

An Examination of the Link between RM Implementation Strategies and Performance

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Dissertation submitted to the faculty of the Virginia Polytechnic Institute and State University in
partial fulfillment of the requirements for the degree of

Doctor of Philosophy

In

Hospitality and Tourism Management

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February 26, 2015

Blacksburg, VA

Keywords: Revenue management implementation, strategy, hotels, outsourcing, in-house,
centralized

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ABSTRACT

Since its foundation, revenue management techniques on aggregate have added billions of dollars to many firms' bottom lines, while using existing products or services and existing sets of consumers (Cross, Higbie, & Cross, 2010). The recent rapid changes in the business environment have forced firms to adopt strategies that will fit their overall strategies to aid in their survival and success (Pechlaner & Sauerwein, 2002). As a result of the modern reality of business, academic literature has not yet been able to address many important considerations. An example is RM implementation strategies and the performance outcomes as a result of these decisions. This study investigated the advantages and disadvantages of implementation of RM strategies; in-house, centralized, and outsourced. This was followed by the make or buy decision, specifically focusing on Transaction Cost Economics and the Resource Based View to investigate antecedents of outsourcing intention, and if and how these different strategies affect hotel properties' performance.

Data were collected using an online survey of lodging properties located in the U.S. in October 2014. A total of 374 usable responses for outsourcing intention study and 591 usable responses for the performance study were collected. Factor analysis, hierarchical multiple regression, repeated measures ANOVA, regression analysis, and pairwise comparison analysis were the statistical analyses used in the study.

The results found that specificity is significant and negatively associated with outsourcing intention. In addition, uncertainty is significant and positively associated with outsourcing intention as proposed. The moderating effect of organizational capability is significant and changes from base model to final model with the moderator being statistically significant. The findings of regression and a pairwise comparison test confirmed the difference in strategy choice on performance for US hotels, giving us insights into the importance of selecting the strategy that is optimal for a given property.

DEDICATION

To the lights of my life, my wife Damla, my daughter Asya, and my son Alperen

ACKNOWLEDGEMENT

First and foremost, I would like to express my deepest and sincere gratitude to Dr. Muzaffer Uysal and Dr. Zvi Schwartz, my co-chairs and mentors. A dissertation is a highly challenging learning process and without their guidance and support, this study would not have been possible. Their personality, wisdom, knowledge, and skill have certainly provided me with opportunities to grow and learn under their wings. Their friendship and mentorship were of immense value to my professional and personal growth throughout my years in the department. When I struggled with difficulties, Dr. Muzzo always gave me encouragement and inspired me to continue, “One step at a time”.

I would also would like to thank my committee members Dr. Singal and Dr. Kumar for their insightful comments in my work. With critical opinions and valuable suggestions, they offered me their intellectual support during the process.

I owe special thanks to my fellow graduate students for their friendship and many thanks also goes to our department staff for their support. Finally, I extend special thanks to my family and friends for their love and support.

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CHAPTER ONE: INTRODUCTION

Beginning in the airline industry, the field of revenue management has since expanded into multiple industries, including a strong incorporation into the lodging industry. Research on revenue management (RM) shows that many firms attribute major increases in their revenues to revenue management applications; even when the firm continues to use a similar cost structure and customer base (Boyd, 1998; Cross, 1997; Geraghty & Johnson, 1997; Orkin, 1988). These and many other similar results make it obvious that revenue management has become an integral part of the operations and strategy of properties as a revenue enhancer, which in turn increases the overall profit of firms and increases owners' wealth.

One important consideration to keep in mind with regards to revenue management is the concept that revenue management does not increase revenue automatically. In some instances, it can even decrease revenue due to wrongful implementation (Lieberman, 1993). Revenue management is a powerful tool when implemented and operationalized correctly, similar to many other business tools. However, selecting the best approach requires a true understanding of one's own skills and capabilities, as well as being able to implement the system that fits best with those skills and capabilities. For example, Schwartz and Cohen (2004) found that something as relatively benign as the computer interface used for revenue management systems, affects a revenue managers' adjustments to the computer-produced forecast. Many researchers argue that there are many reasons behind the performance of RM systems (Belobaba, 2002; Lieberman, 2003). What drives these differences in performance is a crucial question. There are many studies, which have addressed this question, as well as various approaches to identify and understand the underlying reasons, that range from technological concerns to the human elements of the RM system. Due to these important considerations, this study's main concerns

are the advantages and disadvantages of various RM implementation strategies, selection of buy or make decision of these strategies (with a focus on outsourcing decisions), and the performance outcome of these strategies.

The approach to managing RM systems has changed, morphed and advanced in the last several decades, moving from capacity control-based yield management to profit maximization. This new approach also reflected changes from the earlier market-based short-term pricing approach to a long-term strategic approach, in which RM began to integrate with other hotel databases such as Customer Relationship Management (CRM) systems. Through this increasing level of sophistication, the proper utilization of RM systems can allow an even greater level of insights into customer trends and revenue potential. However, the systems must be correctly implemented into a property in order to capitalize on the capabilities RM offers.

There is no doubt that the effectiveness and performance of these systems requires formalized strategy and operational plans for employees to implement it correctly (Anderson & Xie, 2010). However, within this concept, implementation can take many forms; each reflecting an opportunity to optimize revenue for the hotel. While there are many studies discussing various aspects of RM, they each fell short on ascertaining how the implementation of RM systems should be considered and executed. To address this shortcoming, the focus of this research is to determine if a property will develop their own in-house system, interact with multiple properties to develop a centralized system, buy RM service from corporate centers, outsource this function to a third party vendors, or combination of these strategies (mixed).

Lately, outsourcing is considered as a strategic decision and its growth has increased the speed of business for many firms, attracting greater interest from both the professional and academic worlds (Espino-Rodríguez & Padrón-Robaina, 2006). Literature focuses on two major

theories to investigate the phenomena of outsourcing: Transaction Cost Economics (TCE) and the Resource Based View (RBV). TCE has emerged as a leading theory on the explanation of outsourcing decisions for the last several decades (Espino-Rodríguez & Padrón-Robaina, 2006). TCE, as developed by Coase (1937), explains transaction governance and focuses on the minimization of transaction costs. TCE investigates and attempts to determine if the most efficient approach of a production process would be to perform the function in-house or to receive it from the market. This decision between internalization and market choice based on the associated transaction costs has received great empirical support in previous studies (Joskow, 1988; Walker & Weber, 1984, 1987).

Williamson, (1975, 1979) identified three main attributes that relate to transaction cost: asset specificity, frequency and uncertainty. Asset Specificity refers to the concept that if an asset is highly unique to the property, it could create problems on two fronts. First, when asset specificity increases relative to outsourcing, the cost of in-house transactions falls. Second, specificity also increases the complexity of contract negotiation and enforcement, as well as monitoring of the contract, which in turn makes an in-house strategy more efficient. Revenue management systems are specific to each property due to the adjustments required for property characteristics and local market conditions. Frequency refers to how often a transaction occurs (Hall, 2012); when an activity is conducted frequently, there will be less likelihood of outsourcing due to economies of scale (Lamminmaki, 2011). A revenue management system is used relatively frequently, but it is not a production function as described in the theory of transaction cost economics. This means that using the RM system more often will not necessarily increase production costs; however, with an outsourcing strategy, the frequency of communication required between parties could be important.

Finally, the concept of uncertainty has several approaches in the context of transaction cost economics and represents an unpredictable outcome; which is a result of information asymmetry that can incur in a transaction. This study uses information asymmetry and skill asymmetry in a similar way and focuses on the more specific facets of technological uncertainty and environmental uncertainty. Due to the high level of skill and expertise required for using a revenue management system, the inability to assess processes and outcomes might create problems in the sense of calculating return on investment made through the RM system. It can be asserted that the theory of transaction cost economics focuses on uncertainty, such that when an activity is unpredictable and difficult to control, in turn, it could create a higher contracting cost. Similarly, inability to foresee intentions and actions of counterparties (such as third party vendors) could create considerable transaction costs (Williamson, 1985).

Williamson also incorporated human cognition into transaction cost economics, using Simon's (1957) bounded rationality approach, and connecting the theory with opportunism. Bounded rationality is connected with uncertainty due to the inability of the human mind to process all transaction-related information (Aubert, Rivard, & Patry, 1996), and opportunism comes from self-interest seeking behaviors characterized by guile (Williamson, 1989). He developed these in response to strict rational models in neo-classical economics (Walker & Weber, 1984). Bounded rationality is an approach that assumes decision makers are limited by their experience and background that limits their understanding of the complexity involved with RM systems. This concept might replace the utility maximization approach which may contain biases and beliefs held by decision makers (Kahneman, 2003), while uncompleted contracts might contain gaps, errors and omissions (Williamson, 1998). It should be noted that the concept

of bounded rationality has various and conflicting empirical outcomes and is generally not considered as a strong argument by itself for supporting the theory of TCE.

In addition to TCE, this study also investigates the outsourcing decision from the resource-based view perspective, which is the second major theory used in outsourcing literature. The resource-based view argues that firms have a unique set of resources and capabilities, and decision makers select the strategies that work best for them. If these strategies are used in an efficient manner, they can achieve competitive advantage for their properties. One important consideration to this approach is that the resources themselves do not lead to competitive advantage, but transforming those resources into capabilities using a firm's knowledge and coordination may create a superior position (Lamb, 1984).

We argue that when the firm lacks necessary resources or is not able to transform resources into capabilities efficiently or optimally, that outsourcing can be used as a potential method. Similarly, when a firm feels its resources or capabilities are inferior to external providers, they might also focus on an outsourcing strategy (Quinn & Hilmer, 1994). Even when a firm may not desire outsourcing as a revenue management method, the resource based view suggests considering moving a process to a third party in some capacity. An example of this would be a scenario in which a hotel property feels that they lack all of the necessary resources such as human capital or technology to implement revenue management strategies. Based on TCE and the RBV, this study will attempt to help identify an appropriate implementation strategy that creates a competitive advantage, and define the relationship between a selected strategy and performance outcomes.

1.1. Revenue Management

Revenue management is not only an administrative science based on market segmentation and price discrimination, but also recognizes that not all consumers are equal. Constant and close monitoring of market conditions and changes in consumer preferences are needed to effectively identify methods to gain the maximum possible revenue (Anderson & Xie, 2010; McGill & Van Ryzin, 1999). One of the incredible facts related to revenue management is that all of these advancements in sophisticated pricing and revenue management techniques, on aggregate added billions of dollars to many firms' bottom lines, while using existing products or services and existing consumer sets (Cross, Higbie, & Cross, 2010).

Adding to value beyond financial considerations, recent advancements in technology and optimization techniques have led to the more sophisticated capabilities of revenue management (Chiang, Chen, & Xu, 2007). For example, when Kimes (2011) asked the question, "if given an unlimited amount of money to spend on a revenue management initiative" most of the surveyed revenue management professionals chose to invest in technology. However, Lieberman (1993) argued that the revenue management system is not a computer system meant to redefine the property, but instead represents a set of tools and systems that works as a mechanism to assist decision makers. The future success of hotel properties lies within senior management's ability to adopt strategies that promote competitive advantages that could identify rapid changes in their environment (Bolat & Yilmaz, 2009). In this sense, a revenue manager needs to make a variety of strategic decisions on how to and what to implement in their properties in order to gain optimal performance.

It should be noted that revenue management decisions are not only considerations for booking policy. The overall strategic direction of a firm, the strategic orientation needed to design new implementations (Okumus, 2001), and developing and implementing a revenue management system are key considerations to ensure financial success (Chiang et al., 2007). The recent rapid changes in the business environment has forced firms to adopt strategies that will fit their overall strategies to aid in their survival and success (Pechlaner & Sauerwein, 2002). As a result of the modern reality of business, academic literature has not yet been able to address many important considerations, such as RM implementation and performance outcomes as a result of these decisions.

There are many unknown factors involved with the selection of RM strategies such as the advantages and disadvantages of these strategies, antecedents of implementation, and performance differences in the RM implementation process. In this kind of uncertain environment where there is limited information exchange with communication problems between parties, there is potential for difficulty with rational decision-making. This study seeks to explore less understood factors, such as performance outcome in the implementation strategy process to determine if there are differences among implementation strategies and if one method performs better than others do.

Following the earlier argument, this study will investigate the advantages and disadvantages of implementation of RM strategies; in-house, centralized, and outsourced strategies, followed by make or buy decision, specifically focusing on TCE and RBV to investigate antecedents of outsourcing intention, and if and how these different strategies affect hotel properties' performance. This study will fill a gap in the Revenue Management field by addressing implementation strategies and their effect on properties' performance. To the

author's knowledge, there are no published studies, which have investigated various implementation choices of RM strategies and their related performance differences in the lodging industry.

1.2. Statement of the Problem

A number of studies show the importance of a strategic approach to Revenue Management (Anderson & Xie, 2010; Bonnemeier, Burianek, & Reichwald, 2010; Cross et al., 2010; Kimes, 2011; Noone, McGuire, & Rohlf, 2011; Okumus, 2001). However, there are limited, if any studies that investigated RM strategies; specifically with regards to selecting an implementation strategy and the performance outcome of the selected strategy. Implementation of revenue management strategy could be performed in various ways such as an in-house approach (decentralized) where properties employ their own systems and employees. It can be performed for multiple properties using the same system (centralized) that shares a centralized revenue management system, the firm could use outside resources such as corporate RM centers (corporate outsourcing) or third party vendors (third party outsourcing), or combination of these strategies to handle their RM functions.

Developing the best implementation strategy requires a detailed analysis of the property that includes the determination of resources such as the knowledge and skills that are available in the property, affordability (return on investment), and feasibility of the strategy to be considered. In the end, performance should be the main dependent variable for strategic management studies. Similarly, the relationship between performance and strategy employed for the revenue management system is very important for this study. While there are many studies that

investigated numerous aspects of revenue management, there are no studies to our knowledge that have investigated the selection of different implementation strategies for revenue management systems and if there are any differences in performance outcome among them.

Thus, there is a need to investigate and understand how properties determine implementation strategies, advantages and disadvantages of selected strategies and how selected strategies might affect the performance of the property. Findings from this study may help academic researchers to understand the antecedents of implementing a strategy selection process, specifically focusing on outsourcing decisions from the perspective of TCE and RBV and various aspects of the outcome of implementation of revenue management systems. Corporate RM centers and third party RM system providers can use the outcome of this study to adjust their marketing effort and build new systems or modify existing systems. Additionally, hotel owners, investors, and managers might use this study to determine the best implementation strategy for their specific properties.

1.3. Research Questions

In order to respond to the research gap identified earlier, this study identifies and examines implementation strategies of revenue management systems, advantages and disadvantages of these strategies, the determinants of the outsourcing intentions of decisions makers in the lodging industry, and investigates the link between a chosen implementation strategy and the resulting performance of the selected properties. This research study contributes to the strategic approach to revenue management by addressing the following research questions:

- RQ1: What are the types of RM implementation strategies employed in the lodging industry?
- RQ2: What are the advantages and disadvantages of each of these strategies?
- RQ3: What are the antecedents of choosing a RM implementation strategy, when TCE and RBV are considered?
- RQ4: Does the hotel's choice of RM implementation strategy affect its performance?

1.4. Organization of the Paper

Initially, this study reviews the literature by setting out the main premises of outsourcing, followed by the possible outsourcing/in-house activities for a hotel in a RM context, while discussing various advantages and disadvantages of these implementation strategies. This is followed by a focus on two major theories, Transaction Cost Economics (TCE) and Resource Based View (RBV), which were conceptualized and empirically tested in the outsourcing literature. This section focuses on the main similarities and differences of these two theories and how they could be integrated to create a better explanation for an outsourcing decision including some psychological/social factors that might affect decision makers. And most importantly, this study focuses on the performance differences between the various RM implementation strategies, in order to determine if there are any relationships between these strategies and the performance outcomes of hotel properties. Finally, the study concludes with discussion of findings, implications of the results and suggestions for future research.

CHAPTER TWO: RM IMPLEMENTATION STRATEGIES AND OUTSOURCING

The term outsourcing comes from the words out (exterior) and source (origin or resource) (Tomás F Espino-Rodríguez & Gil-Padilla, 2005) and is defined as a transfer of the function or service to an external party that is commonly processed internally. The term is also associated with other words such as “make or buy”, “integration/disintegration of activities”, and “internal or market choice” (Holcomb & Hitt, 2007; Mary Celia Lacity & Hirschheim, 1993; Perry, 1992). The term outsourcing was coined in the late 1980’s to refer to transferring some or all functions of information systems to outside contractors (Espino-Rodríguez & Padrón-Robaina, 2006). While many earlier studies identify outsourcing with information systems of the firms (Aubert, Rivard, & Patry, 2004; Loh & Venkatraman, 1992; Teng, Cheon, & Grover, 1995), recently it has begun to be associated with many other types of functions or activities (Espino-Rodríguez & Padrón-Robaina, 2006).

Today’s business environment is becoming increasingly complex and unpredictable due to changes in technology, changing tastes of consumers, globalization, and increased competition (McIvor, 2008). This complicated and unpredictable environment requires an approach with greater efficiency, which makes outsourcing a viable candidate to help firms focus on what they do best. The concept of outsourcing strategy started from the perspective of cost reduction using external parties to handle non-core or routine business functions (Gottfredson, Puryear, & Phillips, 2005). However, over time, outsourcing became very important to firms and has become a part of critical strategic decisions, moving beyond the cost saving approach (Hoetker, 2005). This new approach is based on the better use of available resources, lower production

costs, a more efficient use of various forms of capital, and most importantly focusing on the core competencies of the business.

In the environment of small and medium enterprises (SME) especially, business challenges increase due to limited access to available resources (Kamyabi & Devi, 2011a) such as technological resources and skilled human resources. One of the recommendations to overcome such challenges is outsourcing (Kamyabi & Devi, 2011b), which is considered a viable solution for SMEs' activities (Kotabe & Mol, 2009; Lamminmaki, 2008). In this sense, outsourcing is increasingly employed in many businesses to improve their performance and is considered for many functions that were done within a firm's boundaries previously.

Under some circumstances, outsourcing will have an advantage and cost savings due to reduced overhead costs, improved product or service quality, or a faster processing time resulting from specialization of the supplier for a short time. However how outsourcing will impact the firm's long term capabilities (McIvor, 2008) needs to be addressed as well. According to Group (2002), chances of success in outsourcing are 50 percent at best and results might be problematic because outsourcing decisions are based on different circumstances for different firms (Watjatrakul, 2005). Many authors also argue that wrongful outsourcing decisions result in failure for a business due to exposure to risk and loss of competitive advantage over time (Mary Celia Lacity & Hirschheim, 1993; Loh & Venkatraman, 1992; Ngwenyama & Bryson, 1999).

