot be generalized beyond the context of this study. As an exploratory study, the goal of this research effort was to seek greater understanding that could lead to building a foundation on which future research related to IT and hotel GDS research can be based. It will be this subsequent research that will produce findings that can be generalized. Perceived lack of rigor and subjectivity were addressed in the research design phase of this study. A carefully crafted methodology outlining the use of reliability and validity checks (Morse, 1994), triangulation, and a case study protocol (Yin, 1994) was defined before the data collection phase began to alleviate these concerns.

Voluminous Documentation

The issue of voluminous documentation is certainly prevalent in this study. The case study method allows for the collection of large quantities of rich data, helping to understand a problem in its natural context. However, distilling this data into smaller, more manageable and readable documents can be difficult. Despite the use of data reduction methods proposed by Miles and Huberman (1984) and the author's attempts to condense the findings of this study without losing any of the meaning, the end report is still quite lengthy and likely to be a criticism of its readers.

Imprecise Units of Analysis

The units of analysis for this study were defined as the investment in technology within a hotel's global distribution system and the process used to evaluate IT investment decisions

related to a firm's GDS. While these units of analysis yielded extensive data and meaningful results, a future study might be better served by selecting a specific investment decision and tracing it from start to finish, just as Bourgeois and Eisenhardt (1988) did in their study of executive decision-making in the microcomputer industry. For this study, selection of a particular IT investment decision was not possible because of sensitivity issues and the competitive nature of the industry. This approach requires complete sharing of information and openness to company records that, in most cases, is difficult to attain. While all three companies were cooperative and willing to share information concerning their procedures and measures, it was evident that some information and documents were safeguarded and not shared.

Other inherent weaknesses related to an imprecise unit of analysis are reporting biases and inaccuracies due to poor recall. Because no one specific investment decision was being explored, interviewees typically answered questions based on general processes practiced in their firms and on personal experiences. It is possible that, in the process of recounting their knowledge of their companies' processes and measures, meaningful insights were left out or missed.

Researcher as Indirect Observer; No Direct Observation or Participation in the Process

In field research, Gold (1958) writes of various levels of observation and participation. These can be put on a continuum anchored by observer and participant at each of the extremes. In the middle are observer-participant and participant-observer. In this study, the researcher was strictly an outside observer—and an indirect one at that since no specific investment decision was under study in any of the three companies. Although not practical in this case, a more ideal situation is to have researcher who can participate in (or at least attend meetings to be privy to important discussions) the actual evaluation and decision-making process, from conception to completion. This would allow for direct observation and first-hand experience to record any subtleties, internal dynamics, political influences, or other situational characteristics that otherwise cannot be captured.

CEOs Unavailable for Interviewing

In each of the three companies studied, the highest-ranking executive, the chief executive officer, was not available for interviewing. Although the participants of this study were high-ranking executives, this study lacks first-hand knowledge of the top executive's perspective and attitudes towards IT in each company.

Concluding Remarks

The perennial question of any business is “How does an organization add value?” Value can be defined from many different perspectives and may result from tangible and intangible factors. Principal stakeholders include shareholders (investors), customers, and employees. Shareholders typically measure value in terms of economic return on their investment based upon some level of perceived risk. For customers, value is assessed in terms of a price-value relationship; that is, how much they received in terms of product and services for the price they paid. For employees, value is measured by salary and by the intrinsic rewards of the job.

One of the most elusive questions with respect to information technology is “How can value be measured?” This question is sometimes raised with respect to a hotel GDS and each distribution channel. As the marketplace becomes more competitive, it becomes increasingly difficult to build value, especially when the focus is to do more with less, and to do things faster and cheaper than how they were previously done. Because the dynamics for producing value are changing, a new model is needed to illustrate how value can be created in hotels of tomorrow. Technology will likely be the most critical component of the value-creating model heading into the next millennium (Olsen, 1996).

This chapter is the culmination of a multi-year research effort designed to investigate IT investment decision-making in the context of hotel global distribution systems. This chapter discussed the major research findings, contributions, and conclusions. It also set forth an aggressive research agenda, a summary of which can be found in Table 5-3, for those wishing to join the author in pursuit of a better understanding on this complex, yet important and timely topic. It is important for the reader to recognize that this is an exploratory study designed to build a better grounding upon which more substantive, empirical research can be based. As was discussed in Chapter Two, the present bodies of knowledge have noticeable gaps and limitations. It is the author’s sincere hope that the richness of this study will play some small part in helping to resolve these problems, find its place in the literature, and serve as a beacon for those who follow. Research is never final; it is an on-going and never-ending process. Thus, the author will continue to pursue this line of inquiry in search of new knowledge that will better industry’s understanding, measures, tools, and practices with respect to IT decision-making and hopes that others will join in this journey.

Table 5-3: Research Agenda - Summary of Research Questions and Propositions

Research Questions
1. <i>What methods and measures can be used to quantify intangible benefits derived from IT projects, both a priori and a posteriori?</i>
2. <i>What processes link IT investments to the business results?</i>
3. <i>Is it the process itself, the criteria used, or the actual measurement results that have the greatest influence on the IT project/investment decision in terms of guiding management action?</i>
4. <i>Which channels do consumers prefer to use to shop for and purchase hotel accommodations and why?</i>
5. <i>What characteristics or attributes do consumers value most in a distribution channel?</i>
6. <i>Which channels are most influential in selling hotel accommodations to consumers?</i>
7. <i>What considerations go into consumer channel selection?</i>
8. <i>How will customers book hotel accommodations in the future?</i>
9. <i>Is there a typology or taxonomy that can be developed to explain channel usage and allow for market segmentation?</i>
10. <i>What are the appropriate incentives to offer consumers in order to influence their behavior to use distribution channels of lower cost?</i>
11. <i>What are the implications of distribution-based price differentiation and yielding by distribution channel?</i>
12. <i>What impact do distribution channels have on a guest's overall perception of hotel quality?</i>
13. <i>What are the long-term effects of real-time pricing strategies and auction-style pricing on hotel profitability and brand loyalty?</i>
14. <i>How can hotels stand out in a crowded marketplace that is increasingly being shaped by commodity-like attributes and behavior, when emphasis is placed on tangible factors like location and price, and when shopping is done by technology products like smart agents rather than by people?</i>
15. <i>How can the competitive advantage derived from a hotel GDS be empirically measured?</i>

**Table 5-3: Research Agenda - Summary of Research Questions and Propositions
(Continued)**

Propositions
<p>1. <i>In hotel companies where projects involving IT are proposed, championed, and managed by business sponsors, there will be a higher degree of project acceptance, funding, user adoption, and benefits realized than for projects submitted and led by IT executives.</i></p> <p>2. <i>Firms that invest heavily in IT will demonstrate more supportive organizational cultures, structures, personnel, and IT infrastructures than those demonstrating only modest investment.</i></p> <p>3. <i>The formality of the evaluation and decision-making processes for IT investments will be directly correlated with the formality of a firm's organizational structure.</i></p> <p>4. <i>The perceived competitive intensity and industry position will dictate the level of structure, rigor, and analysis of the evaluation and decision-making processes. In firms where the competitive intensity is perceived as high or their industry positioning is viewed as lagging behind rivals, the evaluation and decision-making processes will be less formal and faster than for those firms holding and defending leadership positions.</i></p> <p>5. <i>Higher levels of management involvement, coupled with demonstrated and visible commitment and support from the executive ranks, will positively influence a firm's use of IT and the benefits derived from IT.</i></p> <p>6. <i>Hospitality firms that are heavily franchised and demonstrate a high degree of fragmented ownership will have a more difficult time of adopting, implementing, and gaining competitive advantage from IT than those firms having a homogenous ownership structure or a high concentration of owned and/or managed properties.</i></p> <p>7. <i>The amount of time and level of analysis (including the techniques, criteria, and applied rigor) required to evaluate an IT project/investment will depend on:</i></p> <ul style="list-style-type: none"> ▪ <i>The clarity of a project's scope, objectives, and benefits.</i> ▪ <i>The perceived risk, environmental uncertainty, lack of information, and degree of ambiguity between cause-and-effect relationships of the IT project and its proposed benefits.</i> ▪ <i>A firm's knowledge of and comfort level with the technology under consideration.</i> <p>8. <i>A firm's structure impacts its ability to capitalize on opportunities presented in the external environment. The more structured a firm is or the more structure a firm exhibits, the less likely it is to exploit environmental opportunities and the more conservative its IT strategic tendencies will be.</i></p> <p>9. <i>Hotel firms differ on their IT investment priorities based on their strategic orientation, industry positioning, and unique resources and capabilities.</i></p>

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APPENDIX A: EXAMPLES OF INTERNET TRAVEL RESOURCES¹⁶

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Subway/Metro Guides.....	472
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¹⁶This list is meant to illustrate examples of some of the many travel-related resources available via the Internet. While the exact number of travel-related web sites is unknown, Loftus (1997) estimates that there are in excess of 11,000 web sites related to travel and tourism. Hence, this is by no means an exhaustive list. Nevertheless, it should demonstrate the variety and breadth of web-based resources available and serve as a useful reference for any traveler, regardless of his/her destination. The reader should note that web addresses (i.e., URLs) cited here are subject to change without notice.