However, there is no argument that outsourcing has become a very important part of the strategic decision process in the development of overall business strategy. It comes as an opportunity as well as a challenge for many organizations (Baden-Fuller, Targett, & Hunt, 2000). When a firm outsources some of their functions, they might lose some strategic characteristics of the outsourced function (Tomás F Espino-Rodríguez & Gil-Padilla, 2005), in addition to

potential confidentiality problems due to sharing private information with outside suppliers. At the same time, outsourcing could create unique resources and tools that could make a firm more effective (Clemons, 1991; Mata, Fuerst, & Barney, 1995) and release more resources for the core competencies of the firm. If outsourcing involves a stable, long-term relationship with a supplier, that supplier could also turn into a strategic partner (Mol, Van Tulder, & Beije, 2005; Quélin & Duhamel, 2003).

The importance of outsourcing and the possible benefits associated with outsourcing have created an increased interest in the academic arena, becoming a rich tapestry for theoretical foundation as well as incorporating many theories from a range of disciplines (McIvor, 2009). Current research is increasingly focused on the determinants and reasons behind an outsourcing decision (Zhuang, 2012). Earlier approaches mostly focused on the external aspects of the firm such as using a transaction cost economics approach to reduce costs of the firm by focusing on the boundaries within the enterprise. In the past decade, more and more researchers have started to incorporate factors associated with internal functions of firms and focused on the resources and capabilities of those firms using the Resource Based View. This study argues that future research should also consider other influences such as psychological and social factors that may influence decision makers of who determine the outsourcing decision of firms. For example, their attitudes and perceptions towards outsourcing might function as a pre-conceived disposition toward outsourcing. Cost savings due to improved economies of scale, reduced transaction costs (Zhuang, 2012), or improvements of core competencies and the ability to access specific resources that are not available in-house otherwise (Mary C Lacity & Willcocks, 1998a), might create challenges in outsourcing strategy. However, outsourcing is still a strong and viable strategic option for many organizations.

2.1. Strategic Outsourcing

As explained in the previous section, many firms focused on cost reductions and greater efficiency, which forced them to specialize in a number of core areas related to their business (McIvor, 2009). Focusing on limited core areas can be achieved by handing over specific assets or resources to third party management suppliers (Lacity & Willcocks, 1998b). Initially, outsourcing started as transferring peripheral activities to third parties, but in the past decade, this has also started to move toward more critical business activities (McIvor, 2009). As outsourcing suppliers expanded to many different areas, the choice of outsourcing activities also started to increase and evolve from simple cost saving to a more strategic approach (Lacity & Willcocks, 2000). According to Holcomb and Hitt (2007) many organizations consider outsourcing as an important part of their overall strategy, which bring the term strategic outsourcing to light.

Lately the term “strategic outsourcing” has started to gain acceptance in more studies. Holcomb and Hitt (2007) defined strategic outsourcing as “the organizing arrangement that emerges when firms rely on intermediate markets to provide specialized capabilities that supplement existing capabilities deployed along a firm’s value chain”. Rapidly growing outsourcing options, both locally and offshore, and advancement in information and communication technologies have opened newer areas of outsourcing that may not have been otherwise explored for outsourcing strategy. Advancement on the supplier side has also created specialists with greater knowledge depth, which could afford higher salaries and attract highly skilled employees (Quinn, 1999), which may not be possible under traditional systems due to high cost. Many organizations have started to benefit from these specialists in many areas of the business process (Aron & Singh, 2005) where they otherwise might not be available to them.

These areas have allowed firms to leverage specialist capabilities to enhance their own core competencies in order to increase their competitive advantage (McIvor, 2008).

All these changes in the business environment have initiated new approaches for researchers to focus on the determinants of outsourcing in order to explain outsourcing choices from not only the perspective of transaction costs, but also from other theories adapting an economic or strategic approach (Alvarez-Suescun, 2010; Dibbern & Heinzl, 2006). This study however focuses on the two most prominent approaches in an effort to focus on implementation strategies themselves rather than the determination of every relevant theoretical approach.

2.2. Defining Revenue Management implementation strategies

There are several implementation strategies in the hotel RM function. This study uses the following definitions for the remaining of the paper.

In-house refers to a property using its own resources to conduct a business activity in order to have more control of the function. This study defines an in-house revenue management system as consisting of all elements of the revenue management cycle, including forecasting, setting, controls and monitoring done on the property by the hotel's own employees.

Centralization occurs when business activities of multiple properties are concentrated, or located in a single location/department. Advances in technology have created an environment in which the centralization process has become much easier. For example, centralization occurs when a centralized revenue manager manages multiple properties owned by the same group. If property owners have multiple properties in the same region, owners might decide to combine

the revenue management function under a central location to create economies of scale and invest in a system that could be not feasible and out of reach for a single property.

Third Party Outsourcing is more commonly used in the outsourcing literature as defined by Gilley, McGee, and Rasheed (2004)'s ; that outsourcing is the act of subcontracting services which are normally utilized internally, such as marketing, accounting, and maintenance, to an external party. For the purpose of this study, when an individual property or multiple properties together use a third party vendor/system for the revenue management function, those properties are considered to be outsourcing their revenue management systems to the third party.

Corporate Outsourcing is the last type of approach to RM outsourcing discussed in this study. This approach usually involves brand names, such as when branded hotels buy their RM service from their corporate office. For example, Hilton has its Revenue Management Consolidated Center (RMCC), which sells this service to individual property owners and operators. We define corporate outsourcing as when a property buys their RM service from their parent corporation's central office.

Mixed strategy is the combination of any of the strategies discussed previously.

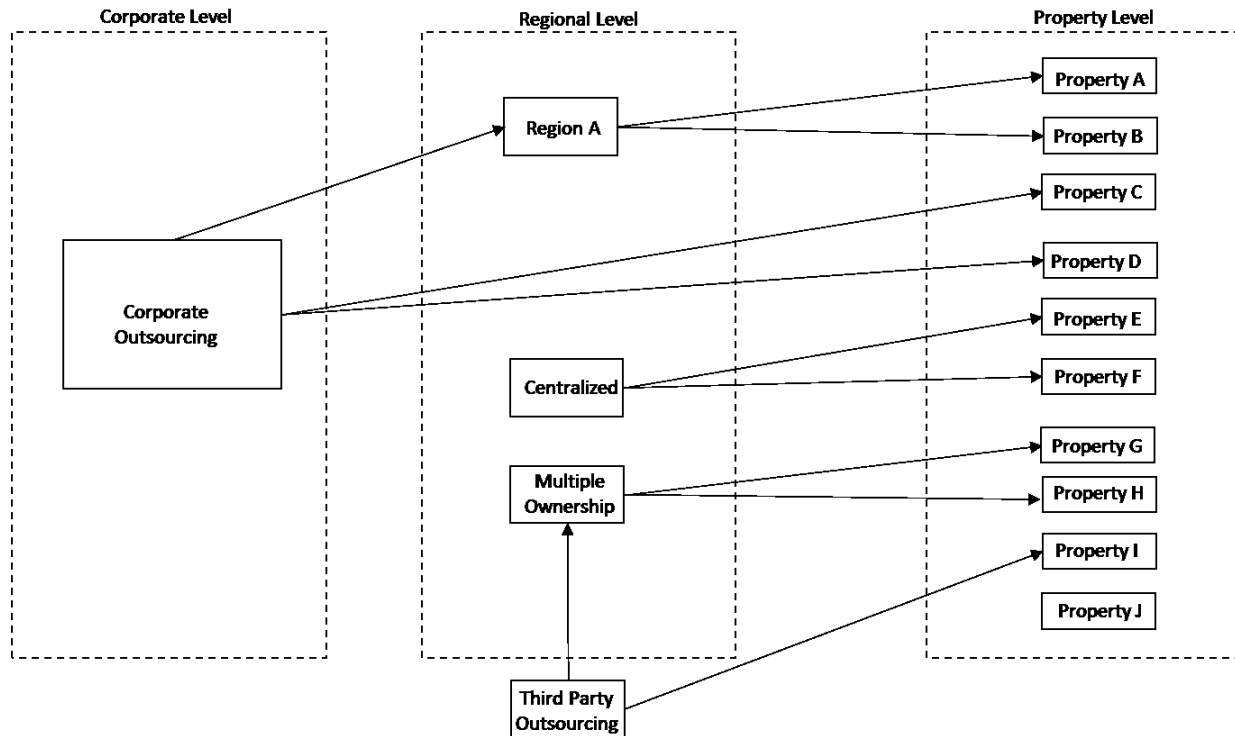


Figure 1: Potential layers of revenue management system implementations

There could be many different levels for the implementation of RM strategies, as outlined in Figure 1. For example, a brand with multiple properties could be managed at a regional level. Regional revenue managers might typically analyze multiple properties, make daily recommendations and send reports to those properties (i.e. Region A to Property A and B in Figure 1) as a part of corporate outsourcing. These regional centers might also get assistance from their corporate office revenue management centers to adjust their processes. In some instances, corporate office revenue managers might be directly responsible for selected properties (i.e. Corporate to Property C and D in Figure 1). This study considers these approaches of implementation strategy as a corporate outsourcing of the revenue management system.

Centralization of the revenue management system could be also initiated by multiple properties working together (properties G and H) or by multiple properties owned by the same entity (Properties E and F). While these properties could create their own centralized systems, they could also use third party vendors to outsource their revenue management systems. Similarly, an individual property might operate their own in-house revenue management system (Property J) or might outsource the function to third party vendors (Property I).

2.3. Advantages and disadvantages of RM implementation strategies

There are multiple advantages and disadvantages to any of these implementation strategies. Depending on the needs and resources of the property, management should investigate and invest in the best implementation strategy for their properties. There could be many reasons to select one strategy over another, such as cost, finding qualified employees, fear of the unknown, size of the property and more. The following advantages and disadvantages for revenue management implementation strategies are definitely not an exhaustive list and could depend on the characteristics and needs of the property.

2.3.1. In-House RM Strategy

In-house revenue management systems, refers to a property's own system. Under this strategy, the property enters data, analyzes it and makes the necessary business decision, all of which is handled on the property by its employees. Additionally, the property maintains, upgrades and alters the RM systems as needed.

The first advantage associated with an in-house system is the notion that when the system is managed by a dedicated RM manager or senior manager, they should have better knowledge of the immediate market due to their experience and daily interactions with property environment and its departments (Cohen, 2004). The in-house approach provides easier access to property specific reports, knowledge of how data is entered and reports are created, and control of function space and multiple revenue streams if available. RM managers should not only focus on room revenue but also consider other income generating venues for their policy adjustments. The in-house approach also helps the daily interactions of different departments on the property, as communicating face-to-face every day makes it easier to include other departments into the whole revenue strategy (Duncan, 2012).

The in-house system could also help to create an environment to better focus on the culture of the firm, offering added resources and capabilities of property through direct access to employees such as the sales and reservation departments. Next, the in-house approach most likely will create improved relationships with various distribution channels and help management teams to better control total revenue strategy (Cohen, 2004; Duncan, 2012). This approach creates an environment that will make it easier to train employees and create focus on the revenue management strategies, which could make it easier to implement and show employees how expected procedures are conducted. Lastly, an in-house property approach can see the result of implemented strategies right away and initiate instantaneous changes if needed.

One of the major problems with the in-house approach is finding well-educated and trained human capital to operate the RM system (Farrell, 2012). There is a shortage in the market for talented revenue managers, which increases human capital cost (Duncan, 2012; Farrell, 2012). Additionally, high turnover (transfers from property to property) among revenue

managers adds to these problems. The in-house approach with dedicated revenue managers might be costly (Rheams, 2004), especially for smaller properties that cannot afford to hire a dedicated revenue manager. When in-house revenue managers focus too much on their own properties, they might fail to look beyond their local markets and lose focus on trends (Parker, 2013), economics, and other major changes in the market. While interaction among departments creates advantages up to a point, after a certain threshold is reached it could also turn into a disadvantage due to unnecessary or time-consuming meetings. Similarly, friendly visits from other departments not only create distractions but also could influence a revenue manager's decisions due to other departments' own agenda, deviating from main revenue strategies (Duncan, 2012). If in-house RM functions are performed by other managers, for example the general manager of the property, it could detract from time reserved for other functions that are part of his or her duty and reduce that individual's performance (Parker, 2013).

2.3.2. Centralized RM Strategy

As discussed earlier, centralization refers to when the RM system of multiple properties is managed from a single centralized location. There could be either multiple properties working together (partnership deals, same ownership) or, more likely, a chain hotels' revenue management system will be controlled and maintained by the corporate office (small scale).

One of the main advantages to this approach is cost savings in the face of limited resources. When properties are small, they might not be able to afford to hire a dedicated RM manager or implement their own revenue management systems. In consideration of cost, multiple properties might pool their resources and be able to afford better talent (Farrell, 2012) or

systems while reducing the cost of revenue management activities per property due to cost sharing of an activity (Duncan, 2012). Especially, smaller properties with less likelihood of having expertise and training for RM systems could effectively use centralized systems to have access to revenue management experts. In addition, the training and education of these centralized revenue managers and the maintenance and upgrades required of the systems could be less costly and better utilized due to cost sharing and a more focused approach. Properties with the same owner or brand could have higher benefits due to the similarity of their properties and the consistent, acceptable standards among these properties (Duncan, 2012). Lastly, if a centralized system is correctly implemented with viable technology, it could in turn help in creating a professional interface between other systems, such as a CRS (Central Reservation Systems) as well as produce more effective access to social media.

One of the primary disadvantages of centralization is (especially if centralized revenue managers are not in the same area/market) lack of knowledge of local market conditions, which might create an adjustment problem with the chosen strategy for the property if there is a need. Additionally, a centralized management style could be less responsive to the immediate needs of property and local market conditions, which could delay the necessary appropriate actions (Duncan, 2012). If this approach does not consider the characteristics of each property and the market it operates in, it could do more harm than good. One other major disadvantage is attempting to align the goals of a specific property and centralized revenue manager(s). Lack of communication, lowering empowerment of local managers, and trying to implement strategies created by “outsiders” could create distrust and damage to each individual property’s team environment (Duncan, 2012). This could also create an issue for accessing proprietary

information of a property. Lastly, implementation of this strategy could be more difficult or costly due to incompatibility of systems between properties.

2.3.4. Third Party and Corporate Outsourcing

Rapid changes in the competitive environment and constantly looking for a competitive advantage forces many managers to consider outsourcing in order to improve their competitive position (Bolat & Yilmaz, 2009). Competitive advantage depends on the investment made in the resources of the property over a period of time (Dierickx & Cool, 1989). An outsourcing supplier that specializes in certain tasks may provide the firm with resources due to a higher capability obtained from specialization (Tomás F. Espino-Rodríguez, Pei-Chun, & Baum, 2008). Outsourcing decisions can also be based on the efficiency-based perspective, in which organizations select a cost minimization (Parker, 2013) or profit maximization strategy among other strategies. In addition, they may feel that they do not have the necessary resources to complete the certain functions for the organization. Argyres (1996) argues that property outsourcing a function results from the inability to perform better than outside entities can and it will retain those functions in-house where they have higher capabilities.

Many researchers point out that the major motivation for outsourcing is cost reduction (Gupta & Gupta, 1992; Huff, 1991; Zhuang, 2012). Especially important in poor economic conditions, outsourcing eliminates large fixed costs; when new technology and methods are adapted in the industry, those adjustment costs are transferred to the outsourcing vendor (Aubert et al., 1996). This also allows quicker changes and adaptation to technology and methods due to outside vendors' resources and expertise. Revenue managers are in high demand and there is an

immense need for qualified revenue managers, which increases turnover and the hiring cost of staff. Additionally changes in technology and trends increases the cost of education and training of the staff. These problems may lower the cost of outsourcing compared to the investment a property would have to make for an in-house revenue management system.

While there are many benefits to outsourcing, enjoying these benefits in practice might be much more complex and problematic than anticipated (Hsu & Liou, 2013). If outsourcing activities are not performed properly, considering overall strategy and fit for the property, it could create ineffective or harmful results that lead to damaged core competencies and create exposure to unexpected risks (Hsu & Liou, 2013). There are also many instances where outsourcing does not provide any advantages to organizations (Steensma & Corley, 2001; Wang & Yang, 2007), especially considering the complex and property-specific nature of a revenue management system. Wrongful implementation of outsourcing might create more harm than benefit to the property. Measuring the outcome of performance is also not an easy task and creating a trustworthy relationship between parties, monitoring activities, and enforcing contracts (as needed) may create difficulties and increase transaction costs. If property owners transferred the RM system responsibility to an outsourcing vendor, it is questionable whether owners will be able to measure the outsourcing vendor's performance. Moreover, the nature of RM systems requires seamless operations and communication between department(s) and outsourcing vendors (i.e. hotel sends booking, cancellation and other data to outsourcing vendor and outsourcing vendor sends processed outcome back to the property). A lack of communication and/or trust between parties might create disastrous results.

CHAPTER THREE: THEORETICAL BACKGROUND

The theoretical background of this study is divided into multiple sections. In the initial section, the function of revenue management is defined and identified as a strategic part of the hotel industry. In this same revenue management section, TCE is defined and is connected to outsourcing literature and its related critiques. The next section covers the RBV approach and its connection to outsourcing activities and critiques. Many studies focus on economic theories but ignore the psychological/social factors that influence decision makers. To address this, possible factors that could affect Small and Medium Enterprise (SMEs) owners and decision makers are discussed. Lastly, the final section of the theoretical background is an attempt to integrate these approaches and construct the hypotheses of this study.

3.1. Revenue Management

Over time, revenue management has changed in definition from yield management to revenue management, and is currently evolving into profit optimization and to the related concept of revenue management strategy. The framework of this section is based on the studies of Cross, Higbie, and Cross (2009), and C. Anderson and Xie (2010). One of the earliest definitions of revenue management according to Kimes (1989) is, “selling the right product to the right type of customer at the right time and for the right price”. The basic idea behind yield management is that different customers are willing to pay different amounts for the same service or product. In this sense, revenue management tries to utilize the limited capacity of

undifferentiated products to available demand that maximizes profit (Kimes, 2000). Later on, “using the right channel” was also added into this definition.

Revenue management, formerly known as yield management, started as the necessity to fill empty airline seats by deeply discounting the prices. It began in the early seventies by British Overseas Airway’s “early bird” discounts, which were intended to stimulate demand for empty seats (McGill & Van Ryzin, 1999). In 1976, American airline planes were flying half full and they realized their revenue problems were more problematic than the cost problem (Cross, 1997). Although these differentiated and discounted fare products could generate revenue from unused capacity, this also could create a cannibalization effect on the regular paying customers. To control this problem, airlines instituted carrier restrictions (such as advance booking requirements and cancellation fees) and limited the number of seats available for discounted fares (Cross et al., 2009). The process of predicting demand and controlling seat inventory allocation was called “yield management” since yield was defined at the time as representing revenue per passenger mile (Cross, 1995).

When hotels and other industries adopted similar techniques, the term yield was replaced by revenue and the overall discipline came to be known as revenue management (Cross, 1997). Orkin (1988) was one of the earliest authors who considered yield management usage in hotel industry. He used the term “yield statistics” and according to his measure:

$$\text{Yield} = \frac{\text{Revenue Realized}}{\text{Revenue Potential}}$$

Revenue potential came from the full rack rate of a room night multiplied by one hundred percent of the hotel rooms. Revenue realized was the actual revenue that was generated. The study also discussed different scenarios that created equal revenue and yield which all gave

similar results when no cost was considered. When cost is included in the equation, profit might differ because it is cheaper to maintain (heating, cooling, cleaning etc.) 100 rooms than 150 rooms. Orkin (1998) recommended that four critical areas be considered to improve yield, which included: forecasting, systems and procedures, strategies and tactics, and developing feedback systems.

According to Orkin (1988), the most effective yield management tactic was having a daily forecast for future demand. For example, when a hotel books a group for a future visit, this will eliminate some of the transient guest business dependent on the capacity limits of the property. In general, transient guests pay higher rates (Sawhney & Lewis, 1993) than group bookings and forecasting accordingly (group booking vs. transient) might help to reject group bookings if necessary and accept transient bookings when the room night draws closer.

Forecasting by itself is not enough to increase revenue, so there should be systems, policies, procedures (Lieberman, 1991), and trained personnel to take advantage of revenue opportunities under different scenarios. Achieving for maximum yield requires careful planning, a mix of market segments, and creation of strategies and tactics for implementation (Yeoman & Ingold, 1997). Lastly, systematic feedback is essential for effectiveness of yield management. A constant loop of information provides revenue managers with the information necessary to adapt to external changes and plan for the future accordingly.

According to Pechlaner and Sauerwein (2002), organizations' survival and success in the rapidly changing business environment requires adopting a strategy that best fits with the environment. This type of competitive environment forces management teams to seek best strategies, which will help them to achieve competitive advantage in their market (Avci, Madanoglu, & Okumus, 2011). One of the most important revenue management strategy

question involves the consideration of how the revenue management system will be implemented on property, considering in-house solutions or market solutions. We need to identify, analyze, and understand the possible implementation strategies and antecedents to answer this question. There are two main theories used to investigate outsourcing decisions, namely transaction cost economics and resource-based view. This study will investigate the research questions from the perspective of these theories to determine the best possible implementation strategy for revenue management systems.

3.2. TCE and Outsourcing

Transaction cost is defined in economics as a cost incurred due to an economic exchange between parties. There are many different kinds of transaction costs such as bargaining cost, search and information cost, and control and enforcement costs. In this sense, transaction cost economics describes the most efficient structure that will minimize transaction cost (Williamson, 1985) and has been widely used to define the boundaries of the firm by studying its outsourcing activities (Ang & Cummings, 1997; Aubert et al., 1996; Lamminmaki, 2005, 2007; Walker & Weber, 1984). While the idea behind transaction cost economics was started by Coase (1937) as a relevant transaction cost and discussion of the structure of the firm (Williamson, 1975, 1979, 1981, 1991), it was later integrated with bounded rationality using Simon (1957, 1972) approach and opportunism. As mentioned previously, bounded rationality is linked with the concept of uncertainty due to the inability of the human mind to process all the information about a transaction (Aubert et al., 2004). Opportunism derives from self-interest seeking individuals with what can be relatively unethical tactics (Williamson, 1989).

To address the foundations of TCE, we need to examine the origins of economic theory. Classical economic theory did not feature much interest in the theory of the firm and considered the production function of business enterprise as a “black box” due to a market efficiency approach which took the existence and scope of the firm for granted (Aubert et al., 1996). The theory of classical economics approach assumes all the information is available and symmetrical to sellers and buyers alike (Teo & Yu, 2005) and these assumptions assume the irrelevance of most transactional costs in an economic exchange. However, the founding of modern institutional economics and Coase (1937)’s work on transaction cost theory indicated that information exchange between economic actors participating in economic activities was only partial in real life scenarios (Yeong Gug & Gang, 2009).

Coase (1937) suggested that during an economic exchange, economic actors gather information, evaluate the options, negotiate, enforce and monitor contracts and that at the conclusion of the exchange, all of these additional activities create additional costs (Yeong Gug & Gang, 2009). When the cost of transacting within the firm is less costly than the cost of a transaction through the market, than the firm’s in-house approach will replace market transactions (Lamminmaki, 2005).

In support of this argument, Coase (1937) defined the boundary of the firm and the reason for the firm’s existence using a price mechanism, while discussing the relevant price and the separate contract negotiations and cost for each exchange in the process (Zhuang, 2012). Coase also discussed problems associated with forecasting, uncertainty, role of entrepreneurs and regulatory bodies (Zhuang, 2012). According to Coase’s approach, firms and markets are alternate structures and under certain conditions their transaction costs differ. Due to this, the decision of selecting one economic exchange over another should also differ. This approach

suggests that there are costs and problems associated with outside (market) transactions.

Williamson (1975, 1979) used this argument to identify the types of transactions that are better conducted within the firm, if the cost of market transaction is higher.

According to Williamson (1975, 1979, 1981, 1985) there are certain types of exchanges that are better executed within the boundaries of the firm, adding that transaction costs could be both from direct costs and from opportunity costs such as poor governance decisions (Mathien, 2013). Williamson explains these efficient decisions and the institutional structure of industry by focusing on human behavior, market conditions, transactions and their resulting costs (Peris Bonet, Peris-Ortiz, & Gil-Pechuan, 2010). Transaction costs in this sense include both before and after-contracting costs, such as the cost of searching, drafting and negotiating before the transaction and monitoring, controlling, and executing necessary adjustments as needed after the transaction (Zhuang, 2012). This whole process is considered as a part of economic exchange and a major part of business transactions (Williamson, 1985; Yeong Gug & Gang, 2009). Because of this, the concept of TCE is widely used to analyze reasons behind outsourcing decisions (Aubert et al., 1996; Lamminmaki, 2005; Murray & Kotabe, 1999; Murray, Kotabe, & Wildt, 1995).

In summary, transaction cost economics focuses on the minimization of transaction costs as a main decision determinant for the selection of either conducting internalized transactions (in-house) or market (outsourcing) transactions. Including the factors associated with information asymmetry, a firm will try to select the best outcome between in-house or market choice (e.g. outsourcing). This approach to differentiation between a market and in-house approach is one of the main reasons that transaction cost economics are considered a major theory in outsourcing literature. Transaction cost economics has been applied and tested in many

empirical papers such as investigating strategic alliances (Oxley, 1997), making or buying decisions (Walker & Weber, 1984, 1987), vertical integration (Caves & Bradburd, 1988; Lieberman, 1991) and outsourcing decisions (Ang & Cummings, 1997; Aubert et al., 1996).

To better understand the concepts highlighted by TCE, we should examine the central tenants of the theory. Williamson (1975, 1979) identified three main attributes that relate to transaction cost: asset specificity, frequency and, uncertainty. Each of these concepts is examined in the following sections.

3.2.1. Asset Specificity

The nature of assets can vary from a machine required to manufacture a product, to the knowledge required to perform a service (Aubert et al., 2004). Some of these assets could be as common as the firm's cash, while other assets could be designed for only certain tasks and cannot be used for any other situation (Aubert et al., 2004). Asset specificity is defined as the "degree to which the assets used to conduct an activity can be redeployed to alternate uses and to alternate users without sacrifice of product value" (Williamson, 1979). When an asset is durable and dedicated to a specific function, that asset is considered a highly specific asset (Aubert et al., 1996). According to Lohtia, Brooks, and Krapfel (1994), when tangible or intangible assets create little value outside of a particular relationship it is characterized as having high asset specificity. There are two important considerations under the asset specificity approach. First, higher levels of asset specificity make firms vulnerable towards supplier's wrongdoings (Miranda & Kim, 2006). Second, most of the firm's core competencies are asset specific functions (Miranda & Kim, 2006). When asset specificity increases due to loss of economic

scale, in-house transaction costs fall relative to using external market (outsourcing).

Additionally, considering the complex contract, negotiation and enforcement process related to specific assets, the use of in-house system becomes relatively more efficient (Mathien, 2013).

Williamson (1996) also identified several major forms of asset specificity as reviewed below:

Human asset specificity refers to any unique knowledge or skill that an employee gained while employed and any knowledge or skill gained that is not easily transferable to another situation (Lamminmaki, 2005). According to Lohtia et al. (1994) this form of asset specificity receives the most attention in research. For example, when revenue managers master the characteristics of a property and its environment, that unique knowledge is considered a specific human asset. The importance they put on this form of specificity might affect the outsourcing decision.

Site specificity refers to a location and the resources related to that location. In the case of site specificity, if the asset has to be moved and the relocation cost is high, it is said that high site specificity occurs (Lamminmaki, 2005).

Physical asset specificity refers to the required tools and equipment used for a function and is characterized by its specificity or unique quality. For example, if the firm made an investment in a specialized computerized revenue management system that could not be used for other purposes, it could be said that the system has high physical asset specificity.

Dedicated asset specificity refers to investment of general purpose assets, which are purchased for long-term relationships. For example, a hotel might expand on the assumption that a neighboring conference will produce additional business (Lamminmaki, 2005).

Temporal or time specificity refers to investment concerns that depend on the timing and coordination of activities (Lamminmaki, 2005). For example, timing and coordination between third party vendors or centralized revenue management and the property could be very important. On time access to information and analysis or answers questions that senior management might have for revenue strategies might help in this activity.

Brand capital refers to investment made in the reputation of the brand (Lohtia et al., 1994). For example, if there is a chance that outsourcing activity might damage the reputation of the property, there may be a decreased likelihood of outsourcing activities.

There are two important questions that need to be considered for an asset specificity approach: First, how important is asset specificity for revenue management practices? Second, how specific is the revenue management function for a given property? If the assumption is that revenue management is asset specific (personalized for the property), then outsourcing of the revenue management system could be costly or not as efficient from the perspective of transaction cost economics. If we consider revenue management not as specific for a property, then this approach does not affect the outsourcing decision of the hotel.

3.2.2. Frequency

In its simplest form, frequency refers to how often a transaction occurs (Hall, 2012) and shows buyer activity in the market (Williamson, 1985). When an activity is conducted frequently, there will be less chance to outsource that particular activity due to economies of scale (Lamminmaki, 2011). Similarly, frequency could be explained as frequent interaction required among parties. When parties require frequent interaction, it could be more beneficial to

design an internal transaction to create a more efficient system (Aubert et al., 1996). Revenue management functions are not production systems that could be considered in a way that the higher the usage frequency, the lower the production cost is going to be. Additionally, it could be difficult to operationalize the frequency from the perspective of a RM system.

3.2.3. Uncertainty

Uncertainty represents the unpredictable outcome that is a result of information asymmetry from the transaction. A majority of studies focus on two forms of uncertainty: behavioral uncertainty and environmental uncertainty (Slater & Spencer, 2000; Williamson, 1985). Behavioral uncertainty (also known as outcome or success uncertainty) refers to a lack of knowledge and the inability to foresee the intentions and actions of transaction partners (Yeong Gug & Gang, 2009), implying a higher uncertainty in outcome of using third partner vendors and increasing the risk of outsourcing in two ways. First, as the name implies, the uncertainty of outcome (in this case, the performance of an outsourcing activity) and second, higher negotiating and contracting costs due to the complexities created by uncertainty. When firms attempt to eliminate some of the uncertainty using contracts and monitoring, it increases the cost of transactions. Behavioral uncertainty is used to measure difficulty of performance by many studies (Mathien, 2013). Exchange partners might have their own agendas to create hidden costs such as inefficient performance (Rindfleisch & Heide, 1997; Williamson, 1985) and as discussed, these actions increase monitoring and enforcing costs. When a service provider provides poor performance, runs counter to contractual obligations, and the firm has difficulty in measuring the performance (Dibbern & Heinzl, 2009; Kamyabi & Devi, 2011b; Lamminmaki,

2007), this creates an uncertain environment. A firm's cost also increases due to additional "writing, negotiating, monitoring and enforcing contracts to prevent opportunistic behavior" (Everaert, Sarens, & Rommel, 2010). In this case, when a firm's goal is the minimization of cost, a firm will likely choose an in-house solution (Anderson, 2008; John & Weitz, 1988; Williamson, 1985).

Another common form of uncertainty is environmental uncertainty and refers to the unpredictability of the environment (Mathien, 2013) which creates problems with an organization's ability to predict future outcomes (Leblebici & Salancik, 1981). For example, technological uncertainty arises from random changes in technology, algorithms or new techniques used in RM systems. When decision makers believe that changes in the future are not clear (i.e. the rapid change in technology and algorithms used in RM systems) it increases the risk of investment in a revenue management system. Any increase in uncertainty increases the risk level, which requires a higher rate of return on investment. If a property uses a third party vendor and there is a change in technology, this change does not cost as much to the property because the vendor needs to invest in the new future(s). For the in-house revenue management system, a property has to handle new investments and changes for their system. Approaching from this point of view, we can argue that an increase in technological uncertainty decreases the relative cost of outsourcing. Overall, costs for organizations tend to increase under uncertainty (Verwaal, Commandeur, & Verbeke, 2009) and greater resource commitment to necessary functions allow greater resiliency in the face of shocks to the firm (Holcomb & Hitt, 2007). These unanticipated changes in environment may increase the benefit of strategic outsourcing due to reduced exposure of the firm's financial and operational outcomes from outsourcing (Holcomb & Hitt, 2007).

3.3. RBV and Outsourcing

The resource based view was primarily developed by Barney (1991), Wernerfelt (1984), and Peteraf (1993) and was based on the work of Penrose (1959). According to Penrose (1959), the growth of a firm is based on its internal characteristics. Barney (1991) argues that to be able to achieve a sustainable competitive advantage, a firm's resources such as human capital and other organizational resources need to be valuable, rare, inimitable, and non-substitutable (VRIN). According to the RBV approach, a firm's decision to apply an outsourcing approach or apply an in-house approach depends on the distinctive knowledge and skills generated within the organization (Poppo & Zenger, 1998). While transaction cost economics focuses on the minimization of transaction costs, the resource based view focuses on the creation and maintenance of competitive advantage using a firm's resources.

The main assumptions of RBV are resource heterogeneity and resource immobility (Barney, 1991), which rejects the traditional economic assumptions of resource homogeneity and perfect mobility (Watjatrakul, 2005). While the neo-classical model supported by Porter (1980) depends on the position of markets and products, the resource approach focuses on the possession of resources and capabilities to explain performance differences between firms. Resources vary from firm to firm and can include tangible and intangible assets such as equipment, various form of capital, employee skills, finances, and includes capabilities and organizational processes that are used to implement strategies to improve a firm's efficiency (Daft, 2010).

In this sense, a firm's unique set of resources and capabilities lies on the base of their strategy, and when correctly chosen, strategies are able to use these resources and capabilities,

creating a competitive advantage for the firm. While a classical approach focuses on the external environment, a resource based view is grounded on the idea that a firm's internal environment, such as resources and capabilities, should have priority in strategy formulation over the external environment (Hax & Majluf, 1996). Das and Teng (2000) argue that this set of unique resources are not easily exchangeable or transferable, which may explain performance differences among firms. This approach asks the question, "Why some firms perform better than others?" and looks into the extension capability of a resource-based view.

For example, Kogut and Zander (1992) propose that combining and applying acquired and current knowledge has combinative capability. Resources themselves do not lead to competitive advantage, but instead the method of how the resources are transformed into capabilities, using knowledge and coordination, may create competitive advantage (Lamb, 1984). A firm's ability to utilize, integrate and reconfigure external and internal resources to address dynamic changes in the environment (Teece, Pisano, & Shuen, 1997) can enhance the potential for a firm to be successful (Zhuang, 2012). Firms can obtain these resources by developing them (i.e. in-house), gaining access via alliances or partnership (i.e. centralization), or acquire them from third parties (i.e. outsourcing). We can argue that if the firm's function or strategy is not performing as expected by developing an in-house approach, they can then look for alliances (centralization) or outsourcing of the activity to achieve better performance.

One of the most important connections between the resource-based view and outsourcing lies on the firm's incapacity of the resources or capabilities. When a firm lacks the necessary resources or capabilities, they could use outsourcing as a potential method. Quinn and Hilmer (1994) also argue that when a firm feels its capabilities are inferior to those of suppliers, they might outsource that particular activity. In this kind of approach, outsourcing should be

considered a strategic decision when the firm itself cannot provide adequate performance and outsourcing could cover shortfalls and imbalances in the operation (Tomás F. Espino-Rodríguez et al., 2008).

Using the resource based view for a resource and capabilities approach seems to also be an appropriate strategic framework to determine outsourcing factors in the hotel sector (Tomás F. Espino-Rodríguez & Gil-Padilla, 2005). The resource based view suggests that firms should focus on core competencies because they offer advantages and growth to the firm, and if they feel inadequate or do not have necessary resources to create competitive advantage, they should consider other methods than the in-house approach, evaluating the resources for the operation before deciding to outsource the activity (Wan & Su, 2010).

3.4. Psychological/Social Approach to Outsourcing

A majority of the research from outsourcing focuses on the external or internal factors related to a firm, but do not consider the actual decision makers within the firm. Most economic theories assume that decisions are made based on this rationality, which could be seen as ignoring a very important aspect of how humans behave. Many major management decisions made in the firms are made by individuals (Stoner, 1961). There is no doubt many practices or strategies might be affected by the perception of the firm's decision makers. Organizations do not act in a vacuum and decision makers' perceptions, attitudes, previous experience, and peer influences affects the outcome of a decision. This study focuses on several aspects of this type of psychological/social approach, which include attitude toward outsourcing and perceived risk as a result of outsourcing.

3.4.1. Attitude toward Outsourcing

Attitude is defined as an evaluation of a particular subject in a favorable or unfavorable way (Eagly & Chaiken, 1998). Attitude toward outsourcing process is defined as “overall evaluative appraisal” made by decision makers toward outsourcing process (Gewald et al 1998). This definition suggests that a person such as the decision maker of a hotel company could have a positive or a negative attitude for RM outsourcing and that could affect the outcome of their decision. The decisions makers’ attitude plays important role on outsourcing decisions (Benamati & Rajkumar, 2003; Dibbern, 2003; Wullenweber & Weitzel, 2007). For example Barthelemy and Geyer (2001) investigated attitude toward it outsourcing differences between German firms and French firms, where German firms are more reluctant to outsource. The attitude of the decision maker may derive from pre-conceived notions as a result of past experiences, or pressure exerted from the individual’s peers. Regardless of how it is formed, the decision maker’s attitude reflects a significant influence on the resulting implementation strategy.

3.4.2. Perceived Risk

Perceived risk is described as the amount at stake and the degree of certainty for possible outcomes (Cox, 1967) in a chosen business process. For the definition of risk we follow broad definition of risk as defined in Gewald et. al (1998) “potential for an undersired outcome due to uncertainty about future developments”. Bauer (1960) argues that perceived risk is a better indicator of management attitude than rational decision-making. Yates (1992) argues that decision makers handle decisions in a rational way, but most of the empirical outcomes show a risk-averse approach to decision making. If decision makers base their decisions on risk-averse

approaches, it becomes important to understand their perception of risk for RM outsourcing decisions.