Adventure Travel

AdventureQuest.com	http://www.adventurequest.com
GORP.com – Great Outdoor Recreation Pages	http://www.gorp.com
Mountain Travel-Sobek	http://www.mtsobek.com
Mountain Vacations	http://www.mountainvacations.com
MountainZone.com	http://www.mountainzone.com
REI.com	http://www.rei.com
Rough Guides	http://www.roughguides.com

Airlines

Aer Lingus	http://www.aerlingus.ie
Aeroflot - Russian International Airlines	http://www.aeroflot.org
Aerolíneas Argentinas	http://www.aerolineas.com.ar/index-english.htm
Aerosweet Airlines	http://www.aerosweet.com
Air Afrique	http://www.air-afrique.co.za
Air Canada	http://www.aircanada.ca
Air Caribbean	http://aircaribbean.com
Air China	http://www.airchina.com.cn/english
Air France	http://www.airfrance.com
Air Jamaica	http://www.airjamaica.com
Air New Zealand	http://www.airnewzealand.co.nz
Air-India	http://www.airindia.com
Airlines of the Web	http://flyaow.com
AirTran	http://www.airtran.com
Alaska Airlines/Horizon Air	http://www.alaska-air.com
Alitalia	http://www.alitalia.it/english
All Nippon Airways	http://www.ana.co.jp/eng
America West Airlines	http://www.americawest.com
American Airlines	http://www.aa.com
American Trans Air	http://www.ata.com
Ansett Australia	http://www.ansett.com.au
Ansett New Zealand	http://www.ansett.co.nz
Asiana Airlines	http://www.asiana.co.kr/english
Austrian Airlines	http://www.aua.com
British Airways	http://www.british-airways.com
British Midland	http://www.iflybritishmidland.com
Candian Airlines International	http://www.cdnair.ca
Cathay Pacific Airways	http://www.cathaypacific-air.com
China Airlines	http://www.china-airlines.com/index-e.htm
China Eastern Airlines	http://www.cea.online.sh.cn/html/enindex.html
China Southern Airlines	http://www.chinasouthernair.com
Continental Airlines	http://www.flycontinental.com
Cyprus Airways	http://www.cyprusair.com.cy

Delta Air Lines	http://www.delta-air.com
Dragon Air	http://www.dragonair.com
easyJet	http://www.easyjet.com
Emirates	http://www.emiratesairline.com
EVA Air	http://www.evaair.com.tw/english/eindex.htm
Finnair	http://www.finnair.fi
Finnair - The Americas	http://www.us.finnair.com
Frontier Airlines	http://www.frontierairlines.com
Garuda Indonesia	http://www.garuda.co.id
Ghana Airways	http://www.ghana-airways.com
Go	http://www.go-fly.com
Grupo TACA	http://www.grupotaca.com
Gulf Air	http://www.gulfairco.com
Iberia Airlines of Spain	http://www.iberia.com/ingles/home.html
Icelandair	http://www.icelandair.is
Indian Airlines	http://www.nic.in/indian-airlines
Iran Air	http://www.iranair.co.uk
Japan Airlines	http://www.jal.co.jp/english/index_e.html
KLM Royal Dutch Airlines	http://www.klm.nl
KLM uk	http://www.airuk.co.uk
Korean Air	http://www.koreanair.com
LanChile	http://www.lanchile.com
Lauda Air	http://www.laudaair.com
LOT Polish Airlines	http://www.lot.com/english
LTU International Airways	http://www.ltu.com
Lufthansa	http://www.lufthansa.com
Luxair	http://www.luxair.lu
Malaysia Air	http://www.malaysiaair.com
Malév Hungarian Airlines	http://www.malev-airlines.com
Mandarin Airlines	http://www.mandarinair.com
Merpati Airlines	http://www.merpati-airlines.co.id
MetroJet - US Airways	http://www.flymetrojet.com
Mexicana Airlines	http://www.mexicana.com.mx/mx2/english
MIAT Mongolian Airlines	http://www.miat.com.mn
Midway Airlines	http://www.midwayair.com
Northwest Airlines	http://www.nwa.com
oneworld	http://www.oneworldalliance.com
Orca Air	http://www.orca-air.com
Pakistan International Airlines	http://www.piac.com
Peninsula Airways	http://www.penair.com
Philippine Airlines	http://www.philippineair.com
Portugália Airlines	http://www.pga.pt/uk
Qantas Airways	http://www.qantas.com
Qata Airways	http://www.qatarairways.com/qr
Royal Jordanian Airlines	http://www.rja.com.jo
Ryanair	http://www.ryanair.ie

Sabena Airlines	http://www.sabena-usa.com
Saudi Arabian Airlines	http://www.saudiairlines.com
Scandinavian Airlines	http://www.flysas.com
Singapore Airlines	http://www.singaporeair.com/home.htm
South African Airways	http://www.saa.co.za
South African Express Airways	http://www.saexpress.co.za/sax.html
Southwest Airlines	http://www.iflyswa.com
Spanair	http://www.spanair.com/uk
Star Alliance	http://www.star-alliance.com
Swissair	http://www.swissair.com
TAP Air Portugal	http://www.tap-airportugal.pt/en/index1.html
TAROM Romanian Air Transport	http://tarom.digirow.net
Thai Airways	http://www.thaiair.com
Tower Air	http://www.towerair.com
Trans World Airlines	http://www.twa.com
Transbrasil	http://www.transbrasil.com.br/i/index.htm
Turkish Airlines	http://www.turkishairlines.com
United Airlines	http://www.ual.com/home/default.htm
US Airways	http://www.usairways.com
Vanguard Airlines	http://www.flyvanguard.com
VARIG Brasil	http://www.varig.com.br/english/rghome-p.htm
VASP Brazilian Airline	http://www.vasp.com.br/iindex.htm
Virgin Atlantic Airways	http://www.fly.virgin.com

Airport Codes

Airport Search Engine	http://www.uni-karlsruhe.de/~un9v/atm/ase.html
Quinwell Travel Service Airport Codes	http://quinwell.com/aircode.html
World Wide Airport and City Code Database	http://www.cowtown.net/users/rcr/aaa/ccmain.htm

Airport Directories

Airports International	http://www.airportsintl.com
QuickAid Airport Directory	http://www.quickaid.com

ATM Locator

American Express - Express Cash ATM Networks	http://www.americanexpress.com/corp/express_cash/expresscash.html
ATM Locator	http://www.groupweb.com/personal/consumer/atm_locator.htm
Chase Manhattan Bank-ATM Locator	http://www.chase.com/yourmoney/service/atmlocate.html
Citibank ATM/Branch Locator	http://www.citibank.com/branches
Co-op Network ATM Locator	http://209.24.187.89/web/coop/search.html
EDS ATM Locator	http://www.eds.com/atmlocator
First Union ATM/Branch Locator	http://firstunionsp.infonow.net/FirstUnion.html
Honor ATM Locator	http://www.honor.com/atm
Magiline ATM Locator	http://www.magiline.com/atm_database.html

MasterCard/Cirrus	http://www.mastercard.com/atm
NationsBank/Bank of America	http://www.nationsbank.com
NOVUS Cash Access Locator	http://www.novusnet.com/merchant/data/info.htm
SunTrust Banks Branch/ATM Locator	http://www.suntrust.com/pers/bran
Surcharge-Free ATM Locator	http://www.surcharge-free-atms.com
Visa/Plus	http://www.visa.com/atms
Wells Fargo	http://www.wellsfargo.com/findus

Bed and Breakfast Inns and Country Inns

1st Traveler's Choice	http://www.virtualcities.com/~virtual/cinn/cinn01.htm
American Bed & Breakfast Association	http://www.abba.com
America's Gallery of Bed & Breakfast Inns	http://www.abcsn.com
America's Inn & Lodge Directories	http://www.dallasadmall.com
B&B's on the WWW	http://www.webcom.com/~neatstuf/bb
Bed & Breakfast Channel	http://www.bbchannel.com
Bed & Breakfast Inns Online	http://www.bbonline.com
Bed and Breakfast Inns of North America	http://www.bestinns.net
Choice Bed & Breakfast Guide	http://www.choice-guide.com
Go Native's On-Line Guide to Bed & Breakfast Inns	http://www.go-native.com
Home Arts Inn Finder	http://homearts.com/inns
Infinity Quest	http://www.infinityquest.com
InnCrawler	http://www.inncrawler.com
Innkeepers' Register	http://www.innbook.com
INNroads	http://www.inns.com
Inns&Outs: The Bed & Breakfast Source	http://www.innsandouts.com
Innsearch	http://www.innsearch.com
INNside Scoop	http://www.the-innside-scoop.com
InnSite: The Internet Directory of Bed & Breakfasts	http://www.innsite.com
TravelASSIST	http://www.travelassist.com
TravelData: The Internet Guide to Bed & Breakfast Inns	http://www.traveldata.com
Ultimate Bed & Breakfast Directory	http://www.innformation.com