3.5. Integration and Hypotheses Building

As many earlier studies show, using a single focus on outsourcing decisions has limited explanatory power (Zhuang, 2012), emphasizing the importance of considering various characteristics other than the traditional cost focus of TCE (Erramilli & Rao, 1993). Research on outsourcing has changed over time, has adapted, and integrated many different approaches to consider other factors for the outsourcing decision. For example, Ang and Cummings (1997) investigated information systems outsourcing, focusing on TCE, Institutional Theory and production economics. Mayer and Salomon (2006) pointed out that while TCE is concerned with transaction governance to minimize costs, it held a firm's capabilities constant, which ignored the differences in capabilities. Those parts that are ignored could affect the outcome of the decisions.

This study defines an initial model of the RM implementation decision as a relationship between external, internal and psychological/social factors that affect decision makers (Figure 2). Combinations of these factors are the determinants of the implementation choice as follows:

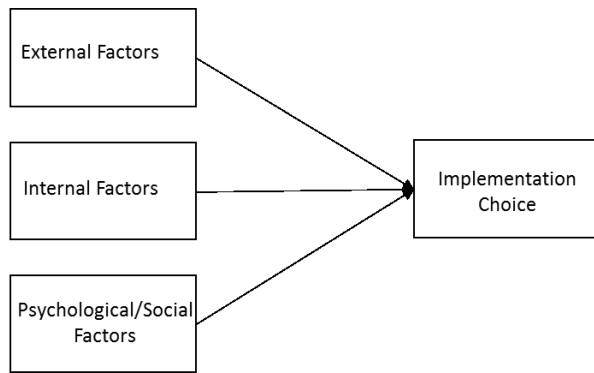


Figure 2: Integration of RM Implementation Approaches

The cost based (external) approach is best defined by transaction cost economics, and as explained earlier, can provide cost saving motivations for outsourcing decisions (Zhuang, 2012). As discussed earlier, Williamson (1975, 1979) identified three main attributes that are related to transaction cost: asset specificity, uncertainty, and frequency. In simplest terms, frequency refers to how often transactions occur (Hall, 2012) and shows buyer activity in the market (Williamson, 1985). Revenue management is not a production function, requiring constant information flowing both ways and making it very difficult to measure from the frequency perspective. Due to this measurement problem, this study is not going to consider using the frequency of TCE approach, but will focus on asset specificity and uncertainty.

Asset Specificity

As defined earlier, asset specificity refers to investments made towards tangible and/or intangible assets that have significantly lower value if they cannot be used in another part of the firm (Alvarez-Suescun, 2010). This study is specifically concerned about the belief that

management has regarding the specificity of the revenue management system. If they believe that the RM system is property-specific there will be less chance of outsourcing.

H1: The more the RM system is perceived to be property specific, the less it is likely to be outsourced.

Uncertainty

Uncertainty has mainly been investigated in two forms. Technological uncertainty, the most commonly studied form of environmental uncertainty, refers to unanticipated changes in technology (Holcomb & Hitt, 2007), resources and activities that are related to RM systems. A RM system is based on technology such as computer systems, newer techniques and algorithms and thus has a strong connection with technology. When decision makers believe that changes in the future are not clear (i.e. rapid change in technology and algorithms used in RM systems) it increases the risk of investment in a revenue management system (any increase in uncertainty increases the risk level and it requires higher rate of return on investment). If a property uses a third party vendor and there is a change in technology, this change will not cost as much for the property because the vendor will need to invest in the new future(s). For the in-house revenue management system, the property has to handle new investments and changes for their own system. From this point of view, we can argue that increases in uncertainty decreases the relative cost of outsourcing. Uncertainty increases the risk of in-house investment and when risk increases required rate of return increases with it. Thus, outsourcing becomes option that is more viable.

H2: The higher the level of perceived uncertainty associated with technology and environment, the more the RM is likely to be outsourced.

As discussed earlier, focusing only on the TCE approach creates limited explanatory power, so we must investigate other factors as well. Williamson (1999) argues that both transaction based and resource based perspectives can be used in complementary ways. Similarly, Barney (1999) argued that capabilities of the firms could affect the boundary decisions of the firms. Other researchers who also investigated combining TCE and RBV and its extensions argued its ability to offer better explanatory power in outsourcing decisions (Jacobides & Winter, 2005; Leiblein & Miller, 2003; Mayer & Salomon, 2006). If the property does not have any organizational capability to implement their own system, it does not matter how specific they think a RM system is. On the other hand, if they have the capability to implement their in-house system, then specificity could become the major determinant on their outsourcing decision.

Organizational Capability

One other important consideration of RBV is not only having these resources, but also having the capability to use them to create competitive advantages (We use capability of management and organizational capability interchangeable). Capability refers to the ability of properties to utilize resources and perform set of tasks to achieve certain end results (Helfat & Peteraf, 2003). If firms are not able to turn any of their resources into something useful, asset

specificity of the function becomes less important. As an example, in Scenario 1, a firm does not have the organizational capability to create competitive advantage using or acquiring resources to create an in-house competitive advantage, thus asset specificity becomes not as important a factor for decision making because of lack of choice. The only viable option will be acquiring a function from the market (outsourcing), assuming they want that function. In Scenario 2, the firm possesses the organizational capability to handle the process; however, they want to consider the minimization of costs. In this case, asset specificity becomes the major factor in decision-making. This study argues that organizational capability acts as a moderator for asset specificity. Considering the argument above:

H3: Organizational capability has a moderating role in the relationship between asset specificity and outsourcing decision.

Considering the earlier arguments, we can draw our model as following:

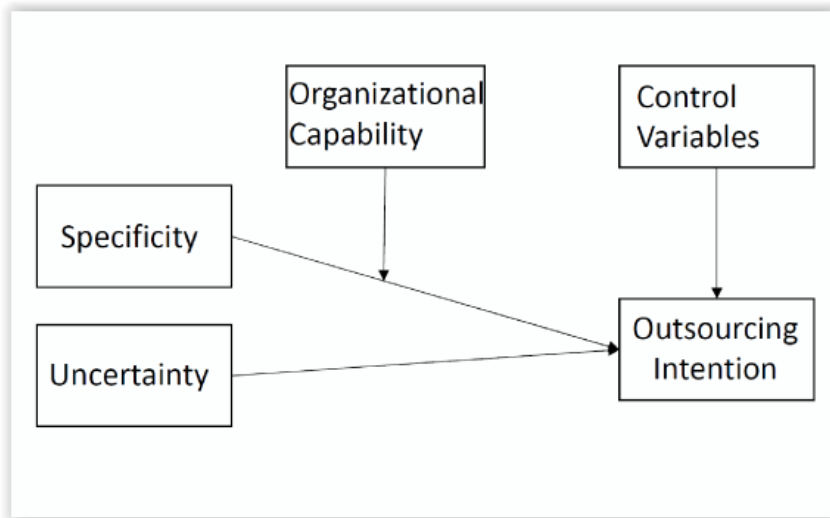


Figure 3: Antecedents of Outsourcing Intention

Looking from the perspective of outsourcing, a revenue manager's attitude, perceived risk, their previous positive or negative experiences and impacts of their peers' influences any strategic decision he or she makes. We can use attitude and perceived risk toward outsourcing to control their approach to outsourcing, shown as control variables in Figure 3.

Attitude toward outsourcing

A decision maker's preconceived attitude towards outsourcing could influence their ultimate decision. Attitude is defined as an evaluation of a particular subject in a favorable or unfavorable way (Eagly & Chaiken, 1998). This definition suggests that a person such as a decision maker in a hotel company could have a positive or a negative attitude for RM outsourcing and affect the decision outcomes. We argue that the manager's attitude toward outsourcing has a positive relationship with their outsourcing intention.

Perceived Risk

Perceived risk is defined as the potential loss from the desired outcome resulting from outsourcing (Featherman & Pavlou, 2003). While there are many facets of risk such as performance risk, financial risk, psychosocial risk, safety risk and opportunity/time risk (Bauer, 1967), this study uses the strategic aspect of perceived risk, which could be potentially harmful to a firm in relation to long-term development (Gewald, Wüllenweber, & Weitzel, 2006). Because outsourcing is associated with being a risky business (Aubert, Patry, & Rivard, 2002) and in many instances, it could even harm the business; perception of risk held by decision makers becomes an important factor in the implementation of outsourcing. If a firm perceives outsourcing as a risky strategy, they will be less likely to outsource the RM function.

CHAPTER FOUR: METHODOLOGY

This chapter discusses the methodologies used to investigate various implementation strategies and the advantages and disadvantages associated with these strategies, as well as test the theoretical model of antecedents of outsourcing intention (Figure 3), and most importantly the difference in performance related to different implementation strategies that was discussed earlier. First, the section discusses the research framework for outsourcing intention and scales used to measure selected variables. Second, the performance of different implementation strategies is discussed. Third is a discussion on the statistical methods employed for this study. Lastly, the research design and data generation process will be presented.

Before discussing the model and hypotheses of this study, it is helpful to define the reliability and validity approach employed for the construct quality and data collection process. Reliability and validity of constructs are essential to produce robust results. Reliability refers to consistently producing similar results with similar measures and validity refers to measurement capturing what it is intended to measure (Zikmund, Babin, Carr, & Griffin, 2012).

Content or face validity refers to agreement among experts that a scale measures what it is supposed to measure. It is qualitatively assessed and considers how well the design of selected items follows the conceptual definition of each construct. The constructs are selected from a previously tested area and adopted for the specific research purpose. These are also examined by research faculty and experts in the field for feedback. Additionally, graduate students in the hospitality field and native English speaker used to test readability and clarity of constructs.

Average variance extracted (AVE) was proposed by Fornell and Larcker (1981) to measure convergent validity of latent variables. AVE represents error-free variance of latent variables, which in turn measures variance captured by latent variables compared to measurement errors (Dillon & Goldstein, 1984). Overall, Fornell and Larcker (1981) suggest that convergent validity can be assumed when latent variable explains 50% or more common variance. Convergent validity is also assessed by using confirmatory factor analysis and estimating significant factor loadings, which shows their convergence. Discriminant validity on the other hand argue that “dissimilar constructs should differ” (Hair et al, 2010) and refers to low correlation among different constructs. There are many ways to measure discriminant validity, this study applied Fornell and Larcker (1981) technique, which also supported by Hair et. al (2010). Fornell and Larcker (1981, pp. 45-46) argue that for two constructs the AVE for construct 1 and the AVE for construct 2 should be greater than the shared variance estimate. These approaches were used in the selection and validity of the following constructs and analysis. Figure 4 summarizes the steps that are followed in order to implement data analysis.

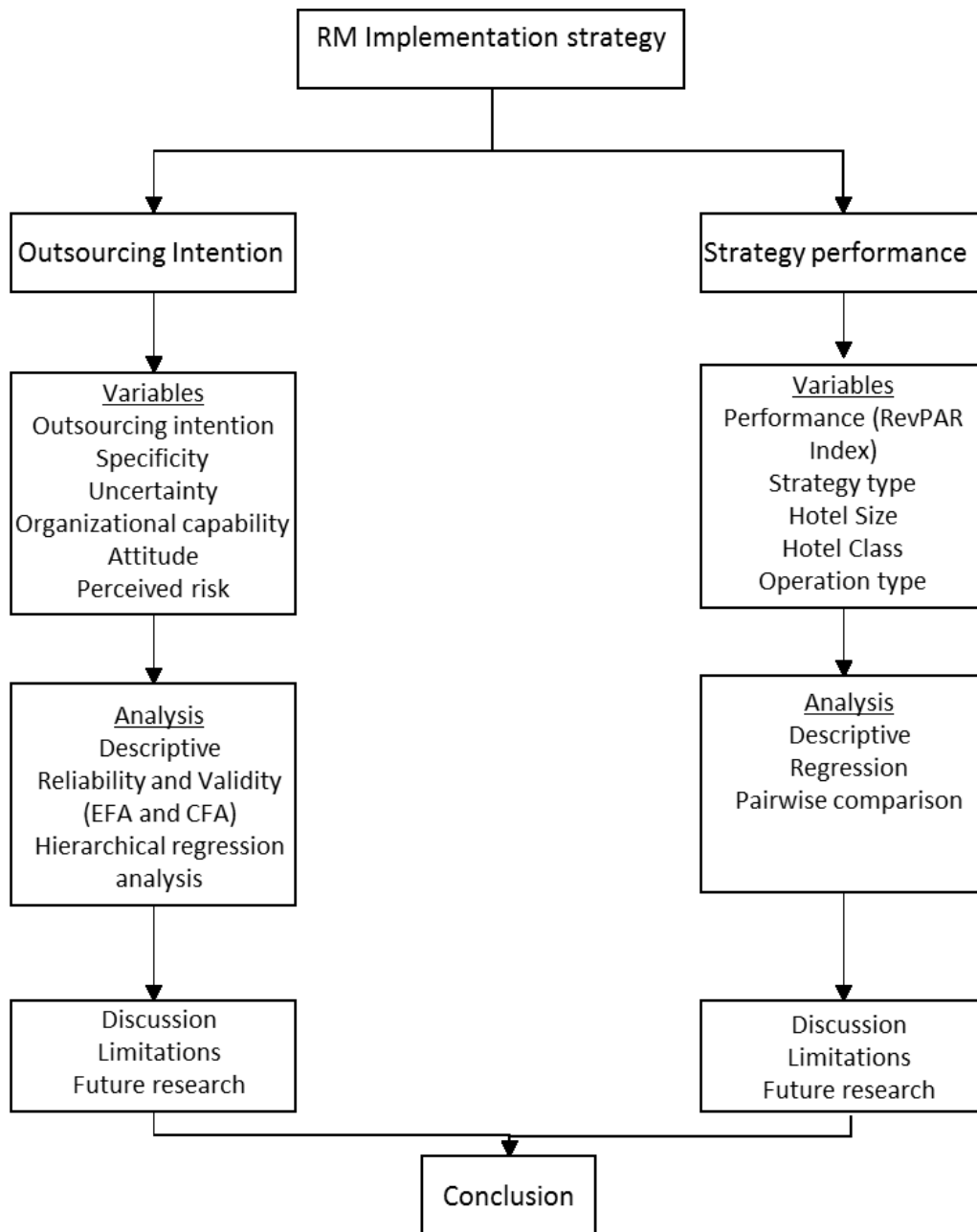


Figure 4: Steps undertaken in the study

4.1. Antecedents of Revenue Management Outsourcing Intention

4.1.1. Model and the Hypotheses

The proposed conceptual framework of this study is discussed in the literature review and theoretical background sections. This research investigates outsourcing intentions of lodging properties in the context of revenue management systems. Antecedents of outsourcing intention were based on transaction cost economics and the resource based view to investigate the following three hypotheses:

H1: The more the RM system is perceived to be property specific, the less it is likely to be outsourced.

H2: The higher the level of perceived uncertainty associated with technology and environment, the more the RM is likely to be outsourced.

H3: Organizational capability has a moderating role in the relationship between asset specificity and outsourcing decision.

Given the framework of this study and the previously discussed hypotheses, this study defined the following variables that were used to determine RM outsourcing intention:

4.1.2. Variables

Dependent variable: Outsourcing intention

Independent variables: Specificity, uncertainty

Moderating variable: Organizational capability

Control variables: Attitude toward outsourcing and perceived risk

Following the guidelines found in by the literature and by our proposed model, the study's dependent variable is outsourcing intention. This was adapted and reworded from Saaksjarvi and Morel (2010)'s "intention to purchase" scale to a revenue management outsourcing context as follows:

- ✓ How positive or negative is your judgment toward outsourcing the revenue management system? (1-Very negative to 7-Very positive)
- ✓ How appealing do you (or property management) find the revenue management system outsourcing option? (1-Not appealing at all to 7-Very appealing)
- ✓ How likely is your hotel to outsource revenue management system in next 5 years? (1-Very unlikely to 7-Very likely)

The following section will cover selected independent variables that were previously discussed, which are explained in greater detail according to their respective measurement scales.

Independent Variables:

Asset Specificity: As seen from the preceding discussion, asset specificity refers to the "degree to which the assets used to conduct an activity that can be redeployed to alternate uses and to alternate users without sacrifice of product value" (Williamson, 1979). From the perspective of a revenue management system, it could be argued that the hardware and software structures of the system are dedicated solely to revenue management functions and cannot be used in any other way. A similar argument could be made for changing from one strategy to

another, where higher specificity require a much higher cost due to the requirement to locate and train qualified employees, the required investment and other concerns. More importantly, asset specificity could be defined as the need for RM systems to be property specific. For example, RM functions such as changing the values of booking and cancellation, and any other daily changes could affect RM performance, might need to be adjusted/tweaked depending on the property specifications. Similarly, human aspects of the revenue management system such as a dedicated RM manager or manager in charge of revenue management who makes decisions on a daily basis requires that an individual wields an immense amount of specific knowledge of the property. If decisions makers believe that all these functions and adjustments require specific knowledge of property (high asset specificity) they might go against an outsourcing decision. On the other hand, if they believe most RM functions are generic or do not need to be as property specific (low asset specificity), they might see outsourcing as a viable option. The study adapted asset specificity measures from Poppo and Zenger (2002) which were reworded for the revenue management context as follows:

- ✓ To what degree should revenue managers acquire property specific information to adequately perform the revenue management function? (1-Not specific at all to 7-Very specific)
- ✓ To what degree should the revenue management system be custom-tailored to the property? (1- No customization at all to 7-Very high customization)
- ✓ How costly would it be to switch your revenue management system to another strategy, for example converting in-house to third party outsourcing (considering time required to locate and train qualified employees, required investment, conduct testing, and develop working relationship etc.)? (1-Not costly at all to 7-Very costly)

Uncertainty: As seen from the preceding discussion, a feeling of uncertainty towards the selected strategy may affect the outsourcing decision. If decision makers believe that technology and methods used for revenue management systems might change rapidly and unpredictably, they can select the outsourcing option so that the risk associated with uncertainty is transferred to a third party. Similarly, problems associated with the external environment that could not be accurately predicted or understood, increases the risk of uncertainty. If the decision makers of a property are not able to evaluate activities, resources used and especially changes in technologies related to RM functions, they might decide to transfer this uncertainty risk to third party providers to reduce their own risk. This study adapted the uncertainty measure used in Jait and Thietart (2013) and was reworded for the revenue management context as follows (all reverse coded):

- ✓ How easy is it to evaluate the performance requirements of the RM function?
(1-Very easy to 7-Not easy at all)
- ✓ How easy is it to evaluate the human resource competencies required for the RM function? (1-Very easy to 7-Not easy at all)
- ✓ How easy is it to evaluate the activities needed for the RM function? (1-Very easy to 7-Not easy at all)
- ✓ How easy is it to evaluate the changes in technologies related to RM function? (1-Very easy to 7-Not easy at all)

Organizational capability: As discussed previously, organizational capability might have a moderating effect. If a property does not have the necessary resources and capability to handle

RM functions, even if they believe the RM function is property specific, they might not have the ability to implement an in-house strategy and seek outside assistance (outsourcing). On the other hand, if they think they have the capability to handle an in-house strategy, they can opt for in-house if they believe the RM function is property specific or opt for outsourcing if they do not believe the RM function is property specific. This study adapted capability measurement from Lahiri, Kedia, & Mukherjee (2012) and was reworded for the revenue management context as follows:

- ✓ We manage our human resources efficiently (1-Strongly disagree to 7-Strongly agree)
- ✓ We manage our information systems efficiently (1-Strongly disagree to 7-Strongly agree)
- ✓ We manage various RM-related changes efficiently (1-Strongly disagree to 7-Strongly agree)
- ✓ We manage to satisfy most of our RM requirements (1-Strongly disagree to 7-Strongly agree)

The following section will cover selected control variables, which are deemed important for this study for controlling certain psychological and social factors. If a participant has past experience such that involvement in outsourcing or they have knowledge of risks and benefits of outsourcing, including but not limited to exposure from trade magazines, friends etc., it could create pre-conceived notions towards outsourcing, which might affect the outsourcing outcome.

Attitude toward RM Outsourcing: This study adapted the attitude toward RM outsourcing measure from Gewald et al. (2006) which was reworded for the revenue management context as follows:

- ✓ Overall, my attitude towards the outsourcing of the revenue management function is positive. (1-Strongly disagree to 7-Strongly agree)
- ✓ The outsourcing of business processes is an attractive alternative to in-house revenue management. (1-Strongly disagree to 7-Strongly agree)
- ✓ I believe that the benefits of outsourcing revenue management function outweigh the associated risks. (1-Strongly disagree to 7-Strongly agree)
- ✓ Overall, the outsourcing of the RM function provides our hotel with added value. (1-Strongly disagree to 7-Strongly agree)

Perceived Risk: This study also adapted the perceived risk measure from Gewald et al. (2006) which was reworded for the revenue management context as follows:

- ✓ Outsourcing of RM function is associated with a high level of risk. (1-Strongly disagree to 7-Strongly agree)
- ✓ There is a high level of risk that the expected benefits of outsourcing will not materialize. (1-Strongly disagree to 7-Strongly agree)
- ✓ Overall, I consider the outsourcing of RM function to be risky. (1-Strongly disagree to 7-Strongly agree)

Given the structure of this dissertation as seen in the framework of the study, the following analysis includes two major sections. The first major section addresses understanding

the nature of outsourcing using a survey of selected properties and the second major section incorporates performance measures of properties as obtained and matched by STR (Smith Travel Research).

4.2. RM Implementation strategies and performance

One of the important considerations for measuring performance is eliminating or reducing external effects such as changes in the market or in the economy of the relevant geographic areas. In addition, determining differences among properties that are not similar might be problematic due to measurement issues or lack of data. This study strives to determine performance differences among similar properties in the same region. While there are many kinds of performance measures (e.g. GOPPAR), most hotels currently measure their performance using RevPAR. Smith Travel Research (STR) collects hotels' RevPAR measures and matches comparatively within their competitive set to create a benchmark called the RevPAR index.

Performance functions are measured as follows:

$$\text{Performance} = f(\text{implementation strategy and control variables})$$

The performance of properties measured utilizing the RevPAR index is explained below. The implementations of strategies in this performance function are the in-house strategy, centralized strategy, corporate outsourcing strategy, and third party outsourcing strategy, which were all explained in previous sections. We also need to consider properties that use mixed strategies (or a combination) that employ multiple strategies for their RM systems. For example,

in our data set, 53 (42%) of properties indicated to use in-house/corporate outsourcing combination, 23 (18%) of properties used an in-house/centralized combination, 13 (10%) used an in-house/third party outsourcing strategy. Finally, 11 (8%) indicated various combination and/or did not answer the question.

In addition to the strategies discussed above, several control variables were included into analysis:

Size: Size is a very important indicator and used in many studies for various reasons. The availability of resources and capabilities could change with the size. For example, a 50 room property may have less resources available to them in comparison to a 300 room property. The STR data set used in this study used the following size categories:

1: Less than 75 rooms, 2: 75-149 rooms, 3: 150 rooms and greater (150-299 rooms, 300-500 rooms and greater than 500 rooms combined).

Class: The second control variable used in the analysis is the class of properties. Similar to the argument made above, available resources and overall strategies could change. For example, an economy property could have less resources available compared to a luxury property. The STR data set used in this study used the following class categories:

1: Upscale (Upper upscale/ Luxury combined), 2: Upper midscale, 3: Midscale, 4: Economy

Operation type: Lastly, the type of operation for hotel properties was included in our investigation. Their operation type could affect the hotel's strategy choice. For example, if the hotel is chain-owned or managed, an agreement made between parties might favor a certain strategy over another. The STR data set used in this study used the following operation type categories:

Chain owned/managed, franchised, and independent.

Performance of properties with different implementation strategies is the focus of the next section. The dependent variable selected for this study is the RevPAR index.

4.2.1. RevPAR Index:

The dependent variable was obtained from STR and is known as a RevPAR index. Some argue that RevPAR index provides the best indication on how competitive the property is compared to its competitive set (Rivera, 2011). Because the RevPAR index uses a competitive set, which serves as the best proxy for hotels with similar service levels and are often located in the same region, using it as a performance measure helps us to control outside economic factors and various service levels among properties (Queenan, Ferguson, & Stratman, 2009).

STR calculates RevPAR index as:

$$RevPAR\ Index = \frac{RevPAR_i}{RevPAR_{compset}} \times 100$$

Where i represents the subject hotel and “compset” is the competitive set (Queenan et al., 2009).

The RevPAR index measures and compares properties’ performance to other properties in its comp set. If the property has a value of 100, it means that the property’s performance is on par with other properties within the competitive set. When the value is higher than 100, it indicates that the property outperforms other properties and when value is lower than 100, it underperforms other properties in its comp set.

4.3. Statistical methods employed

This section of the chapter discusses the statistical methods used in order to analyze the collected data. There are multiple parts of the study and various methods were employed to answer the various research questions. In order to test the hypotheses discussed in the antecedents of outsourcing intention, Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA) were used to investigate the reliability, validity, and for refinement of the selected scales, and Hierarchical Multiple Regression (HMR) was used to test the hypotheses and moderating effect. The performance difference of implementation strategies was investigated using repeated measure ANOVA and multiple regression analysis.

4.3.1. Exploratory Factor Analysis (EFA)

Factor analysis is an independence technique that uses summarization and data reduction methods to examine the interrelationship among variables in order to explain common underlying dimensions. Data reduction refers to the process in which factor analysis calculates scores, which represents a variables' interrelationship with other variables in the data set. After identification, the underlying dimensions (data summarization) process creates a new set of variables that replaces the original set of variables (composite measures, scales).

Assumptions of EFA can be divided into conceptual and statistical dimensions. Conceptually, theory or the intuition of researchers assumes that some underlying structure exists among selected items; the sample needs to be logically homogenous and as defined by theory it should include all-important items and exclude extraneous variables. Statistically, items should not have any outliers and interval data should be used. While linearity, homoscedasticity and

normality are assumed, only normality is necessary and the other assumptions rarely create problems (except in extreme cases) Thus, EFA is considered a robust statistical tool.

Multicollinearity is also desired to find the underlying structure (except where singularity occurs – 0.9 or higher correlation) (Hair, Black, Babin, & Anderson, 2010).

There are various approaches to sample size for EFA analysis. Hair et al. (2010) suggest the sample size to be 100 or greater with a 10:1 ratio of sample to variable ratio. Factorability of the data is also very important and anything over 0.50 is considered as being significant while lower than 0.50 requires attention. Suitability of the data is very important and several tests are used to assess this. Kaiser-Meyer-Olkin (KMO) measures the sampling adequacy of the data with results higher than 0.50 considered suitable for factor analysis. When there are problems with this value, it might require investigation of an anti-image correlation matrix. The Bartlett test of sphericity tests the hypothesis that the correlation matrix is an identity matrix, which means that variables are uncorrelated. For this test, we expect the rejection of the null hypothesis ($p < 0.05$) to determine appropriateness of the data set for exploratory factor analysis.

There are several options to extract factors, with Principal Component Analysis (PCA) being the most commonly used in the literature; following Kaiser's criteria (Eigenvalue >1) and Varimax rotation (Kaiser, 1960), which this study employed. Variance explained is also an important factor and should explain at least 50-60% of variance (Hair et al., 2010). Lastly, we have to measure internal consistency within the scale (Cronbach' alpha) to test how items are related to each other as a group. It is generally expected for this value to be 0.70 or greater.

To establish uni-dimensional scale and refine (if needed) for the measurement of the construct, an EFA with a principle component method was used for each construct.

4.3.2. Confirmatory Factor Analysis (CFA)

CFA is a theory driven technique that tests how well measured variables represent smaller numbers of factor structures. CFA has many similarities with EFA, however EFA explores the data and tries to understand how many factor structures could explain the data. Researchers do not predetermine what items loads on what factors. CFA, on the other hand, is specified beforehand by researchers to analyze both factors and items that creates factors. CFA examines if the collected data follows a priori specified model (Hair et al, 2010). In a sense, CFA is a tool that tests our pre-conceived theory so we can use them in further analysis.

CFA also follows certain assumptions. Researchers should have previous knowledge to identify parameters for which some values are known and others are to be estimated. The data should be measured on the interval or ratio level. Residuals should be normally distributed, homoscedastic, independent of each other, and factors should not correlate to each other.

There are several goodness of fit indices used to test CFA and the measurement models for model validity. Following Stern, Bush, and Hair (1977), three groups of overall model fit used to evaluate the measurement and models, namely, absolute fit measures, incremental fit measures, and parsimonious fit measures presented in Table 1.

Table 1: CFA Fit indices

Fit Indices	shorthand	Accepted value
Absolute fit measures		
Chi-Square	χ^2	$p > 0.05$ recommended
Goodness of Fit Index	GFI	> 0.90 recommended
Standardized Root Mean Square Residuals	SRMR	$p < 0.05$ good; $p < 0.08$ adequate model
Root Mean Square Error of Approximation	RMSEA	$p < 0.05$ good; $p < 0.08$ adequate model
Incremental fit measures		
Normed Fit Index	NFI	> 0.90 recommended
Non-Normed Fit Index (AKA Tucker-Lewis)	NNFI	> 0.90 recommended
Comparative Fit Index	CFI	> 0.90 recommended
Parsimonious fit measures		
Adjusted Goodness of Fit Index	AGFI	No accepted cut-off level for good model
Parsimony Normed Fit Index	PNFI	Very sensitive to model size and closer
Parsimony Goodness of Fit	PGFI	to 1 is considered better

Chi-Square: The chi-square tests the model fit comparison. The null hypothesis of the chi-square is reduced (over-identified) to examine how the model fits the data as well as the default (researcher's) model. A significant chi-square value rejects that the reduced model fits the data as well as the default model. However, the chi-square test is very sensitive to sample size.

Goodness of Fit Index (GFI): The possible range for GFI is 0 to 1 and higher values indicates better fit. Overall GFI value of 0.90 and higher considered as accepted model. GFI has problem such as given large values for even poorly specified models and large sample size might affect the GFI outcome for this reason latest researchers such as Schumacker and Lomax (2004) recommends value 0.95 and higher.

Standardized Root Mean Square Residuals (SRMR): SRMR is a standardized difference between predicted and observed correlation in absolute terms, biased toward small N and low degrees of

freedom with a value of zero indicating a perfect fit (Kenny, 2011). Any value lower than 0.08 is considered as an adequate fit (Hu & Bentler, 1999).

Root Mean Square Error of Approximation (RMSEA): is one of the fit indices that is less effected by sample size (Fan, Thompson, & Wang, 1999) and is related to non-central chi-square distribution. RMSEA penalizes for lack of parsimony and estimates the lack of fit compared to a saturated model. In a well-fitting model, RMSEA should be less than 0.05 but some researchers consider a value less than 0.08 to be adequate.

Normed Fit Index (NFI): was developed as an alternative to CFI, which did not required making chi-square assumption. Normed means it ranges from 0 to 1 and model with perfect fit will produce value of 1. Values above 0.90 considered an adequate model.

Tucker-Lewis Index (TLI): Also known as the Non-normed Fit Index (NNFI), TLI is an incremental fit index which penalizes the outcome for adding parameters. TLI depends on the average correlation between variables and the recommended value is over 0.90 (Kenny, 2011).

Comparative Fit Index (CFI): Also known as the Bentler comparative fit index, CFI assumes that the independence model and the tested model are uncorrelated. CFI compares the null model (covariance matrix of 0s) to our own model, measuring lack of fit and is affected by sample size. CFI is one of the most often reported results and is considered a good fit if the value is over 0.90.

4.3.3. Hierarchical Multiple Regression (HMR)

Hierarchical multiple regression is a series of regression, which runs each step as an additional term. Changes to r-squared are calculated which is followed by hypothesis test to test if the change in r-square is significantly different from zero. HMR is most widely used to estimate moderating effect and could be used for both continuous and dichotomous variables (Cohen, Cohen, West, & Aiken, 2013). This study also employed HMR to understand the moderating effects of organizational capability on the asset specificity.

4.3.4. Regression Analysis

Multiple regression analysis is a dependence technique that has two objectives. Multiple regression analysis explains the relative contribution of each independent variable on the dependent variable. It also predicts changes in the dependent variables resulting from the independent variables (Hair et al. 2010). Multiple regression usually utilizes a least squares approach. In regression analysis, variables are weighted to produce a linear combination of independent variables that best predicts the dependent variable for their relative contribution. (Hair et al. 2010).

4.4. Survey and data collection

The population of this study is hotel properties that are located in the USA. There were multiple steps utilized to collect data in order to answer the research questions discussed previously. Emails of possible properties were obtained from the STR (Smith Travel Research)

census database. The data collection process used the “Qualtrics.com” online survey system to design and distribute surveys to the properties. The online survey method provides cost effective, quick responses with error-free data entry. Prior to collecting the data, survey questions were checked by experts in the hospitality field both in the academic and professional arenas for content validity (Hult, Ketchen, & Arrfelt, 2007) and edited by a professional native English-speaking individual.

4.4.1. Survey method and sample

STR collects geographic and non-geographic data and hotel metrics from over 50k properties with a census database including over 150k properties. STR provided us with a randomly selected email list of properties that are located in the US. After cleaning and correcting some problems associated with the email list (incomplete emails, non-mail format in the list, hard bounced emails) we had 3,166 emails and one email for each property. Data collected during the month of October, 2014. Out of these, 745 (23.5%) of them started the survey and 666 (21%) of them answered to at least the “strategy type” question. For the outsourcing intention portion of the survey, we only selected properties with in-house or centralized strategies, providing us with 422 surveys. Further clean up resulted in the final amount of 374 surveys for antecedents of outsourcing intention analysis. Identity of properties masked using special id created by STR to protect privacy of properties, because of this procedure this study were not able to check non-response bias.

We also had 666 responses to the “strategy type” employed question, but after combining the survey with the STR dataset and cleaning problems such as outliers in the data, the final

dataset had 591 responses able to be used for further analysis in investigating performance differences.

CHAPTER FIVE: ANALYSIS and RESULTS

5.1. Introduction

This chapter covers analysis of the antecedents of outsourcing intention and performance analysis of strategies that were discussed previously. We begin the chapter with the data collection process including the survey method followed with characteristics of respondents.

The study randomly split the data into two parts with the first half of the data tested for unidimensionality and reliability of scales using exploratory factor analysis and Cronbach's alpha. As explained in the following summary of CFA section, utilizing skewness, kurtosis and univariate normality distribution there were no major problems found with the second half of data, which investigated employing confirmatory factor analysis to verify measurement items of the scales. After determining the reliability and validity of the scales, the study used path analysis and hierarchical multiple regression analysis to test the hypotheses. Results confirm our hypotheses, including the moderator effect of organizational capability.

The next section investigates performance differences among the RM implementation strategies discussed previously. Originally, we had 666 respondents that answered the "strategy type" question but after combining this with the STR dataset and eliminating some outliers, the final dataset had 591 responses. Analysis of this dataset shows that there are statistically significant differences between RM implementation strategies even when controlled for size, class and operation type of properties.

5.2.1. Profiles of properties and respondents

An initial look at the characteristics of hotel properties shows (Table 2) that the majority of the properties are independently owned (87.8%) and are associated with a brand name (92.5%). It seems that less than half of them employ a revenue manager (41.6%) and a large percentage of properties without revenue managers handle revenue management issues by their general managers (79.4%). The majority of properties in our dataset (85.6%) have less than 150 rooms and 96 properties (14.4%) having greater than 150 rooms. Most of the properties are midscale to upscale class (80%) and there are 48 properties (7.21%) in the luxury/upper upscale class, with 85 of them (12.76) in the economy class.

Table 2: Survey respondents' characteristics - property

Property Characteristics	Frequency	Percent
Ownership		
Independently Owned	339	87.8%
Corporate Owned	47	12.2%
Associated with Brand?		
Yes	358	92.5%
No	29	7.5%
Employ Revenue Manager?		
Yes	159	41.6%
No	223	58.4%
If no RM manager employed, RM is the responsibility of:		
General Manager	173	79.4%
Room/Reservation/Sales Mgr.	20	9.2%
Others	25	11.4%
Size		
Less than 75 Rooms	231	34.7%
75-149 Rooms	339	50.9%
Greater than 150 Rooms	96	14.4%
Class		
Upscale and higher class	180	27.0%
Upper Midscale	277	41.6%
Midscale	124	18.6%
Economy	85	12.8%

Beside the property characteristics, we also compiled the characteristics of respondents (Table 3). The majority of the respondents were general managers (64.6%), followed by room/reservation/sales managers (16%) and revenue managers (7.9%). Almost 58 percent of the respondents were aged between 35 to 54 years old with few young respondents (under 25 years old - 2.4%) and few over 65 years old respondents (5.3%).

A little over 51 percent of the respondents have a bachelors or higher level of education. While the majority of the respondents have worked in the hotel industry for 11 years or more (63.7%), the majority of them have been with their current company 5 years or less (61%). The majority of the respondents graduated with a degree in hospitality management and/or business administration (64.8%) but there are also varying disciplines including engineering, criminology and more.

Table 3: Survey respondents' characteristics - respondents

Respondents Characteristics	Frequency	Mean
Respondents Position		
General Manager	246	64.6%
Room/Reservation/Sales Mgr.	61	16.0%
RM Manager	30	7.9%
Owner	17	4.5%
Others	27	7.1%
Age		
Under 25 Years	9	2.4%
25-34 Years	73	19.5%
35-44 Years	97	25.9%
45-54 Years	120	32.0%
55-64 Years	56	14.9%
65 and Older	20	5.3%
Education		
High School Graduate	34	9.0%
Some College, No Degree	90	23.9%
Associate Degree	60	16.0%
Bachelor's Degree	160	42.6%
Graduate Degree	32	8.5%
Years With the Current Company		
Under 2 Years	136	36.7%
3 to 5 Years	90	24.3%
6 to 10 Years	80	21.6%
11 to 20 Years	50	13.5%
21 Years or More	15	4.0%
Years in the Hotel Industry		
Under 2 Years	25	6.7%
3 to 5 Years	31	8.3%
6 to 10 Years	80	21.3%
11 to 20 Years	128	34.1%
21 Years or More	111	29.6%
If completed college or higher; Discipline of Study was		
Hospitality Management	91	25.9%
Business Administration	137	38.9%
Tourism or Recreation	16	4.5%
Others	108	30.7%

5.2.2. Preliminary analysis and assumptions check

First, we analyzed the data to be sure we had clean data, investigating any outliers or error in our data. Since an online survey system was used, there were no errors with the data. Next, the mean, standard deviation, skewness, and kurtosis for each variable were investigated. While there are many discussions on acceptable values for skewness and kurtosis, it is usually considered safe if ranged ± 3 ; some of the computer simulation studies suggests similar results (Curran, West, & Finch, 1996).