Bus Service

Greyhound	http://www.greyhound.com
Greyhound Canada	http://www.greyhound.ca
National Express: Britain's Coach Network	http://www.nationalexpress.co.uk
Peter Pan	http://www.peterpan-bus.com
Trailways National Bus System	http://www.uma.org/tnbs.htm

Car Rentals

Alamo A Car	http://www.goalamo.com
Auto Europe	http://www.autoeurope.com
Avis	http://www.avis.com

Budget Rent a Car	http://www.drivebudget.com
CarTemps USA Rent-A-Car	http://www.cartemps.qpg.com
Dollar Rent A Car	http://www.dollar.com
Enterprise Rent-A-Car	http://www.enterprise.com
Europe by Car	http://www.europebycar.com
Europcar	http://www.europcar.com
Hertz	http://www.hertz.com
National Car Rental	http://www.nationalcar.com
Payless Car Rental	http://www.paylesscar.com
Thrifty Car Rental	http://www.thrifty.com

Consumer Rights and Advocacy/Complaints

BBBOnLine	http://www.bbbonline.com
PassengerRights.com	http://www.passengerrights.com
TRUSTe	http://www.truste.com

Credit Cards

American Express	http://www.americanexpress.com
Diners Club	http://www.dinersclub.com
Discover Card	http://www.discovercard.com
MasterCard	http://www.mastercard.com
Visa	http://www.visa.com

Cruises

Accent on Travel and Cruises	http://www.travelandcruises.com
American Canadian Caribbean Line	http://www.accl-smallships.com
American Hawaii Cruises	http://www.cruisehawaii.com
Bergen Line	http://www.bergenline.com
Carnival Corporation	http://www.carnivalcorp.com
Celebrity Cruises	http://www.celebrity-cruises.com
Clipper Cruise Line	http://www.clippercruise.com
Commodore Cruise Line	http://www.commodorecruise.com
Cruise Lines International Association	http://www.cruising.org
Cruises.com	http://www.cruises.com
Crystal Cruises	http://www.crystalcruises.com
Delta Queen Steamboat Company	http://www.deltaqueen.com
Disney Cruise Line	http://www.disney.go.com/disneycruise
First European Cruises	http://www.first-european.com
Norwegian Cruise Line	http://www.ncl.com
Orient Lines	http://www.orientlines.com
Premier Cruises	http://www.premiercruises.com
Princess Cruises	http://www.princess.com
Radisson Seven Seas Cruises	http://www.rssc.com

Regal Cruises	http://www.regalcruises.com
Renaissance Cruises	http://www.renaissancecruises.com
Royal Caribbean International	http://www.rccl.com
Royal Olympic Cruises	http://www.royalolympiccruises.com
Scandinavian Seaways	http://www.scanseas.com
Star Cruises	http://www.starcrises.com
TravelASSIST	http://www.travelassist.com
Voyager Cruise Line	http://www.voyagercruiseline.com
World Explorer Cruises	http://www.wecruise.com
World's Leading Cruise Lines	http://www.leaderships.com

Events and Event Tickets

24/7 Ticket Service	http://www.webtickets.com
Aloud.com – Britain	http://www.aloud.com
CultureFinder	http://www.culturefinder.com
Festivals.com	http://www.festivals.com
Playbill On-Line	http://www.playbill.com
Soldout.com	http://www.soldout.com
Telecharge NetTiks	http://www.telecharge.com
Ticketmaster Australasia	http://www.ticketmaster.com.au
Ticketmaster Canada	http://www.ticketmaster.ca
Ticketmaster UK	http://www.ticketmaster.co.uk
Ticketmaster USA	http://www.ticketmaster.com
Tickets.com	http://www.tickets.com
TicketsLive	http://www.ticketslive.com
tix.com	http://www.tix.com
TNT Tickets	http://www.tnttickets.com
What's On Stage - Britain	http://www.whatson.com

Flight Schedules

OAG Online	http://www.oag.com
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Flight Tracking

Flyte Comm	http://www.flytecomm.com
Trip.com	http://www.thetrip.com

Foreign Exchange Rates, Services, and Currency Conversion Calculators

CNNfn	http://www.cnnfn.com/markets/currencies
Direct FX Foreign Exchange Services	http://www.foreign-currency.com
DynaMind Currency Calculator	http://www.dynamind-llc.com/cgi-bin/currency.cgi
Exchange Rates	http://www.x-rates.com

OANDA 164 Classic Currency Converter	http://www.oanda.com/converter/classic
Thomas Cook	http://www.thomascook.com
travlang	http://www.travlang.com/money
Universal Currency Converter	http://www.xe.net/ucc

Frequent Traveler Information

FrequentFlier.com	http://www.frequentflier.com
MaxMiles	http://www.maxmiles.com
WebFlyer	http://www.webflyer.com

Hostels

Elderhostel	http://www.elderhostel.org
Hostels.com	http://www.hostels.com

Hotels, Motels, Resorts, and Corporate Housing

Accor	http://www.accor.com
Adam's Mark Hotels and Resorts	http://www.adamsmark.com
Aerowista Hotels and Resorts	http://aerowisata.com
AmeriSuites	http://www.amerisuites.com
ANA Hotels	http://www.ananet.or.jp/anhoteles/e/index.html
Bass Hotels and Resorts	http://www.basshotels.com
Baymont Inns and Suites	http://www.baymontinns.com
Best Western International	http://www.bestwestern.com
BridgeStreet Accommodations	http://www.bridgestreet.com
Budget Host International	http://www.budgethost.com
Canadian Pacific Hotels	http://www.cphotels.ca
Candlewood Suites	http://www.candlewoodsuites.com
Carlson Companies	http://www.carlson.com
Cendant	http://www.cendant.com
Choice	http://www.choicehotels.com
Club Med	http://www.clubmed.com
ClubCorp	http://www.clubcorp.com
Concorde Hotels	http://www.concorde-hotels.com
Concorde Hotels and Resorts	http://www.concorde.net
Country Inns and Suites by Carlson	http://www.countryinns.com
Delta Hotels and Resorts	http://www.deltahotels.com
Disney	http://www.disney.com
Dolce International	http://www.dolce.com
Drury Hotels	http://www.drury-inn.com
Dusit Group	http://www.dusit.com
Extended Stay America	http://www.extendedstay.com
Fairmont Hotels	http://www.fairmont.com

Forte Hotels	http://www.forte-hotels.com
Forte Travelodge	http://www.travelodge.co.uk
Four Seasons Hotels and Resorts	http://www.fourseasons.com
Golden Tulip Worldwide	http://www.goldentulip.com
Hilton	http://www.hilton.com
Hyatt	http://www.hyatt.com
Kempinski Hotels and Resorts	http://www.kempinski.com
LaQuinta Inns	http://www.travelweb.com/TravelWeb/lq/common/laquinta.html
Le Meridien Hotels and Resorts	http://www.accessworldwide.com/wwhr/lemeridien
Leading Hotels of the World	http://www.lhw.com
Loews Hotels	http://www.loewshotels.com
Mandarin Oriental	http://www.mandarin-oriental.com
Marriott International	http://www.marriott.com
Microtel Inn and Suites	http://www.microtelinn.com
Motel 6	http://www.motel6.com
Mövenpick Hotels and Resorts	http://www.movenpick-hotels.com
New Otani Hotel Group	http://www.newotani.co.jp
New World Hotels International	http://www.newworld-intl.com
Nikko Hotels International	http://www.nikkohotels.com
Oakwood Corporate Housing	http://www.oakwood.com
Omni Hotels	http://www.omnihotels.com
Opryland Hotel Convention Center	http://www.opryhotel.com
Outrigger Hotels and Resorts	http://www.outrigger.com
Pan Pacific Hotels and Resorts	http://www.panpac.com
Park Plaza International	http://www.parkhtls.com
Peninsula Group	http://www.peninsula.com
Preferred Hotels Worldwide	http://www.preferredhotels.com/preferred.html
Promus	http://www.promus.com
Radisson	http://www.radisson.com
Rafael Hotels	http://www.rafaelhotels.com
Ramada Franchise Systems, Inc.	http://www.ramada.com
Ramada International Hotels and Resorts	http://www.ramada-hotels.com
Red Roof Inns	http://www.redroof.com
Regent International Hotels	http://www.regenthotels.com
Resorts OnLine	http://www.resortsonline.com
Rosewood Hotels and Resorts	http://www.rosewood-hotels.com
Sandals Resorts	http://www.sandals.com
Savoy Group	http://www.savoy-group.co.uk
Scandic Hotels	http://www.scandic-hotels.com
Shangri-La	http://www.shangri-la.com
Shoney's Inn	http://www.shoneysinn.com
Signature Inns	http://www.signature-inns.com
Small Luxury Hotels of the World	http://www.slh.com
Sonesta International	http://www.sonesta.com
Stakis Hotels	http://www.stakis.co.uk
Starwood Hotels and Resorts	http://www.starwoodlodging.com

Sterling Hotels Corporation	http://www.sterlinghotelscorp.com
Summit Hotels and Resorts	http://www.summithotels.com
Sun International Hotels Limited	http://www.sunint.com
Sun International South Africa	http://www.sun-international.com
Sunburst Hospitality Corporation	http://www.sunbursthospitality.com
Sunroute Hotel Chain	http://sunroute.aska.or.jp/index_e.html
SuperClubs Resorts	http://www.superclubs.com
Swallow Hotels	http://www.swallowhotels.com
Swissôtel	http://www.swissotel.com
Thistle Hotels	http://www.thistlehotels.com
Vagabond Inns	http://www.vagabondinns.com
Vail Resorts	http://www.vailresorts.com
Woodfin Suites	http://www.woodfinsuites.com
Wyndham Hotels and Resorts	http://www.wyndham.com

International Time Zone Information

David's Emporium	http://web.ukonline.co.uk/david.w34/_FIFTEEN.html
Extension Software's International Time Zone Information	http://www.extensionsoft.com/timezoneinfo.htm
Timezone Converter	http://www-ca.llnl.gov/atp/tzconvert.cgi
World Time Zone	http://www.isbister.com/worldtime
www.timeanddate.com	http://www.timeanddate.com

Language Guides and Translation Dictionaries

Babel Fish	http://babelfish.altavista.digital.com/cgi-bin/translate?
Babylon	http://www.babylon.com
Internet Translator	http://www.tranexp.com/intertran.cgi
Travlang	http://www.travlang.com

Limousines and Shuttle Service

Carey International	http://www.careyint.com
ExecuCar	http://www.execucar.com
LimousinesOnline.com	http://www.limousinesonline.com
SuperShuttle	http://www.supershuttle.com

Local Information, Convention and Visitors Bureaus, Traveler Guides, and Travel Aids

@USA	http://www.at-usa.com
Airline Information On-Line on the Internet	http://www.iecc.com/airline
Arthur Frommer's Outspoken Encyclopedia of Travel	http://www.frommers.com
Cahners Traveler.Net	http://www.traveler.net
CitySearch	http://www.citysearch.com

CMP's NetGuide Travel Guide	http://www.netguide.com/travel
CNN Interactive TravelGuide	http://www.cnn.com/TRAVEL
Condé Nast	http://www.cntraveler.com
Convention and Visitor Bureau Web Sites	http://omni.cc.purdue.edu/~alltson/iacv.htm
Digital City	http://www.digitalcity.com
eGO Travel Guides	http://www.ego.net
Fodor's Travel	http://www.fodors.com
Go 2 Orlando	http://www.go2orlando.com
Go-Global.com	http://www.go-global.com/index.shtml
Holidays in the UK	http://www.holidayuk.co.uk
International Association of Convention & Visitor Bureaus	http://www.iacvb.org
International Business Kiosk	http://www.webcom.com/~one/world
iVillage Travel	http://www.ivillage.com/travel
Lonely Planet	http://www.lonelyplanet.com
Microsoft Sidewalk	http://www.sidewalk.com
My TravelGuide	http://www.mytravelguide.com
On the Go Publishing	http://www.onthegopublishing.com
Online CityGuide	http://www.oncg.com
Passport Pal	http://www.passportpal.com
Passport Travel Guide	http://www.passportguide.com
Rand McNally	http://www.randmcnally.com
Rec.Travel Library	http://www.travel-library.com
Steve Kropla's Help for World Travelers	http://kropla.com
Tourism Offices Worldwide Directory	http://www.towd.com
Travel Channel	http://www.travelchannel.com
Travel City	http://www.travelcity.com
Travel Library	http://www.travellibrary.com
Travel.org – The Directory for Travel	http://www.travel.org
TravelFinder.com	http://www.travelfinder.com
Traveling.com – The Traveling Channel	http://traveling.com
Travelon	http://www.travelon.com
U. S. Tourism Contacts	http://www.traveldiscounts.com/discount/usa/tourous.html
Virtual Tourist	http://www.vtourist.com
Visit Virginia	http://www.virginia.org
WHERE Magazine	http://www.wheremags.com
World Now	http://www.worldnow.com
World Travel Guide	http://www.wtg-online.com

Maps, Driving Directions, and Traffic Reports

American Automobile Association (AAA)	http://www.aaa.com
AutoPilot	http://www.freetrip.com
Canadian Automobile Association (CAA)	http://www.caa.ca
Etak Traffic	http://www.etaktraffic.com
Map Blast!	http://www.mapblast.com

MapQuest	http://www.mapquest.com
Maps on Us	http://www.mapsonus.com
Microsoft's TerraServer	http://www.terraServer.microsoft.com
WorldAtlas.com	http://www.worldatlas.com/aatlas/world.htm
Zip2	http://www.zip2.com

Measurement Conversion

English-Metric Measurement Converter Plus	http://fuji.stanford.edu/converter
Internet French Property Reference Library	http://www.french-property.com/ref/convert.htm
MegaWeb English Metric Converter	http://www.mega.co.za/members/resources/english_metric_converter.htm

Meetings, Conventions, and Conference Centers

b-there.com	http://www.b-there.com
Business Meetings.com	http://www.businessmeetings.com
Business Travel RFP Service	http://www.arraydev.com/travel
Conference Centers and Retreats	http://www.conferencesearch.com
Event Planner	http://www.event-planner.com
EventSource	http://www.eventsource.com
Guide to Unique Meeting Facilities	http://www.theguide.com
Hot Dates Hot Rates	http://www.hdhr.com
International Association of Conference Centers	http://www.iacconline.com
Meeting Guide	http://www.mmaweb.com/meetings
Meeting Professionals International	http://www.mpiweb.org
MeetingCity	http://www.meetingcity.com
Meetings and Conventions Online	http://www.meetings-conventions.com
Meetings and Destinations' MADSearch	http://www.madsearch.com
Meetings and Travel Online	http://www.mtonline.com
Meetings Industry Mall	http://www.mim.com
MeetingsNet	http://www.meetingsnet.com
PlanSoft Network	http://www.plansoft.com
Professional Convention Management Association	http://www.pcma.org
StarCite.com	http://www.starcite.com

Moving Vans

Penske	http://www.penske.com
Ryder	http://www.ryder.com
U-Haul	http://www.uhaul.com

Newsgroups

alt.travel
alt.travel.road-trip

bit.listserv.travel-l
clari.biz.industry.travel+leisure
clari.biz.industry.travel+leisure.releases
fl.travel
ijjnet.travel
rec.travel.africa
rec.travel.air
rec.travel.asia
rec.travel.australia+nz
rec.travel.bed+breakfast
rec.travel.caribbean
rec.travel.cruises
rec.travel.europe
rec.travel.latin-america
rec.travel.marketplace
rec.travel.misc
rec.travel.resorts.all-inclusive
rec.travel.usa-canada
tnn.travel
tnn.travel.report

Online Travel Agents, Booking Services, Consolidators, and Bucket Shops

1Travel.com	http://www.1travel.com
800 Travel Systems	http://www.lowairfare.com
Aaron's Travel Resource Center	http://www.hotel-intl.com
Aaron's TravelHero.com	http://www.travelhero.com
Access Worldwide	http://www.accessworldwide.com
Accommodations Search Engine	http://www.ase.net
Airlines.com	http://www.airlines.com
AirTravel Network	http://www.airtravel.net
All Hotels on the Web	http://www.all-hotels.com
Amadeuslink.com	http://www.amadeuslink.com
American Express Travel	http://travel.americanexpress.com
Atevo Travel	http://www.atevo.com
BananaTravel.Com	http://www.bananatravel.com
Bestfares.com	http://www.bestfares.com
Biztravel.com	http://www.biztravel.com
Bon Vivant	http://www.bvt-usa.com
Bucket Shops	http://www.etn.nl/bucketshops
Budgethotels.com	http://www.budgethotels.com
Carlson Wagonlit Travel	http://www.carlsontravel.com
Cheap Tickets	http://www.cheaptickets.com
Discount Travel	http://www.discounttravelint.com
Discount-Airfare.com	http://www.discount-airfare.com