Normal distribution is a purely theoretical concept that refers to the shape of data distribution. While the horizontal axis shows all possible values for variables, the vertical axis shows the probability of occurrence. When this result in a symmetrical bell shaped curve, it is called normal distribution. This distribution is most commonly used with F and t statistical tests, which require data to be normally distributed. If there is an extreme violation for normality, results become invalid. There are various ways to measure it, for example, it could be measured by histogram (graph/visual) Skewness (balance or tail), Kurtosis (peakedness) or through the use of theoretical models such as Shapiro-Wilks and Kolmogorov Simirnov. We normally do not require the normality assumption to be upheld in order to obtain unbiased coefficient results, but it is required for t-test and F-test to be valid, hence it is required for hypothesis testing. According to Hair et al. (2010), extreme deviance from normality might invalidate the results, which we are going to use for our analysis. We analyzed the variables' descriptive, skewness and kurtosis measures for univariate normality distribution as seen in the following Table 4.

Table 4: Descriptive, skewness and kurtosis

	Mean	SD	Skewness	Kurtosis
How positive or negative is your judgment toward outsourcing the revenue management system?	3.670	1.789	.266	-.837
How appealing do you (or the hotel management) find the revenue management system outsourcing option?	3.427	1.843	.316	-.948
How likely is your hotel to outsource the revenue management system in the next 5 years?	3.037	2.061	.653	-.920
To what degree should revenue managers acquire property specific information to adequately perform RM functions?	6.167	1.196	-1.847	3.312
To what degree should the revenue management system be custom-tailored to the property?	6.102	1.193	-1.617	2.219
How costly would it be to switch your revenue management system to another type of strategy?	5.641	1.184	-1.238	2.002
How easy is it to evaluate the performance requirements of the revenue management function?	3.388	1.466	.245	-.437
How easy is it to evaluate the human resource competencies required for the RM function?	3.576	1.474	.227	-.361
How easy is it to evaluate the activities needed for the RM function?	3.364	1.497	.242	-.499
How easy is it to evaluate the changes in technology related to the revenue management function?	3.683	1.457	.115	-.123
We manage our human resources efficiently.	5.566	1.119	-1.035	1.329
We manage our information systems efficiently.	5.551	1.156	-1.098	1.534
We manage various revenue management-related changes efficiently.	5.623	1.099	-.990	1.015
We manage to satisfy most of our revenue management requirements.	5.704	1.123	-1.364	2.363
Overall, my attitude towards the outsourcing of the revenue management function is positive.	3.685	1.628	.272	-.244
The outsourcing of business processes is an attractive alternative to in-house revenue management.	3.416	1.551	.492	.134
I believe that the benefits of outsourcing revenue management function outweigh the associated risk.	3.491	1.562	.410	.070
Overall, the outsourcing of the revenue management function provides our hotel with added value.	3.457	1.537	.473	.233
Outsourcing of the revenue management function is associated with a high level of risk.	4.885	1.243	-.683	1.332
There is a high level of risk that the expected benefits of outsourcing will not materialize.	4.940	1.195	-.601	1.390
Overall, I consider the outsourcing of the revenue management function to be risky.	5.041	1.230	-.851	1.779

We also investigated the multivariate normality assumption that checks normality of error distribution. We used the Stata program to investigate normality of residuals. Shapiro –Wilk W test resulted in a 5% significance level ($W=0.988$ $V=1.86$ $Z=1.44$ $p=0.08$) indicating that we cannot reject as residuals are normally distributed. Normality of residuals and Kernel density graph (Figure 5 and 6) also shows close estimates to normality as follows:

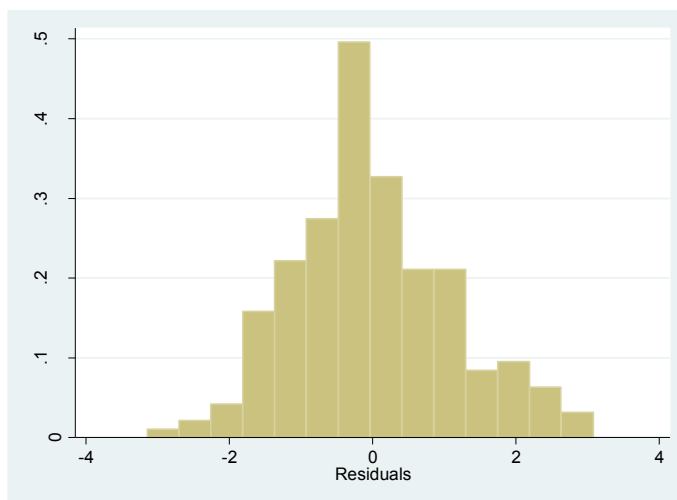


Figure 5: Normality of residuals

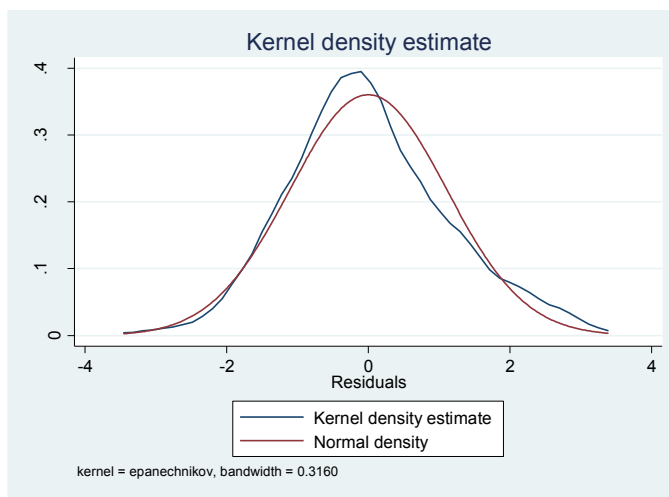


Figure 6: Kernel density and normality

As we can see from the previous graphs, normality is achieved. Therefore, it was concluded that the study should continue to the follow up analysis. The following section of the chapter discusses the quality and reliability of measurement, which followed several steps. First, the study randomly selected about 40 percent of the data (n=159) from the final sample of 374, as a calibration sample for checking the quality and reliability of the scales used. This part of the analysis tests the unidimensionality and reliability of scales using EFA (Exploratory Factor Analysis) and Cronbach's alpha (Hair et al., 2010). After confirming the quality of scales, the rest of the sample (n=215) was used as a validation sample using CFA (confirmatory factor analysis). Following the confirmation of reliability and validity of the data, summated scales were then constructed for each scale for further analysis.

5.3. Outsourcing Intention

5.3.1. Summary of the findings of exploratory factor analysis

The summary of EFA results is shown in Table 5. Overall results indicate that the variables examined shows that the adaptation and rewording of data was successful. The alpha measures of all individual scales are well above 0.7 and KMO, and Bartlett's test of sphericity confirms the quality and reliability of selected scales. For detailed information on EFA results please see Appendix A.

Table 5: Summary of EFA results

Scale	Eigen value	Explained variance	KMO	Bartlett's test	Cronbach's Alpha
Outsourcing intention	2.51	83.69%	0.70	0.00	0.90
Specificity	2.15	69.78%	0.64	0.00	0.77
Uncertainty	3.03	75.72%	0.84	0.00	0.89
Organizational capability	3.44	86.05%	0.86	0.00	0.95
Attitude	3.44	86.08%	0.84	0.00	0.95
Perceived risk	2.39	79.59%	0.73	0.00	0.87

5.3.2. Confirmatory Factor Analysis

5.3.2.1. Summary of CFA results

CFA was utilized to verify the measurement items of outsourcing intention (3 items), asset specificity (3 items), uncertainty (4 items), organizational capability (4 items), attitude (4 items), and perceived risk (3 items). As seen in Table 6, the outsourcing intention scale consisted of three items with composite reliability (CR) of 0.91 and average variance extracted (AVE) value of 0.77, with fit values also deemed acceptable. The specificity scale consisted of three items and the uncertainty scale consisted of four items. They had a CR value of 0.78 and 0.89, and AVE of 0.56 and 0.66, respectively, with other values also deemed acceptable. For detailed information on CFA results please see Appendix B.

Table 6: Summary of CFA results

Scale	AVE	CR	χ^2	RMSEA	GFI	CFI	TLI	SRMR
Outsourcing intention	0.77	0.91	0.00 (1.00)	0.00	0.94	1.00	1.00	0.00
Specificity	0.56	0.78	13.36 (0.42)	0.01	0.99	0.99	0.99	0.02
Uncertainty	0.66	0.89	13.34 (0.42)	0.01	0.99	0.99	0.99	0.02
Organizational capability	0.75	0.93	0.01 (0.90)	0.00	0.93	1.00	1.00	0.00
Attitude	0.83	0.95	0.67 (0.45)	0.00	0.96	1.00	1.00	0.00
Perceived risk	0.70	0.87	0.00 (1.00)	0.00	0.88	1.00	1.00	0.00

5.3.2.2. CFA of Overall Measurement Model

Previously in this study, each construct was analyzed with confirmatory factor analysis to make sure each of them was unidimensional (Jöreskog, 1993; Sethi & King, 1994). According to Anderson and Gerbing (1988) measurement models define the relationship of observed variables to the underlying construct, where constructs are allowed to inter-correlate freely, requiring examination and specification (if needed) before further analysis. The overall measurement model fit was tested using CFA to test whether the collected data fit the proposed model (Hair et al., 2010; Jöreskog, 1993). The overall measurement model consisted of 6 constructs (outsourcing intention, specificity, uncertainty, organizational capability, attitude and perceived risk) with 21 indicators.

The primary purpose of CFA is determining if the measurement model has an acceptable fit or not. Before we evaluate the model as a whole, it is required to evaluate the individual parameter estimates. Table 7 shows the estimates (lambda), standard error and statistical significance of parameter estimates, which are denoted by t-value. As we can see from Table 7, examination of unstandardized parameter estimations reveals all estimates to be both reasonable and statistically significant. Next, the overall measurement model fit was tested.

Table 7: Parameter estimates of the overall measurement model

Indicators	Constructs/Dimensions					
	Outsource	specificity	Uncertainty	Org cap	Attitude	Perceived Risk
Out1	1.00					
Out2	1.09 (0.04)					
	24.81					
Out3	1.07 (0.05)					
	20.45					
Sp1		1.00				
Sp2		1.56 (0.14)				
		11.23				
Sp3		1.61 (0.14)				
		11.22				
Uc1			1.00			
Uc2			1.15 (0.06)			
			17.95			
Uc3			1.06 (0.06)			
			16.76			
Uc4			0.99 (0.06)			
			15.66			
Oc1				1.00		
Oc2				1.05 (0.04)		
				23.68		
Oc3				1.01 (0.04)		
				24.45		
Oc4				1.00 (0.04)		
				22.94		
At1					1.00	
At2					0.96 (0.04)	
					25.43	
At3					1.04 (0.03)	
					32.09	
At4					1.04 (0.04)	
					27.99	
Pr1						1.00
Pr2						0.81 (0.05)
						16.99
Pr3						0.89 (0.05)
						18.29

Note: The first line represents the estimate (lambda), the parentheses value denotes the standard error, and the second line represents the t-value. Out1:How positive or negative is your judgment toward outsourcing the revenue management system? Out2:How appealing do you (or the hotel management) find the revenue management system outsourcing option? Out3:How likely is your hotel to outsource the revenue management system in the next 5 years? Sp1:To what degree should revenue managers acquire property specific information to adequately perform RM functions? Sp2:To what degree should the revenue management system be custom-tailored to the property? Sp3:How costly would it be to switch your revenue management system to another type of strategy? Uc1:How easy is it to evaluate the performance requirements of the revenue management function? Uc2:How easy is it to evaluate the human resource competencies required for the RM function? Uc3:How easy is it to evaluate the activities needed for the RM function? Uc4:How easy is it to evaluate the changes in technology related to the revenue management function? Oc1:We manage our human resources efficiently. Oc2:We manage our information systems efficiently. Oc3:We manage various revenue management-related changes efficiently. Oc4:We manage to satisfy most of our revenue management requirements. At1:Overall, my attitude towards the outsourcing of the revenue management function is positive. At2:The outsourcing of business processes is an attractive alternative to in-house revenue management. At3:I believe that the benefits of outsourcing revenue management function outweigh the associated risk. At4:Overall, the outsourcing of the revenue management function provides our hotel with added value. Pr1:Outsourcing of the revenue management function is associated with a high level of risk. Pr2:There is a high level of risk that the expected benefits of outsourcing will not materialize. Pr3:Overall, I consider the outsourcing of the revenue management function to be risky.

The overall measurement model fit was tested to examine the extent of the data, which the measurement model adequately represents, as shown by the observed items seen in Table 8. The squared multiple correlation (R²) were used to determine how observed variables were represented in the measurement model, which also presents the reliability of each indicator.

Table 8: CFA results of the overall measurement model

Constructs and Indicators	Standardized Loading (Li)	Reliability (Li2)	Composite Reliability	Error Variance	AVE	Squared Multiple Correlations
Outsourcing Intention			0.91		0.77	
Out1	0.88	0.77		0.23		0.77
Out2	0.93	0.87		0.13		0.87
Out3	0.82	0.67		0.33		0.67
Specificity			0.83		0.63	
Sp1	0.90	0.80		0.20		0.80
Sp2	0.87	0.76		0.24		0.76
Sp3	0.56	0.32		0.68		0.32
Uncertainty			0.89		0.67	
Uc1	0.78	0.60		0.40		0.60
Uc2	0.82	0.68		0.32		0.68
Uc3	0.88	0.77		0.23		0.77
Uc4	0.78	0.61		0.39		0.61
Organizational Capability			0.93		0.78	
Oc1	0.87	0.76		0.24		0.76
Oc2	0.89	0.79		0.21		0.79
Oc3	0.90	0.81		0.19		0.81
Oc4	0.87	0.76		0.24		0.76
Attitude			0.95		0.82	
At1	0.90	0.80		0.20		0.80
At2	0.94	0.89		0.12		0.89
At3	0.86	0.74		0.26		0.75
At4	0.92	0.84		0.16		0.84
Perceived Risk			0.87		0.69	
Pr1	0.81	0.66		0.34		0.66
Pr2	0.76	0.58		0.42		0.58
Pr3	0.92	0.84		0.16		0.84

Out1:How positive or negative is your judgment toward outsourcing the revenue management system? Out2:How appealing do you (or the hotel management) find the revenue management system outsourcing option? Out3:How likely is your hotel to outsource the revenue management system in the next 5 years? Sp1:To what degree should revenue managers acquire property specific information to adequately perform RM functions? Sp2:To what degree should the revenue management system be custom-tailored to the property? Sp3:How costly would it be to switch your revenue management system to another type of strategy? Uc1:How easy is it to evaluate the performance requirements of the revenue management function? Uc2:How easy is it to evaluate the human resource competencies required for the RM function? Uc3:How easy is it to evaluate the activities needed for the RM function? Uc4:How easy is it to evaluate the changes in technology related to the revenue management function? Oc1:We manage our human resources efficiently. Oc2:We manage our information systems efficiently. Oc3:We manage various revenue management-related changes efficiently. Oc4:We manage to satisfy most of our revenue management requirements. At1:Overall, my attitude towards the outsourcing of the revenue management function is positive. At2:The outsourcing of business processes is an attractive alternative to in-house revenue management. At3:I believe that the benefits of outsourcing revenue management function outweigh the associated risk. At4:Overall, the outsourcing of the revenue management function provides our hotel with added value. Pr1:Outsourcing of the revenue management function is associated with a high level of risk. Pr2:There is a high level of risk that the expected benefits of outsourcing will not materialize. Pr3:Overall, I consider the outsourcing of the revenue management function to be risky.

Following the examination of reliability values, composite reliability and average variance extracted (AVE) estimates for each construct is calculated. As seen in Table 8, the lowest composite reliability is 0.83 and varies between 0.83 and 0.95. All the variance extracted estimates were also well above 0.50 and indicate satisfactory results (varies from 0.63 to 0.82).

Different types of fit indices were also examined to assess the model as seen in Table 9. The most common fit index is the Chi-square goodness of fit test which gave satisfactory results ($\chi^2=303.17$ $p=0.00$). Additionally, three groups of overall fit measures were considered. They were absolute fit measures (χ^2 , GFI, SRMR, RMSEA), incremental fit measures (NFI, NNFI, CFI), and parsimonious fit measures (AGFI, PNFI, PGFI) (Stern et al., 1977). The summarization of all fit indices is presented in Table 9. Overall, all of the results satisfy the cut of values. Thus, the measurement model was considered acceptable.

Table 9: Fit indices for the overall measurement model

Fit Indices	Model	Accepted value
Absolute fit measures		
	$\chi^2 = 280.97$ (df=173 p=0.00)	p > 0.05 recommended
Chi-Square		
Goodness of Fit Index	0.93	> 0.90 recommended
Standardized Root Mean Square Residuals	0.08	p < 0.05 good; p < 0.08 adequate model
Root Mean Square Error of Approximation	0.05	p < 0.05 good; p < 0.08 adequate model
Incremental fit measures		
Normed Fit Index	0.95	> 0.90 recommended
Non-Normed Fit Index (AKA Tucker-Lewis)	0.97	> 0.90 recommended
Comparative Fit Index	0.98	> 0.90 recommended
Parsimonious fit measures		
Adjusted Goodness of Fit Index	0.91	No accepted cut-off level for good model
Parsimony Normed Fit Index	0.79	Very sensitive to model size and closer
Parsimony Goodness of Fit	0.71	to 1 is considered better

In order to check construct reliability, discriminant validity, and convergent validity, the study analyzed standardized loadings, construct reliability, average variance extracted, maximum shared variance (MSV), and average shared variance (ASV) for chosen constructs with all results found to be satisfactory. Therefore, the analyzed constructs were found to be reliable and valid. Due to this, the study proceeded to test hypotheses 1 and 2 utilizing path analysis.

5.3.3. Analysis of Hypothesis 1 and 2 with Path Analysis

The path analysis procedure is a statistical tool that measures the relationship among unobserved constructs (Hair et al., 2010). This study employed a path analysis procedure using the AMOS program with a Maximum Likelihood method of parameter estimation. As discussed previously, all the observed variables met the required assumptions for the analysis.

The main purpose of this section is to examine the interrelationship between outsourcing intention, asset specificity (H1), and uncertainty (H2). Therefore, path analysis with a maximum likelihood method was employed to test Hypotheses 1 and 2. The review of maximum likelihood estimation provided an adequate fit to data as seen in the following results: $\chi^2=303.17$ (df=174 p=0.00), GFI=0.93, RMSEA=0.05, NNFI=0.97, and CFI=0.98. Thus, the results revealed that the collected data was reliable and consistent with the theory driven model.