European Travel Network	http://www.etn.nl
Farebusters	http://www.farebusters.com
Flifo Global	http://www.flifo.com
GetThere.com (formerly Internet Travel Network)	http://www.itn.net
Global Online Travel	http://www.got.com
Global Travel Network	http://www.travnet.com
Go-today.com	http://www.go-today.com
Hotel Guide	http://www.hotelguide.com
Hotel Reservations Network	http://www.180096hotel.com
HotelBook by Utell International	http://www.hotelbook.com
inntopia.com	http://www.inntopia.com
Internet Travel Services	http://www.faraway.com
LastMinute Travel.com	http://www.lastminutetravel.com
Leisure Planet.com	http://www.leisureplanet.com
LeisureWeb	http://www.leisureweb.com
Liberty Travel	http://www.libertytravel.com
Lowestfare.com	http://www.lowestfare.com
Microsoft Expedia	http://www.expedia.com
MrCheaps.com	http://www.mrcheaps.com
NITC Travelbase Internet Travel Planning	http://www.travelbase.com
Preview Travel	http://www.previewtravel.com
Rosenbluth International	http://www.rosenbluth.com
skymalltravel	http://www.skymalltravel.com
Skytours	http://service.skytours.de
Ticket Planet	http://www.ticketplanet.com
Travel Information Software Systems	http://www.tiss.com
Travel Navigator	http://www.travelnavigator.com
Travel Online	http://www.travel.com
Travel Secrets	http://www.travelsecrets.com
TRAVEL.com	http://www.travel.com
Travelers Advantage Discount Travel Club	http://www.travelersadvantage.com
Traveler's Net	http://www.travelersnet.com
TravelNow	http://www.travelnow.com
Travelocity	http://www.travelocity.com
TravelRes Direct	http://www.travelresdirect.com
travelscape.com	http://www.travelscape.com
TravelWeb	http://www.travelweb.com
TravelWiz	http://www.travelwiz.com
Travelzoo	http://www.travelzoo.com
Trip.com	http://www.thetrip.com
Trubotrip.com	http://www.turbotrip.com
Uniglobe Travel Online	http://www.uniglobe.com
USA Hotel Guide	http://www.usahotelguide.com
USA International Travel and Tours' a-travel.com	http://www.a-travel.com
WorldHotel Finder	http://www.worldhotel.com
WORLDRES.com's Places to Stay	http://www.placestostay.com

Passports and Visas

All Aboard Passports	http://www.geocities.com/Athens/Aegean/5165
All Points Visa	http://www.allpointsvisa.com
American Passport Express	http://www.americanpassport.com
G-3 Visas and Passports	http://www.g3visas.com
Instant Passport	http://www.instantpassport.com
Passport Express	http://www.passportexpress.com
Passport Now	http://www.passportnow.com
Passport People	http://www.passportpeople.com
Travel Document Systems	http://www.traveldocs.com
Travisa	http://www.travisa.com
U. S. State Department	http://travel.state.gov
VIP Services	http://www.vippassports.com
Visa Advisors	http://www.visaadvisors.com
Visa Connection	http://www.visas-for-travel.com

Rating Services for Travel-Related Web Sites

bizrate.com	http://www.bizrate.com
Gómez Advisors	http://www.gomez.com

Relocation

Homefair.com	http://www.homefair.com
Relocation Central	http://www.relocationcentral.com
USA CityLink	http://www.usacitylink.com
Virtual Relocation.com	http://www.virtualrelocation.com

Restaurant/Dining Guides

CuisineNet	http://www.cuisinenet.com
Daily Diner Interactive Restaurant and Dining Guide	http://www.dailydiner.com/home.cfm/CID2
dine.com Online Restaurant Guides	http://www.dine.com
Dining à la Card	http://www.dalc.com
Fodor's Restaurant Index	http://www.fodors.com/ri.cgi
foodline.com	http://www.foodline.com
OpenTable.com	http://www.opentable.com
Restaurant Row Dining Guide	http://www.restaurantrow.com
Traveling's International Restaurant & Dining Pages	http://www.traveling.com/restaurant
World Wide Restaurant Guide	http://www.wwrg.org/index.shtml
Zagat Survey	http://www.zagat.com

Search Engines, Directories, and Web Portals

About.com	http://www.about.com
AltaVista	http://www.altavista.com
AnyWho	http://www.anywho.com
AOL.com	http://www.aol.com
Ask Jeeves!	http://www.ask.com
Bigfoot.com	http://www.bigfoot.com
Big Yellow	http://www.bigyellow.com
CMP NetGuide	http://www.netguide.com
CNN Interactive	http://www.cnn.com
Deja News	http://www.dejanews.com
Direct Hit	http://www.directhit.com
EuroSeek	http://www.euroseek.com
Everything's Travel	http://members.aol.com/trvlevery
Excite	http://www.excite.com
Fireball (German)	http://www.fireball.de
GO Network	http://www.go.com
Google!	http://www.google.com
GoTo.com	http://www.goto.com
GTE SuperPages	http://superpages.gte.net
Hotbot	http://www.hotbot.com
Hotel Resource	http://www.hotelresource.com
Information Please	http://www.infoplease.com
Infoseek	http://www.infoseek.com
InfoSpace.com	http://www.infospace.com
LookSmart	http://www.looksmart.com
Lycos	http://www.lycos.com
Magellan	http://www.mckinley.com
MegaGo.com	http://www.megago.com
MSN.com	http://home.microsoft.com
Netscape Netcenter	http://www.netscape.com
Northern Light	http://www.northernlight.com
Snap	http://www.snap.com
Switchboard	http://www.switchboard.com
Talk City	http://www.talkcity.com
theglobe.com	http://www.theglobe.com
USA Today	http://www.usatoday.com
TravelSearch	http://www.travelsearch.com
Voilà (French)	http://www.voila.fr
WebCrawler	http://www.webcrawler.com
WorldPages	http://www.worldpages.com
Yack	http://www.yack.com
Yahoo!	http://www.yahoo.com

Sightseeing

American Sightseeing International	http://www.sightseeing.com
CityPass	http://www.citypass.net
Gray Line Tours	http://www.grayline.com

Smart Agents ("Bots") and Comparison-Shopping Aids

Amazon.com's Shop the Web	http://www.amazon.com
IntelliTRIP.com by TheTrip.com	http://intellitrip.thetrip.com
Virtual Outlet by InfoSpace.com	http://vo.infospace.com

Spas and Specialty Travel

Contiki Holidays	http://www.contiki.com
Destinations.com	http://www.destinations.com
Epicurious	http://www.epicurious.com
Golf Travel Online	http://www.gto.com
Online Vacation Mall	http://www.onlinevacationmall.com
Only The Best	http://www.onlybest.com
Pleasure Break Vacations	http://www.pleasurebreak.com
ResortQuest International	http://www.resortquest.com
SkiResorts.com	http://www.skiresorts.com
Spa-Finders' Spa Source	http://www.spafinders.com
Vacation Hotline	http://www.vacation-travel.com
Vacation Outlet	http://www.vacationoutlet.com
VacationSpot.com	http://www.vacationspot.com

Subway/Metro Guides

AmeriMetro	http://www.geocities.com/Paris/Metro/9406/america.htm
EuroMetro	http://ourworld.compuserve.com/homepages/robert_sch/euromet.htm
Subway Navigator	http://metro.ratp.fr:10001/bin/cities/english

Telephone Information - Area Codes, City/Country Codes, Calling Card Access

555-1212.com	http://www.555-1212.com
AmeriCom Area Decoder	http://decoder.americom.com
AT&T Worldwide Traveler	http://www.att.com/traveler
MCI International Travel Guide	http://www.mci.com/aboutyou/interests/international/travelguide
Sprint Access Codes	http://www.sprint.com/home/product/abroad/access.html

Trains

Amtrak	http://www.amtrak.com
BritRail	http://www.britrail.com
Europail International	http://www.eurail.on.ca
Rail Europe	http://www.raileurope.com/us
SNCF – France	http://www.sncf.fr/indexe.htm
UK Railways on the Net	http://www.rail.co.uk
VIA Rail Canada	http://www.viarail.ca
Web Union Station	http://www.webunionstation.com

Travel Advisories, Health, and Consular Information

Canadian Dept. of Foreign Affairs & International Trade	http://www.dfait-maeci.gc.ca
Centers for Disease Control and Prevention	http://www.cdc.gov/travel
CIA World Factbook	http://www.odci.gov/cia/publications/factbook
drkoop.com	http://www.drkoop.com
Electronic Embassy	http://www.embassy.org
Embassy Web	http://www.embassyweb.com
Fielding's DangerFinder	http://www.fieldingtravel.com/df
OnHealth	http://www.onhealth.com
Shoreland's Travel Health Online	http://www.tripprep.com
U. S. Customs Service	http://www.customs.ustreas.gov
U. S. State Department Bureau of Consular Affairs	http://travel.state.gov
WebMD	http://www.webmd.com
World Health Organization	http://www.who.int

Travel Auctions and Bidding Services

Bid 4 Vacations.com	http://www.bid4vacations.com
CityAuction	http://www.cityauction.com
Internet Auction List	http://www.usaweb.com/travel.html
NetMarket	http://www.netmarket.com
Onsale Auction Supersite	http://www.onsale.com
priceline.com	http://www.priceline.com
SkyAuction.com	http://www.skyauction.com
TravelBids	http://www.travelbids.com
Travelfacts Auction	http://www.bid4travel.com

Travel Insurance and Trip Protection

AIGAssist Global Travel Protection	http://www.aigtravel.com
CSA Travel Protection	http://www.travelsecure.com
International SOS Assistance	http://www.intsos.com
Travel Insurance DIRECT	http://www.tidirect.com

Travel Insurance Services	http://www.travelinsure.com
Universal Travel Protection	http://www.utravelpro.com
Worldtravelcenter.com	http://www.worldtravelcenter.com
Worldwide Travel Insurance	http://ds.dial.pipex.com/town/avenue/xz43/wwtis.shtml

Weather

AccuWeather	http://www.accuweather.com
CNN Interactive Weather Service	http://www.cnn.com/WEATHER
Intellicast	http://www.intellicast.com
Rain or Shine	http://www.rainorshine.com
U. S. National Weather Service	http://iwin.nws.noaa.gov/iwin/graphicsversion/main.html
USA Today Weather	http://www.usatoday.com/weather
Weather Channel	http://www.weather.com
WeatherLabs	http://www.weatherlabs.com
World Wide Weather Service by Freese-Notis	http://www.weather.net
WorldClimate	http://www.worldclimate.com

APPENDIX B: INTRODUCTORY COVER LETTER



College of Human Resources and Education

Department of Hospitality & Tourism Management
362 Wallace Hall, Blacksburg, Virginia 24061-0429
Phone: (540) 231-5515 Fax: (540) 231-8313

[Date]

[Recipient's Name]

[Recipient's Title]

[Company Name]

[Street Address]

[City, State, Zip Code]

Dear [Recipient]:

I am writing to request your participation in a research study I am conducting as part of my doctoral dissertation at Virginia Tech in Blacksburg, VA. My study is an exploratory, multiple-case study that addresses investment decisions in information technology (IT) in the hotel industry related to a company's global distribution system (GDS). For your convenience, a more detailed summary of my study is enclosed with this letter.

The purpose of my study is to gain an understanding as to the criteria and methods hotel executives use when evaluating and prioritizing IT investments related to GDS. The study is endorsed by the International Hotel and Restaurant Association (IH&RA) and was formulated based upon the results of three Technology Think Tank sessions in which industry participants raised the following questions and asked for assistance in identifying answers:

- 1) **How do corporate-level hotel executives make investment decisions and establish IT priorities within the context of a hotel GDS?**
- 2) **What is the future outlook of hotel GDSs?**
- 3) **How is the success of IT investments in a hotel's GDS measured?**
- 4) **What is the net worth of a hotel GDS?**

To answer these questions, I am seeking your permission to interview several of your company's top executives in the areas of IT, Marketing, Finance, and Operations. If you agree to participate, interviews will be conducted on premise over the course of several days and last for approximately one to two hours each. The interview questions are open-ended in nature and address each of the four

questions above. A representative sample of interview questions is enclosed. If interview participants prefer, they may wish to prepare written responses to each of the questions. This will help to expedite the process and allow for more focused discussion during the actual interviews.

Ideally, I would like to meet with people directly responsible for your company's IT and GDS. These positions may include vice president of global distribution systems, vice president of electronic commerce, vice president of reservations technology, manager of reservations services, etc. (or their equivalents). I would also like to meet with senior management who oversee these roles and have involvement in IT/GDS decisions. These positions include senior vice president of marketing, chief information officer, chief financial officer, vice president of operations, etc. This mix of individuals will provide a holistic view of how IT/GDS investment decisions are analyzed and made. If you know of others within your company with whom I should speak regarding my study, I would welcome your input and suggestions.

In addition to interviews, I would like to supplement my investigation with company documents that discuss corporate strategy, new initiatives, and firm performance and that relate to IT/GDS evaluation and decision-making processes. These include annual reports, financial statements, organizational charts, job descriptions, and internal evaluations/analyses, to name a few. Please see the attached list of secondary sources (at the end of the interview questions) for a more complete listing. Any assistance you can provide in gaining access to these types of documents would be greatly appreciated.

I want to emphasize and assure you that I will treat all data as confidential, including the name of your company, the individuals participating in the interviews, and any proprietary information. All data will be reported in aggregate only. If necessary, I would be happy to sign a confidentiality or non-disclosure agreement. In appreciation for participating in my study, I will gladly make my results available to you and your company.

Finally, I wish to thank you in advance for your time, willingness, and agreement to participate in my study. If you have any questions or concerns, please feel free to contact me via telephone (540-552-7745) or by electronic mail (dconnoll@vt.edu). Otherwise, I will contact you within a few days so that we can schedule a site visit and arrange the specifics.

Sincerely,

Daniel J. Connolly

DJC/slf

Enclosures (2)

- Study Overview
- Interview Questions and Secondary Information

APPENDIX C: INTERVIEW QUESTIONS

About the Interview Participant

1. What is your current title within your company?

Ask for a business card.

2. Briefly describe your current job responsibilities.

Ask for a copy of the person's job description, if available.

3. How long have you held your current position?

4. How long have you been with the company?

5. What other positions have you held while employed with this company?

6. How many years of industry experience do you have?

7. Please describe your current use of information technology, both personally and professionally.

Probe for attitudes regarding computer usage, openness to innovation, and applications used.

8. How would you describe your attitude towards IT and its use in your company?

9. With respect to IT and GDS, what is the scope of your responsibilities and decision-making authority?

About the Company

1. Please describe the size of your company in terms of each of the following:

- | | |
|------------------------|--|
| ▪ Number of hotels | ▪ Operating expenses |
| ▪ Number of rooms | ▪ Growth rate |
| ▪ Number of employees | ▪ Market share |
| ▪ Gross annual revenue | ▪ Marketing Budget |
| ▪ Company assets | ▪ Number of countries where there is an established presence |
| ▪ Net income | |

Collect company documentation for support.

2. What percentage of your company's properties is franchised versus company-managed?

3. In what lodging segments (e.g., economy, extended-stay, full-service, luxury) does your company compete?
4. In your company, is management, decision-making, and control centralized, decentralized, or a combination of the two? Please explain and provide examples.
5. How would you describe the company's organizational culture?

Company Strategy

1. How would you define your company's strategic orientation?

Probe for strategic focus: low-cost provider, product differentiator, niche marketer; ask for supporting examples or evidence.

2. What is your company's mission statement?

Ask for a documented copy of the company mission statement.

3. How would you define your company's critical success factors (i.e., what are they)?

Look for insights regarding primary business objectives, measurement of success, and opportunities for the application of IT. Compare answers to responses for the company's strategic orientation and core competencies.

4. What are your company's competitive methods?

Look for emphasis on customer service, revenue generation, and cost containment (i.e., internal efficiency). Identify strategic thrusts and compare with company's strategic orientation and specified strategy. Ask for supporting examples of each.

5. What is your company's planning horizon (i.e., how many years into the future does the company typically plan)?

6. What are your company's attitudes toward risk and innovation?

Look for positions as a leader or follower. Seek examples of how risk and innovation are supported (i.e., rewarded) or stifled. Compare with the company's strategic orientation.

7. What steps are taken to align business strategy, marketing strategy, and IT strategy?

Ask for a copy of each of these plans.

8. What is your company's cost of capital (i.e., hurdle rate)?

Probe to see if multiple hurdle rates are used, depending on the project and its perceived level of risk.

Market Power

1. What do you consider to be your company's core competencies?

Ask for supporting examples or evidence of each. Look to see how these support the company's mission statement.

2. Which core competencies and competitive method(s) provide your company with the greatest advantages? Why?

Look for primary focus or emphasis of the company's strategy. Validate with the company's strategic orientation, mission statement, and core competencies.

3. What steps does your company take to sustain (or protect) its competitive advantages and maintain its market share?

Look for strategic thrusts and defensive maneuvers.

External Environment

1. What do you consider to be the greatest business/competitive opportunities for your company?

Look for insights as to future directions for this company and the industry as a whole.

2. What do you consider to be your company's greatest business/competitive threats?

Look for emerging threats or issues facing this company and the industry. Probe for competitive threats, environmental forces, and perceptions regarding uncertainty and competitiveness in the industry.

3. How do you monitor your competitors' use of GDS and IT?

4. When (i.e., at what point) does a competitor's use of IT force action by your company?

5. What do you consider to be your company's greatest weaknesses and why?

Compare with company's core competencies.

6. What methods are used to identify new opportunities or needs with respect to IT and GDS?

7. Referring to the previous answer, how are these needs and opportunities analyzed and prioritized?

Probe for:

- Evaluation tools, techniques, and processes used.
- Sources of input and roles and weight assigned to each.
- Criteria used in the evaluation process and preconditions that must be met.

Information Technology within the Company

1. Within your company, is the IT function centralized, decentralized, or some combination of the two? Please explain and provide examples.

Compare response with early response regarding overall assessment of the company.

2. What is your company's annual IT budget?

Establish the IT budget as a ratio to company sales and as a ratio to company expenses. Ask for a copy of the company's IT budget.

3. How large is the company's IT staff?

Ask for a copy of the IT department's organization chart.

4. What is the total value of your company's IT portfolio?

Probe for the extent to which the company has invested in IT. If this number is known, ask how this value was determined.

5. What are the stimuli that drive your company's usage of IT?

Probe for examples. Compare with the company's IT priorities, IT strategy, and corporate strategy.