Table 10: Result of Hypotheses 1 and 2

Hypothesized Path	Standardized Coef	t-value
H1: Asset Specificity --> Outsourcing intention	-0.304	-5.38***
H2: Uncertainty --> Outsourcing intention	0.196	3.41***

Notes: *p < 0.1; **p < 0.05; ***p < 0.001

The hypotheses' test results, presented in Table 10, showed that both hypotheses are supported. Asset specificity shows a statistically significant and negative (-0.304, t=-5.38***) relationship with outsourcing intention as proposed. The uncertainty results were also statistically significant and positive (0.196, t=3.41***).

Following the path analysis, we move on to test Hypotheses 1 and 2, and the moderating effect of organizational capability (H3) utilizing Hierarchical Multiple Regression Analysis. The study analyzed multiple techniques initially using path analysis. This was followed by hierarchical multiple regression in the next section which produced similar results. Their convergence of findings adds credibility and robustness to the outcome of the analysis.

5.3.4. Testing hypotheses using Hierarchical Multiple Regression

This study employs a hierarchical multiple regression analysis to test for the direct effects of the variables and moderating effect of the organizational capability considering selected control variables. There are multiple steps involved to test all the hypotheses and following procedures based on the work of Cohen et al. (2013). Using the summated scores of each scales, first as reported in Table 11, the variables were investigated to determine if there were any problems with the multicollinearity issue and all the results including Variance Inflation Factor (VIF) show no problem with the data.

Table 11: Descriptive and correlations

Variables	Mean	SD	1	2	3	4	5	6	VIF
1. Outsourcing intention	3.38	1.74	1						
2. Specificity	5.97	1.02	-0.39***	1					1.44
3. Uncertainty	3.50	1.27	0.32***	-0.34***	1				1.22
4. Organization capability	5.61	1.03	-0.40***	0.37***	-.28***	1			1.38
5. Attitude	3.51	1.46	0.46***	-0.18***	0.20***	-0.08*	1		1.24
6. Perceived risk	4.96	1.09	-0.26***	0.09**	0.04	0.15***	-0.38***	1	1.20

Notes: * $p < 0.1$; ** $p < 0.05$; *** $p < 0.001$ $n=374$

As we can see from the initial analysis, outsourcing intention is negatively associated with specificity (Hypothesis 1) and positively associated with uncertainty (Hypothesis 2). Following a quick check, we created the moderating effect by multiplying a standardized (the mean of the variable subtracted from its value and divided by the standard deviation of the variable) variable (specificity) with the moderating variable (organizational capability). When

both independent variables are continuous, as in our study, it is necessary to standardize the scores before creating the product term to reduce multicollinearity problems (Dawson, 2014).

As shown in Table 12, the initial model considered outsourcing intention as a dependent variable, and asset specificity and uncertainty as independent variables to test Hypotheses 1 and 2 (Main effects-model 1). This step was followed by adding organizational capability and the moderating effect to the analysis to test Hypothesis 3 (Model 2). Finally, the control variables were entered into the model (Model 3) (See Table 12).

Table 12: Hierarchical multiple regression and hypotheses testing

Variables	Expected Signs	model 1		model 2		model 3	
		Beta	SD	Beta	SD	Beta	SD
Constant		5.58***	0.64	8.82***	0.81	7.46***	0.82
Specificity	H1 (-)	-0.54***	0.09	-0.50***	0.09	-0.412***	0.08
Uncertainty	H2 (+)	0.29***	0.07	0.20**	0.07	0.119**	0.06
Organizational capability				-0.55***	0.09	-0.54***	0.08
Specificity * Org. capability	H3 (n/a)			-0.21***	0.06	-0.21***	0.06
Attitude						0.44***	0.05
Perceived risk						-0.9	0.07

Notes: *p < 0.1; **p < 0.05; ***p < 0.001 n=374

We can see from the results that specificity (-0.54***, -0.50***, -0.412***) shows as significant and negatively affects the outsourcing intention for all three models. Uncertainty (0.29***, 0.20***, 0.119***) also shows as significant and positively affects the outsourcing intention as

predicted by Hypotheses 1 and 2. Hence, these investigated variables significantly influence the outsourcing intention of lodging properties.

One of the easiest ways to understand and see interaction is using scatter plots and adding regression slopes as seen in Figure 7. The graph indicated that when there is a high level of organizational capability, the effect of specificity on the degree of outsourcing intention decreased. But, where there is a low level of organizational capability, the line becomes flatter, meaning that organizational capability has a moderating effect on specificity.

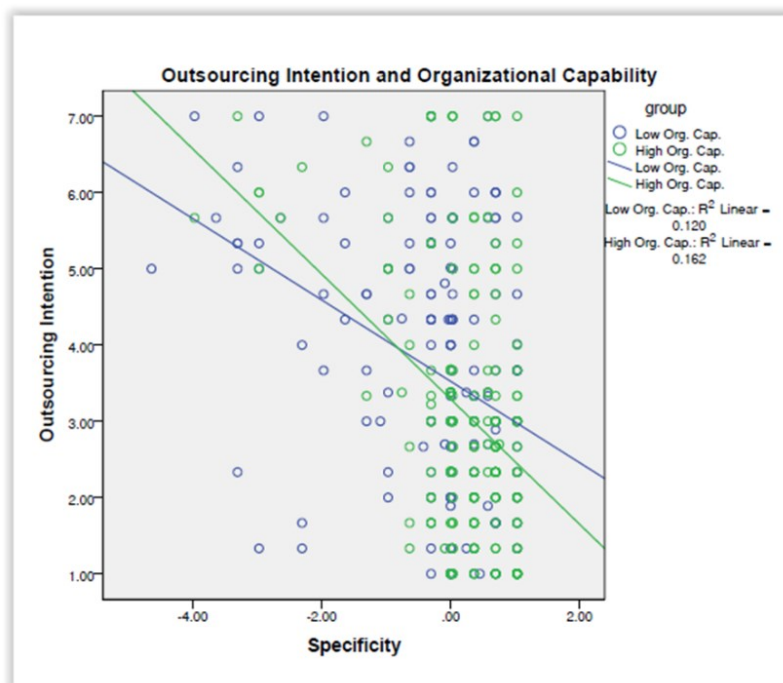


Figure 7: Scatter plots for organizational capability and specificity

The moderating effect and changes from the Model 1 – Model 3 were also observed by changes in statistical significance of ΔR^2 . Significant changes in the ΔR^2 value indicate that the moderating term affects the dependent variable. It can be inferred that the level of organizational capability moderates specificity on the outsourcing intention (See Table 13).

Table 13: Model summary

Model	R	R Square	Adjusted R Square	SD	R Square Change	F change	df1	df2	Sig. F Change
1	0.43	0.19	0.18	1.57	0.19	42.90	2	371	0.00
2	0.52	0.27	0.26	1.50	0.08	20.54	2	369	0.00
3	0.64	0.41	0.40	1.34	0.15	45.27	2	367	0.00

Notes: *p < 0.1; **p < 0.05; ***p < 0.001 n=374

The main effect model with control variables (Model 3) makes a significant contribution in comparison to Model 1 ($\Delta R^2=0.08$) and Model 2 ($\Delta R^2=0.15$) with all of them being significant.

Following the above results, we can test the hypotheses as follows:

Hypothesis 1 stated that when decision makers perceive revenue management systems to be property specific, there is less chance they would seek outsourcing. Hierarchical regression results used for this purpose as well as all the model results (-0.54***, -0.50***, -0.412***) shows significant and negative as expected. Also, Hypothesis 2 stated that when there is an uncertainty related to technology and environment of revenue management, it will be more likely that management will want to transfer this risk to a third party. All the results (0.29***, 0.20***, 0.119***) shows significant and positive as expected. Finally, Hypothesis 3 stated that when a property does not have any capabilities to handle their own revenue management system, how they perceive a revenue management system becomes less important and acts as a moderator. The significant changes from Model 1 to Model 2 and increase in adjusted r-squared confirm this expectation.

5.4. Performance of Implementation Strategies

The original data set included 666 responses to definition of strategy question but when we combined with STR RevPAR index data, this number dropped to 602. After the dataset created, normality assumption of dependent variable checked using histogram and steam and leaf plot graphs which showed possible outliers in the variable. This visual approach followed by formal normality test employing Shapiro Wilk W test. The Shapiro Wilk test also indicated normality problem as seen in normality plots ($W=0.96$ $p=0.000$). As we discussed earlier, the problem created by several outliers in the variable. According to Hair et al. (2010) we can check the studentized residuals of the data where it should lie in the range of +2.5 to -2.5 and any number is far from the proximate residuals requires further investigation. There were 11 observations with extreme values that eliminated following this method, which finalized our number to 591. Following this procedure, histogram, steam and leaf, and Q-Q plots checked and showed better fit. Shapiro Wilk W test also supported normality of the variable ($W=0.997$ $p=0.409$). Additionally, Breusch- Pagan / Cook-Weisberg test for heteroskedasticity ($\chi^2= 0.01$ $p=0.904$) and Ramsey RESET (Regression Equation Specification Error Test) for model specification errors ($F=1.90$ $p=0.127$) examined found no problem additionally using VIF (Variance Inflation Factors) Multicollinearity among variables investigated (1.05 – 3.19 mean $VIF=3.19$) and found no major problem.

The following section presents descriptive and tables of selected variables, and followed by repeated measures ANOVA and regression analysis.

5.4.1. Descriptive and tables

Selection of Revenue Management implementation strategy could be affected by multiple factor that need to be controlled for. Size is a very important factor, which might affect the available resources and play an important role in the selection of implementation strategy. The following figure 8 and table 14 show the size and selected implementation methods in our dataset.

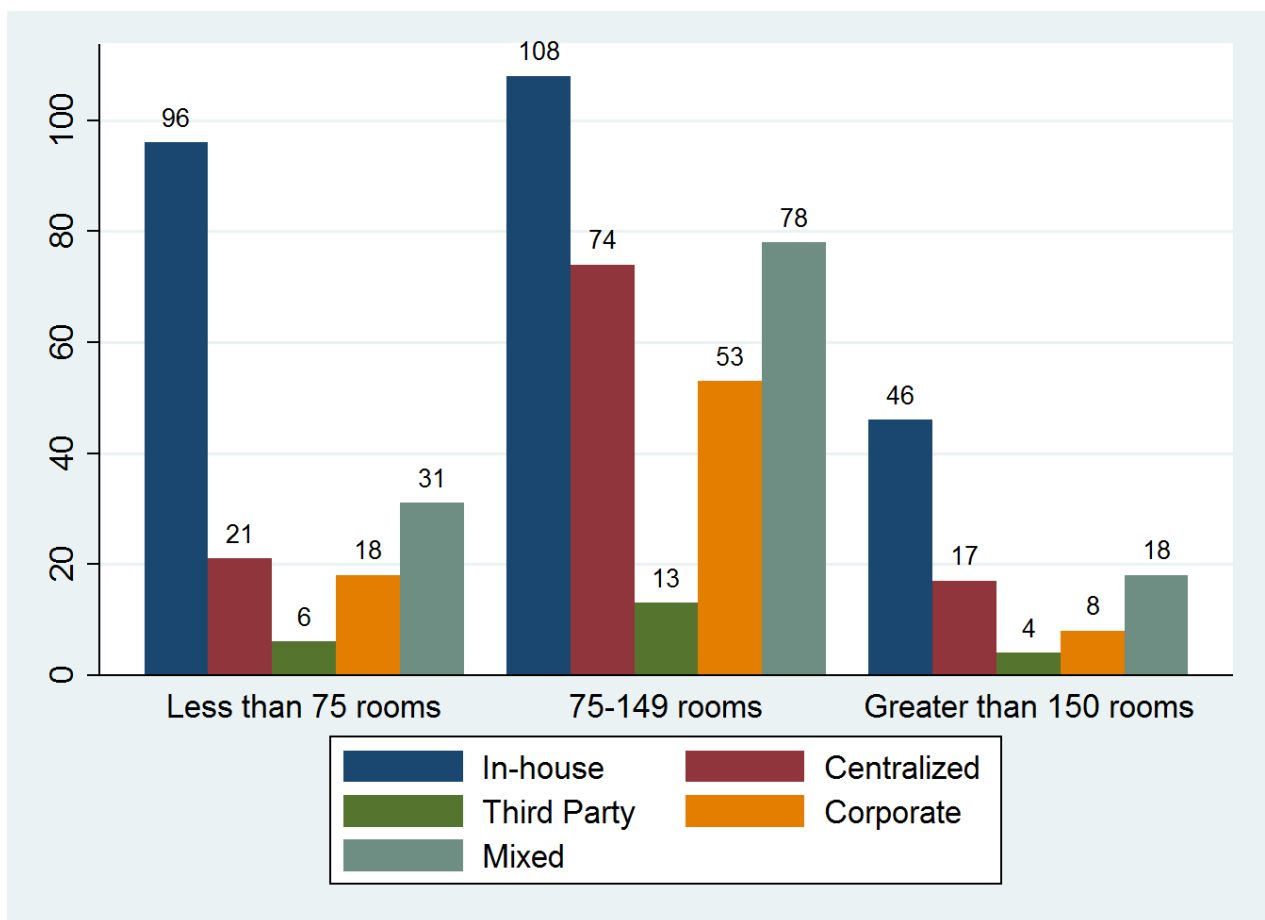


Figure 8: Size and Strategy

Figure 8 give visualization of how strategies distributed over different size of properties and following table 14 gives more information with statistical significance test results.

Table 14: Size and strategy

Strategy/Size		Less than 75 Rooms	75-149 Rooms	Greater than 150 Rooms	Total
In-house	No.	96	108	46	250
	Col %	38.4%	43.2%	18.4%	100.0%
	Row %	55.8%	33.1%	49.5%	42.3%
Centralized	No.	21	74	17	112
	Col %	18.8%	66.1%	15.2%	100.0%
	Row %	12.2%	22.7%	18.3%	19.0%
Third party	No.	6	13	4	23
	Col %	26.1%	56.5%	17.4%	100.0%
	Row %	3.5%	4.0%	4.3%	3.9%
Corporate outsourcing	No.	18	53	8	79
	Col %	22.8%	67.1%	10.1%	100.0%
	Row %	10.5%	16.3%	8.6%	13.4%
Mixed	No.	31	78	18	127
	Col %	24.4%	61.4%	14.2%	100.0%
	Row %	18.0%	23.9%	19.4%	21.5%
Total	No.	172	326	93	591
	Col %	29.1%	55.2%	15.7%	100.0%
	Row %	100.0%	100.0%	100.0%	100.0%

$\chi^2= 28.48$ $p=0.00$. Note: We have other categories (300-500 rooms and greater than 500 rooms), in order to have enough cell observations they were collapsed and shown categories created.

As we can see from table 14, the statistically significant chi-square result ($\chi^2:28.48$ $p=0.00$) shows that there is a relationship between strategy type and size, that means strategy shows variation with size of the property. The majority of the properties in the dataset have 75-149 rooms ($n=326$, 55%), which were followed by the properties with less than 75 rooms ($n=172$, 29%). There were only 10 properties with 300-500 rooms and four of them had greater than 500 rooms before it was collapsed into other category. Overall, the majority of the properties employed an in-house approach ($n=250$, 42%) to revenue management strategy, followed by mixed ($n=127$, 21.5%) and centralized strategy ($n=112$, 19%), while corporate

outsourcing strategy was fourth (n=79, 13.4%) and third party outsourcing was utilized by the least number of properties (n=23, 3.9%).

There are 172 properties (29.1%) with less than 75 rooms in the dataset and the majority of these properties with less than 75 rooms use an in-house strategy (n=96, 55.8%) followed by mixed strategy (n=31, 18%). (One important limitation of the data is in-house strategy could be defined as simple as using an Excel file, to buying sophisticated programs and hardware to handle in-house revenue management). They also have the second highest number of properties to employ a third party outsourcing strategy (n=6, 26%) followed by the 75-149 rooms properties. Centralized strategy and corporate outsourcing were also employed by these properties (n=21, 12.2% and n=18, 10.5% respectively). The properties with 75-149 rooms have the highest numbers in our dataset (n=326, 55%) and the majority of them employ an in-house approach (n=108, 33.1%), followed by mixed (n=78, 23.9%), centralized (n=74, 22.7%), corporate outsourcing (n=53, 16.3%) and third party outsourcing (n=13, 4%). Except the low number of hotel using a third party outsourcing strategy, these properties seem to utilize a wide variety of revenue management strategies. There are 93 properties (15.7%) with greater than 150 rooms in the dataset, having a high similarity with 75-149 room properties, in the way they employ revenue management strategies. The majority of these properties use an in-house strategy (n=46, 49.5%) followed by centralized (n=17, 18.3%), mixed (n=18, 19.4%), corporate outsourcing (n=8, 8.6%) and third party outsourcing (n=4, 4.3%).

As we can see from Table 14, 250 properties out of 591 employ an in-house strategy (42.3%). Comparative to their numbers, most of the properties with greater than 150 rooms use an in-house strategy (49.5%), followed by properties with less than 75 rooms (55.8%), and 75-149 rooms (33.1%). A centralized strategy was mostly employed by hotels with 75-149 rooms

(22.7%) , 12.2 percent of hotels with less than 75 rooms also employ a centralized strategy. Third party outsourcing strategy is the least used strategy, employed by 23 (3.9%) properties.

Corporate outsourcing strategy was the second least used strategy, employed by 79 (13.4%) properties. 16.3 percent of these were 75-149 room properties, and about 10 percent of the less than 75 rooms and 150-299 room properties employed this strategy. Mixed strategy was the second most used approach to revenue management implementation strategy and was employed by 127 (21.5%) properties. About 20 percent of each size category employed a mixed strategy (18% to 23.9%).

Following figure also shows various revenue management implementation strategies for operation types of properties selected. Majority of the information comes from franchised properties as seen in Figure 9.