6. What obstacles exist that limit the use of IT in your company?

Probe for examples. Seek explanations as to why these factors are considered hindrances. What is the company doing to overcome them?

Roles of and Attitudes Towards IT

1. What role does IT play in your company?

Look for company's proactiveness and focus on strategic/enabling systems versus support/utility roles.

2. What is your company's IT strategy?

Ask for a copy of the company's IT strategic plan.

3. How does IT support your company's strategic orientation, competitive methods, and core competencies?

Probe for examples. Compare with IT-business strategy alignment and attitudes regarding IT usage.

4. What is the company's IT mission statement?

Look for priorities, roles of IT, and orientation towards the application of IT. Compare with company mission statement and with responses to questions under the IT priorities and objectives section. How does this mission statement address the customer?

5. How do company executives use IT (and information from IT) in their day-to-day job functions?

Probe for attitudes towards the use of IT by top executives and their reliance on IT. Look for specific applications used by top executives. Compare to the roles IT plays within the company.

6. What is the highest-ranking IT position in the company? To whom (i.e., what position) does this position report?

Ask for a copy of the company's organization chart.

7. Is the company's highest-ranking IT official a member of the company's executive committee?

8. What is your company's philosophy concerning make versus build versus buy and customize decisions for IT applications?

Probe for examples and explanations as to why the company favors one approach over the others. Compare with company's core competencies.

9. What is the company's stance regarding internal IT development versus outsourcing?

Compare participant's response with the response to the previous question.

10. Does the company sell IT services or products to other companies or does it have plans to in the future? If so, what applications or services?

11. How would you assess your company's use of IT (i.e., in terms of sophistication)?

Compare response to IT strategy, priorities, and attitudes.

12. With respect to IT usage in your company, what are the most notable successes? Why were these projects so successful? What benefits were realized? What factors contributed to their success?

Establish IT track record. Look for criteria that are considered for evaluation and for supporting factors that enable IT usage in the firm. Probe for examples and documentation where possible.

13. Has your company ever been disappointed in the results achieved from IT? If so, for what types of projects? Why was the company disappointed? What was the cause of this disappointment?

Establish IT track record. Look for criteria that are considered for evaluation and for obstacles to using or implementing IT that may exist within the firm. Probe for examples and documentation where possible.

14. Has your company ever experienced any IT project failures?

Establish IT track record. Look for criteria that are considered for evaluation and for obstacles to using or implementing IT that may exist within the firm. Probe for examples and documentation where possible.

15. How would you assess your company's knowledge of IT?

16. How would you rate the IT department's credibility within the organization?

17. Do you have confidence in your IT department's ability to complete projects as planned (i.e., on time, within budget, and with the required functionality)? Why or why not?

Probe for examples and evidence. Is there a trusting relationship? Does IT take a proactive role in defining IT solutions to not only meet business needs but also to drive business opportunities?

IT Priorities and Objectives

1. Would you say the catalysts for IT investments come from within the organization or outside the organization?

Seek examples and explore why. Define catalysts and sources.

2. Within the organization, are the forces driving change through IT being pushed down from the top, bubbling up from the bottom, or a combination of the two?

Seek examples.

3. What role does top management play with respect to IT?

Determine how supportive management is with respect to IT and to what extent they set IT direction. Inquire about support from top management and seek examples of how this support (or lack of support) is demonstrated. To what extent does top management drive IT direction, priorities, and strategy?

4. Does your company have an IT steering committee? If so, who sits on this committee, and what role does it play?

Look for the presence of an IT steering committee. Identify positions of people comprising the committee. Seek evidence illustrating the influence they have in IT-related decisions and direction setting.

5. Is there a separate steering committee for your company's GDS? If so, who sits on this, and what role does it play?

6. Within your company, what are the IT investment objectives?

Probe for cost containment/efficiency, revenue generation, growth, customer satisfaction/service enhancement, employee satisfaction/productivity, new products and services. Ask for examples or supporting evidence.

7. What percentage of the IT budget is allocated to each of the following categories:

- | | |
|--|--------------------------------|
| ▪ Strategic systems | ▪ Maintenance/enhancement |
| ▪ Transactional systems | ▪ Experimental applications |
| ▪ Business process redesign | ▪ Threshold/competitive parity |
| ▪ Infrastructure | ▪ Regulatory or mandated |
| ▪ Informational/decision support systems | |

Probe for IT priorities. Compare with IT objectives.

8. What organizational priorities are taken into account when evaluating IT investment options and resource allocation decisions?

Validate response with IT investment objectives and the company's critical success factors.

9. In terms of GDS, what are the IT priorities?

10. Referring to the previous question, how were these IT priorities established?

IT Decision-Making Process

1. How is IT defined in your company for the purposes of determining level of investment?

Probe for the existence of corporate policies that determine processes to be followed, approval levels required, etc. If policies exist, ask to collect a copy of them. Define company's view and definition of IT.

2. Are IT investment decisions and analysis treated differently from other capital investment decisions made in the firm? If so, how?

3. How are IT investments related to GDS treated? Are they capitalized or expensed?
4. Does your company have a formal process for justifying IT investments?
5. Describe the typical process used by your company when evaluating IT-related decisions. What are the procedures or the steps that must be followed when seeking approval for IT-related expenditures?

Probe for:

- Tools/methods used
 - Evaluation criteria
 - Preconditions that must be met.
 - Participants in the process (and to what degree, i.e., amount of input, weight placed on input, etc.)
 - Involvement, guidance, and support from top management
 - Sources of input
 - Corporate policies regarding IT expenditures
 - Tangible cost-benefit analysis
 - Estimation of cash flows
 - Creativity and ad hoc analyses
 - Use of qualitative data and techniques for inclusion in the analysis
 - Examples of memos, reports, or analysis of one or more projects
6. What critical success factors are considered when evaluating new distribution channels and uses of IT to support the company's GDS?

Validate with IT and GDS priorities and the company's critical success factors.

7. What is the time horizon (life expectancy) of each decision?
8. How are intangible benefits and impacts accounted for when evaluating IT decisions?
9. How are opportunity costs and the costs of taking no action assessed when considering IT investment decisions related to the company's GDS?
10. With respect to quantitative and qualitative data, is one type of data valued more than the other? If so, how?
11. How are the expected outcomes (i.e., benefits and negative repercussions) of each IT-related decision estimated and reported?
12. How is a decision or choice made? How are resource allocation decisions made?

13. At what level(s) in the organization are these decisions made?
14. With respect to IT and GDS, where does the decision-making authority lie?
15. Who are the decision-makers for IT- and GDS-related decisions?
16. What factors influence the decision-making process in your firm?
17. How long does the evaluation and decision-making process typically last?
18. What factors influence the amount of time required for the analysis and decision-making process?
19. How do project attributes (e.g., type, size, scope, risk, budget, etc.) affect the level of evaluation, analysis, and methods used?

Probe for situational contexts, ad hoc analyses, and contingency approaches used.

20. To what extent can creativity and ad hoc analyses be used when evaluating IT investment decisions? Please explain and provide examples where possible.
21. To what extent do company politics influence IT budgeting and projection decisions?

Look for confounding variables that add to or detract from the structure of IT decision-making.

22. To what extent does the organizational culture affect IT usage and decisions?

Look for confounding variables that add to or detract from the structure of IT decision-making.

23. What do you consider to be the major strengths of your company's approach to IT evaluation, analysis, and decision-making?
24. What do you consider to be the major limitations or shortcomings to your company's approach to IT evaluation, analysis, and decision-making?
25. Do the current practices for IT evaluation and decision-making encourage or stifle the use of IT in the organization?

Ask for examples and supporting evidence.

26. With respect to GDS and each of the types of IT investment listed below, please define 1) the driving impetus leading to this type of investment, 2) risk-return characteristics, 3) the criteria used for evaluation, and 4) the methods used in the evaluation process.

- Strategic
- Infrastructure
- Informational/Decision Support
- Transactional
- Business Process Redesign
- Maintenance/Support
- Threshold/Competitive Parity
- Regulatory/Mandated
- Experimental

Probe for examples of each type of investment made by the company. Explore the driving strategies/reasons behind each type of investment. Compare response to participant's response regarding how project attributes affect the analysis and decision-making processes.

27. Within your company, are IT projects ever abandoned once they have started? If so, why? What criteria and methods were used to determine that the project(s) should be abandoned?

Probe for examples of abandoned projects. Ask for evaluation reports or documents recommending abandonment. Compare response with questions regarding IT track record in the firm.

28. In your opinion, how should IT investment decisions be evaluated? In other words, what would you consider to be the ideal process?

29. How can the prevailing focus shift from cost justification on a project-by-project basis to a broader business level?

Probe for solutions to the problems associated with traditional financial measures and management orientation towards short-term results.

Risk

1. Does your company use a formal process for evaluating risk associated with IT or other capital investments? If so, can you please describe?

2. With respect to IT and GDS, how does your company define and measure risk?

Probe for project size, estimated cost, familiarity with the technology, clarity of scope and benefits, timeline, etc.

3. Do you consider investment in IT to be risky? If so, why? What do you perceive to be the risks?

4. Are different hurdle rates used for IT decisions based on perceived risk?

5. Are there different considerations, criteria, and participants based on the amount of the investment, the level of perceived risk, or the scope of the investment? If so, could you please elaborate?

Compare response to other factors affecting IT decision-making/evaluation processes.

GDS

1. What is the technical architecture of your company's GDS?

Ask for a schematic representation or diagram if available depicting hardware and connectivity.

2. Under what domain (i.e., department) does the company's GDS fall?

Determine which department has ultimate control and authority for the GDS. Compare response with decision-making authority and participants in the evaluation/decision-making processes.

3. What is the relationship between IT and the department that oversees the company's GDS?

Determine formal and informal reporting and working relationships between departments.

4. In terms of GDS, who are the customers, and how is satisfaction measured for each customer group?

5. What is the company's GDS strategy?

Ask for supporting documentation.

6. In your company, is there a GDS product champion? If so, who (i.e., what position) is that person?

7. Please describe the capabilities of your company's GDS.

8. What are the major strengths and weaknesses of your company's GDS?

9. On an annual basis, how much does your company spend on GDS?

Probe for how these funds are used (e.g., maintenance, new functionality, new distribution channels, infrastructure, operating costs, etc.). Discuss why these funds are being spent, and ask what benefits the company hopes to realize. How will these expenditures be monitored and evaluated? Also, look to see what portion of these funds come from marketing, what portion comes from IT, and what portion comes from other sources (define all funding sources).

10. What are the distribution channels used by your company?

List each distribution channel.

11. For each distribution channel used by your company, what is the geographic reach?

12. For each distribution channel used by your company, what are the transaction costs?

Determine the cost components and contribution of each to the distribution costs.

13. For each distribution channel used by your company, what are the initial investment costs, and what are the on-going costs?

Determine the level of investment required by each distribution channel.

14. How many and what types of GDS interfaces does your company support and maintain?

Ask for schematic diagram.

15. For each interface cited in the previous question, what are the costs associated with development and on-going support/maintenance?

16. What productivity measures are available regarding the company's GDS and each distribution channel?

Probe for company data (reports) detailing:

- | | |
|--------------------|-----------------------|
| ▪ Room-nights | ▪ Net bookings |
| ▪ Revenue | ▪ Cancellations |
| ▪ REVPAR | ▪ No-shows |
| ▪ Conversion rates | ▪ Look-to-book ratios |

17. How much revenue does your company's GDS account for on an annual basis in terms of:

- Room revenue generated?
- Franchise fees?
- Transaction processing fees?
- Other? (Please specify).

18. What is the average number of transactions (reservations) processed by your company's GDS:

- Per second?
- Per day?
- Per year?

19. What is the peak capacity of the company's GDS?

As measured in terms of:

- Properties
- Room types
- Rate categories
- Transactions per second
- Connections, terminals, or concurrent users

20. Can distribution channel usage be segmented or categorized by customer type or market segment? If so, how?

Ask about common attributes of users for each distribution channel. Look for patterns in demographics, purpose of trip, lead time to booking, cost of room, etc.

21. How does your company measure channel churn (i.e., the volume of business shifted from one distribution channel to another)?

22. What is the company's philosophy regarding channel churn?

Assess attitudes towards shifting volume from one channel to another. Does the company try to encourage shifts in channel usage by offering incentives to take advantage of underutilized channels and more cost-effective channels?

Value

1. Does your firm have formal benefit-tracking system in place? If so, please describe the system and its use within your company.

2. How are IT investments managed and tracked within the company?

Probe for examples and supporting documents.

3. How does your company measure or assess the value of its IT and GDS?

Look for possible decision criteria, metrics, and use of a benefits-tracking system. Also look for methods used to assess the success (or failure), effectiveness, and impact of IT within the company.

4. When evaluating IT investment decisions, do you consider their impacts on the company's stock price, earnings per share, or cash flow per share?

5. What post-implementation analysis is conducted, if any?

Ask for an example report, evaluation, or follow-up memo.

6. How are realized effects and benefits captured, measured, and compared to expected ones (i.e., those defined during the evaluation stage on which project approval was contingent)?

Ask for supporting documentation, examples, and evidence.

7. What are the benefits (i.e., payoff) of your company's GDS? What supporting evidence exists to illustrate these benefits?
8. What is the value (i.e., net worth) of your company's GDS? In other words, if you were to assign a value to your company's GDS for the purposes of listing it on the company's balance sheet, what value would you give it?

Determine the process by which this value was determined. Obtain support documentation where possible.

Future Outlook

1. With respect to GDS, what new developments are being planned or are currently under development?

Probe for future outlook and emerging trends related to GDS.

2. How are IT developments and technological change forecasted with respect to GDS and distribution channels?
3. With respect to IT and GDS, who are the leaders? What companies (either within or outside the industry) serve as role models, and what company does your organization try to emulate?

Probe for reasons why.

4. What do you foresee for GDS in the years ahead?

Probe for future outlook, emerging trends, and IT developments related to GDS. Identify forces driving change.

5. How will hotels distribute their products and communicate with their guests with the technology of the future?
6. Where will the control of room inventory and distribution channels rest in the future?
7. What advice can you share with companies embarking on GDS initiatives?

Probe for any issues or topics not previously covered or considered.

VITA

Daniel J. Connolly is the son of George and Natalie Connolly. He was born on February 24, 1965 in Beverly, MA and spent his formative years living in Hamilton, MA with his family. In 1983, he graduated from Saint John's Preparatory School in Danvers, MA.

Mr. Connolly earned his Bachelor of Science degree in Hotel and Restaurant Administration from Cornell University in Ithaca, NY, and he received his Master of Business Administration degree with a concentration in Management Information Systems from American University in Washington, DC. Currently, he is an assistant professor and doctoral candidate in the department of Hospitality and Tourism Management at Virginia Polytechnic Institute and State University in Blacksburg, VA, where he is studying information technology trends and strategic management as they relate to the hospitality industry.

Mr. Connolly's primary research, teaching, and consulting interests focus on strategic applications of information systems and the alignment of strategic management with information technology in organizations. More specifically, he specializes in strategic planning and the use of information systems to enhance managerial decision-making, organizational efficiencies, competitive advantage, and customer service. His interests also include collaborative and remote computing as well as electronic commerce.

Mr. Connolly served as a consultant to a Silicon Valley-based Internet start-up in the areas of strategic planning, market analysis, and concept development. He also served as a consultant to Forum Group, Inc., a leading provider of retirement communities, assisted living and skilled nursing facilities, and home health care services (now part of Marriott International's Senior Living Services), where he developed a three-year strategic information systems plan, implemented the company's core technology and infrastructure, spearheaded numerous information technology projects, relocated the company's data processing from Indiana to Washington, DC, and created the information systems and technology department.

Additionally, Mr. Connolly spent nearly eight years working for the Marriott Corporation in the area of information systems. In that time, he was involved with a number of systems planning efforts and large-scale, multimillion-dollar systems development projects. He served as a project manager for the user requirements, design, and development phases of Marriott's "Next Generation System," a comprehensive, hotel property management system, and a revenue (yield) management system for the limited-service lodging group. Other assignments included systems selection and product evaluations for property management systems, accounting systems, and personal computer-based applications for the Marriott lodging groups and corporate staff. In his planning and research capacities, he created a competitive analysis/business intelligence program to monitor key business and technology trends throughout all facets of the hospitality industry. In addition to his information systems

experience, Mr. Connolly has over 10 years of operations experience in hotels and restaurants.

Mr. Connolly has served as a visiting lecturer at Cornell University, an instructor at Virginia Tech, and a visiting assistant professor at Concord College in Athens, WV, where he taught graduate and undergraduate courses in information technology and hospitality administration. He has also served as a research assistant and as a graduate teaching assistant at Virginia Tech in the area of strategic management. Today, he is a frequent guest lecturer at Cornell University and Virginia Tech on technology-related issues and trends.

In 1996, Mr. Connolly was awarded Virginia Tech's prestigious Department of Hospitality and Tourism Ph.D. Research Award for outstanding research and contributions to his field. Mr. Connolly sits on the editorial review board for the *Journal of Hospitality Information Technology*. He is an author or co-author of numerous publications, and he routinely presents his work at international industry and professional symposiums. Mr. Connolly has worked on numerous funded projects, including an award from Cornell University's Center for Hospitality Research sponsored by the Amedeo Group. The resulting product, co-authored with Michael D. Olsen of Virginia Tech and Richard G. Moore of Cornell University, is entitled *Competitive Advantage—Luxury Hotels and the Information Superhighway*.

Mr. Connolly is president of his own information technology consulting firm ConnQuest, Inc. and a member of Giga Information Group's ExperNet, a select network of information technology professionals. He is married and resides with his wife Sarah in Blacksburg, VA.