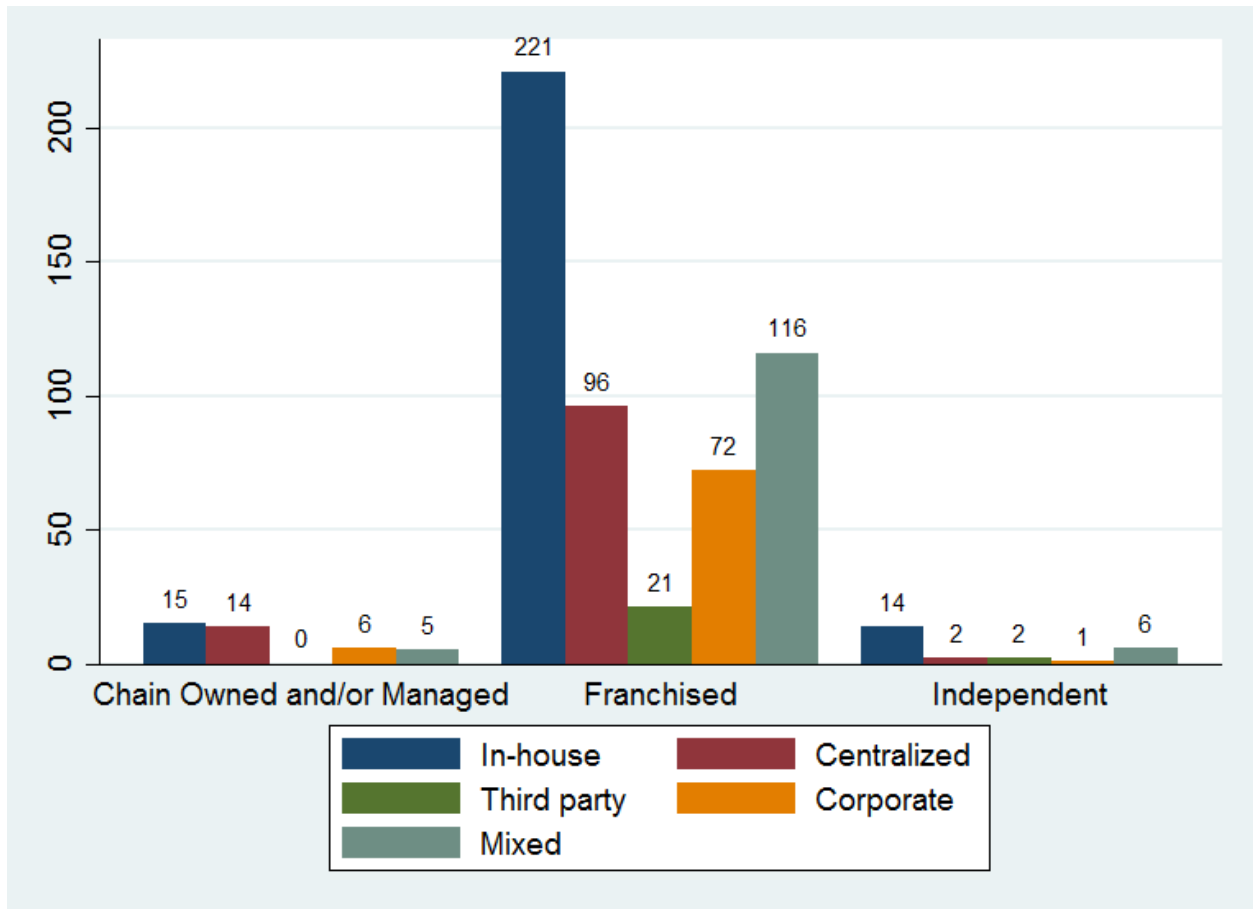


Figure 9: Operation type and strategy

Table 15: Operation type and strategy

Strategy/Operation type		Chain Owned and/or Managed	Franchised	Independent	Total
In-house	No.	15	221	14	250
	Col %	6.0%	88.4%	5.6%	100.0%
	Row %	37.5%	42.0%	56.0%	42.3%
Centralized	No.	14	96	2	112
	Col %	12.5%	85.7%	1.8%	100.0%
	Row %	35.0%	18.3%	8.0%	19.0%
Third party	No.	0	21	2	23
	Col %	0.0%	91.3%	8.7%	100.0%
	Row %	0.0%	4.0%	8.0%	3.9%
Corporate outsourcing	No.	6	72	1	79
	Col %	7.6%	91.1%	1.3%	100.0%
	Row %	15.0%	13.7%	4.0%	13.4%
Mixed	No.	5	116	6	127
	Col %	3.9%	91.3%	4.7%	100.0%
	Row %	12.5%	22.1%	24.0%	21.5%
Total	No.	40	526	25	591
	Col %	6.8%	89.0%	4.2%	100.0%
	Row %	100.0%	100.0%	100.0%	100.0%

$\chi^2=14.6$ $p=0.06$ Fisher's exact=0.077

Operation type is another important factor that could affect the implementation strategy that was selected (Table 15). For example, a franchising agreement could require the property to implement certain strategies and should be controlled for further analysis. There is enough evidence (chi-square=28.48 $p=0.06$) at 10 percent significant level to suggest they are related, however due to not enough observations we cannot be sure but still indication is as such that there is a relationship between operation type and strategy selected. Overall, there were 40 (6.8%) properties that were owned and/or managed by a chain, 526 (89%) properties that were franchised and 25 (4.2%) properties that are independent in our dataset.

Out of 40 properties, the majority of the chain owned/managed properties use in-house (n=15, 37.5%) and centralized (n=14, 35%) strategies, followed by corporate outsourcing (n=6, 15%) and mixed (n=5, 12.5%) strategies. Chain owned/managed properties do not use a third party outsourcing strategy. Most of the properties in our dataset are franchised (n=526, 89%) and the majority of them employ an in-house strategy (n=221, 42%) followed by mixed strategy (n=116, 22.1%). Centralized strategy was used by 96 (18.3%) properties and corporate outsourcing was used by 72 properties (13.7%). Third party outsourcing was used by 21 (4%) properties. There are also 25 (4.2%) properties that are independent and the majority of them use an in-house (n=14, 56%) strategy followed by mixed (n=6, 24%) strategy.

Adjusting for their numbers, the majority of independent properties use an in-house strategy (56%) in comparison to franchised (42%) and chain owned/managed properties (37.5%). For the centralized strategy, chain owned/managed properties have the highest percentage (35%) compared to franchised (18.3%) and independent hotels (8%). There were no property employing third party outsourcing in the chain owned/managed category, while eight percent of independent and 4 percent of franchised hotels employed a third party outsourcing strategy. Compared to independent (4%) and franchised hotels (13.7%), 15.6 percent of chain owned/managed properties use corporate outsourcing. 24 percent of independent properties used a mixed strategy, compared to 22.1 percent of franchised properties and 12.5 percent of chain owned/managed properties.

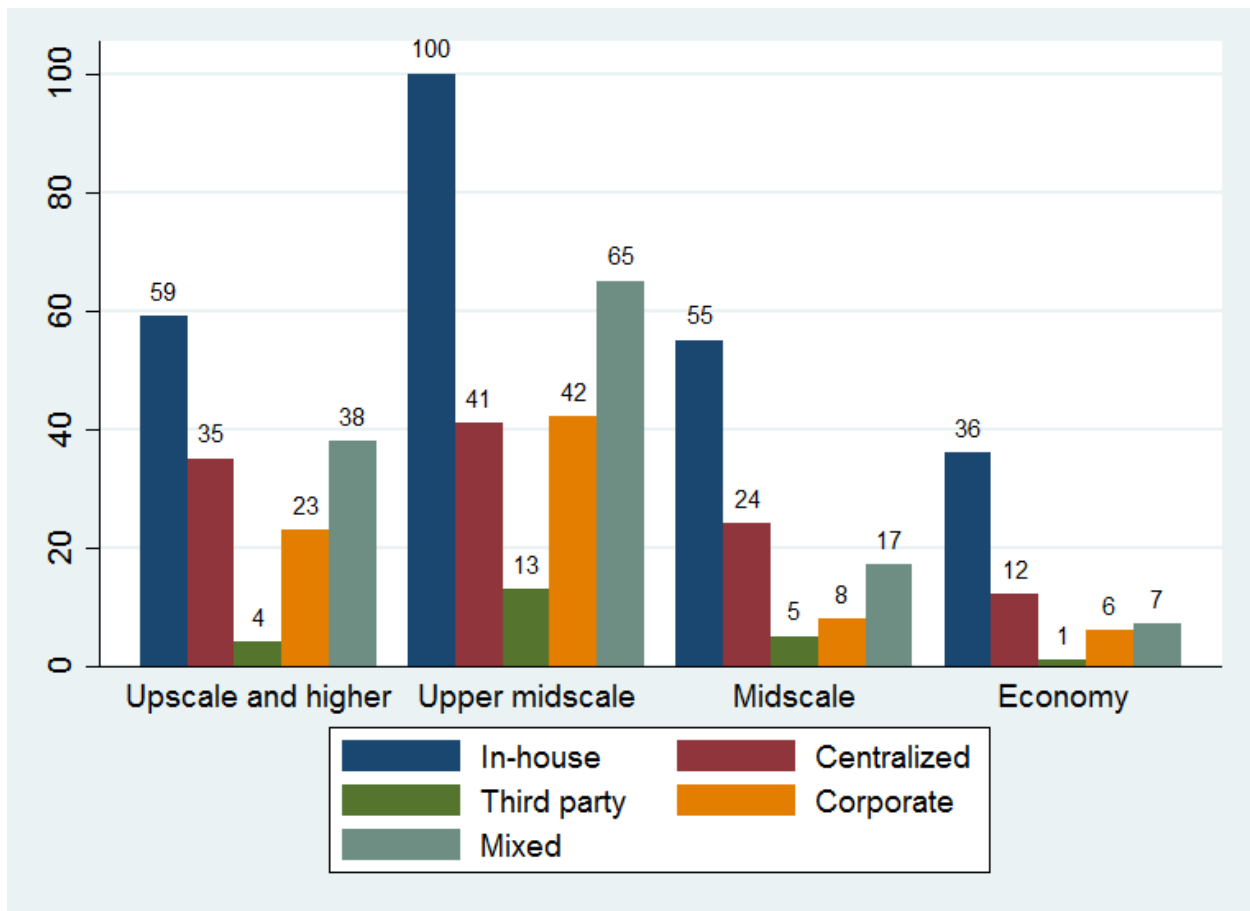


Figure 10: Class type and strategy

Figure 10 give us how different class types uses various strategies, majority of our resources comes from upper midscale properties. Following tables analyze this distribution in more detail and statistically test the variance among them.

Table 16: Class type and strategy

Strategy/Class		Upscale and Higher Class	Upper Midscale	Midscale	Economy	Total
In-house	No.	59	100	55	36	250
	Col %	23.6%	40.0%	22.0%	14.4%	100.0%
	Row %	37.1%	38.3%	50.5%	58.1%	42.3%
Centralized	No.	35	41	24	12	112
	Col %	31.3%	36.6%	21.4%	10.7%	100.0%
	Row %	22.0%	15.7%	22.0%	19.4%	19.0%
Third party	No.	4	13	5	1	23
	Col %	17.4%	56.5%	21.7%	4.3%	100.0%
	Row %	2.5%	5.0%	4.6%	1.6%	3.9%
Corporate outsourcing	No.	23	42	8	6	79
	Col %	29.1%	53.2%	10.1%	7.6%	100.0%
	Row %	14.5%	16.1%	7.3%	9.7%	13.4%
Mixed	No.	38	65	17	7	127
	Col %	29.9%	51.2%	13.4%	5.5%	100.0%
	Row %	23.9%	24.9%	15.6%	11.3%	21.5%
Total	No.	159	261	109	62	591
	Col %	26.9%	44.2%	18.4%	10.5%	100.0%
	Row %	100.0%	100.0%	100.0%	100.0%	100.0%

$\chi^2 = 24.46$ $p = 0.02$. Note: We have other categories (Upper upscale and Luxury), in order to have enough cell numbers they were collapsed and shown categories created.

As we can see from the table 16, statistically significant chi-square result ($\chi^2: 28.46$ $p = 0.02$) indicates there is a relationship between strategy type and class type of properties, that means strategy shows variation with class type of the property. The class of properties is another factor that affects the availability of resources and the selection of implementation strategy. There are 159 (26.9%) upscale and higher classes properties, 261 (44.2%) upper midscale properties, 109 (18.4%) midscale properties and 62 (10.5%) economy properties in our dataset.

The majority of the upscale and higher properties employ an in-house strategy ($n = 59$, 37.1%) followed by mixed strategy ($n = 38$, 23.9%), centralized strategy ($n = 35$, 22%), corporate outsourcing strategy ($n = 23$, 14.5%) and about 2.5 percent of this scale segment employ a third part outsourcing strategy for their revenue management needs. The midscale and economy properties have similarities on their use of strategies. Both segment use an in-house strategy

extensively (50.5% and 58.1%) followed by centralized strategy (22% and 19.4%). This was followed by mixed strategy (15.6% and 11.3%) and corporate outsourcing (7.3% and 9.7%) with the least used strategy as third party outsourcing (4.6% and 1.6%).

As was discussed previously, the majority of the properties use an in-house strategy (n=250, 42.3%), although the upper upscale/luxury class had the highest value for in-house strategy at 64.9% of properties. The next highest use of in-house strategy was in the economy properties (58.1%), followed by midscale properties (50.5%), upper midscale properties (38.3%) and upscale properties (28.7%). A centralized strategy was used in all scale types (n=112, 19%), but mostly used by upscale properties (25.4%) and least used by upper upscale/luxury properties (10.8%). Third party outsourcing strategy was mostly used by upper midscale and midscale properties (5% and 4.6% respectively) and least used by economy properties (1.6%). Corporate outsourcing strategy was mostly employed by upscale and upper midscale properties (18% and 16.1% respectively). Mixed strategy was used in all types and varied from 11.3% in economy properties to 24.9% in upper midscale properties.

5.4.2. Initial look at the performance analysis with repeated measures ANOVA

A one-way repeated measures analysis of variance (ANOVA) was conducted to evaluate two concerns. First, the RevPAR index was measured in four different averages: last month average, last three months averages, last six months averages and last 12 months averages. Due to this wide range in time periods, it is necessary to check if there are any differences of performance over time. Second, the effect of selected strategy on performance was analyzed.

The best way to understand these differences is to visualize it. Figure 11 presents the graphical outcome of performances of implementation strategies. The lines represent different strategies, the last month, last three months, last six months and last 12 months averages of RevPAR index are presented on the x-axis and the mean of each strategy is presented on the y-axis.

As we can see from Figure 11, mixed strategies have the highest value overall, but there is no major difference and differences is not statistically significant by centralized strategy and corporate outsourcing strategy and in-house strategy. Third party outsourcing strategy had the lowest mean of all of the strategies. One thing to note was in the last month, when the centralized strategy was higher than the corporate outsourcing strategy when comparing three, six and twelve month averages. Their differences, as we can see in Table 17 ($t = -1.49$) were not significant.

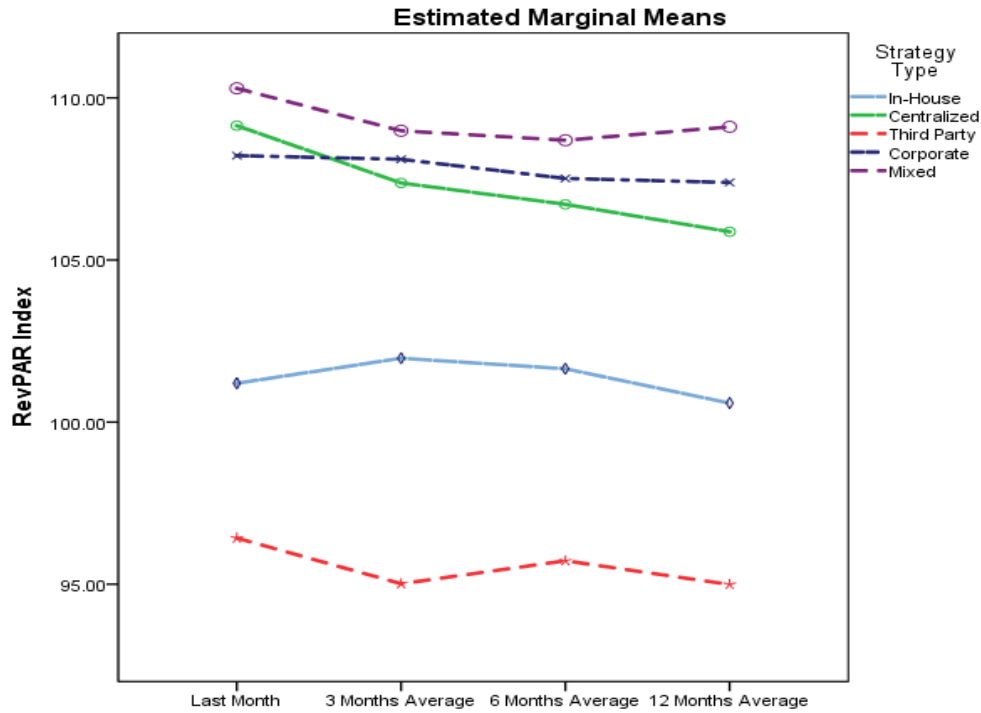


Figure 11: Performance of strategies

The next step was employing a repeated measures ANOVA to test within subjects (monthly averages) and between subjects (strategy type) to determine if they are significantly different from each other. The ANOVA assumes that dependent variable(s) have similar variance for all groups and Levene's test of equality shows that the assumption of homogeneity of variance among groups is attained (last month $F(4,586)=0.321$ $p=0.864$, last three months $F(4,586)=0.849$ $p=0.495$, last six months $F(4,586)=0.922$ $p=0.451$, last 12 months $F(4,586)=0.528$ $p=0.715$). The violation of sphericity is also of serious concern for repeated measures ANOVA. Mauchly's test indicated that the assumption of sphericity is violated ($\chi^2=851.38$ $p<0.000$) therefore, degrees of freedom were corrected employing a Greenhouse-Geisser correction ($\epsilon=0.59$) of sphericity.

Table 17: Repeated measures ANOVA

Strategy Type	Last month	Last 3 months average	Last 6 months average	Last 12 months average
In-house	250 101.20 (2.65)	250 101.97 (2.37)	250 101.65 (2.42)	250 100.59 (2.67)
Centralized	112 109.14 (3.15)	112 107.37 (2.82)	112 106.72 (2.88)	112 105.87 (3.17)
Third party	23 96.42 (5.51)	23 95.02 (4.94)	23 95.72 (5.03)	23 94.99 (5.55)
Corporate	79 108.22 (3.48)	79 108.11 (3.12)	79 107.51 (3.18)	79 107.39 (3.51)
Mixed	127 110.29 (2.16)	127 108.98 (1.93)	127 108.69 (1.97)	127 109.11 (2.17)

Note: First line is numbers, second line is mean and standard error is in parentheses. Within Subject: Wilk's Lambda=0.99, F(3,584)=1.69 p=0.17. Between Subject: F(4)=4.372 p=0.002

The repeated measures ANOVA was conducted to evaluate the hypothesis that there is no change from the last one month RevPAR index result to the last 3, 6 and 12 months RevPAR index averages. This result helps us to be sure that our results are robust and do not vary between time periods. The result of the ANOVA (Table 17) indicated a non-significant time effect (Wilk's Lambda=0.99, F(3,584)=1.696 p=0.167). Partial eta squared ($\eta^2=0.009$) also had a very small effect size on any difference within subjects (Cohen, 2013). The effect of selected strategy was also analyzed using repeated measure ANOVA. There was a statistically significant difference (F=4.37 p=0.002) between performance of properties and strategies they employed.

This study presented visual performance differences among strategies employed, followed by a repeated measures ANOVA to show there were no statistically significant differences in monthly averages of RevPAR index, indicating robust results. The analysis also showed there were statistically significant variations between implemented strategies. The following section incorporated control variables that were discussed previously, using regression analysis as well as comparing strategies to each other employing pairwise comparison.

5.4.3. Performance outcome analysis with Regression

The study employed regression analysis to investigate performance differences among different strategies. As discussed previously, the dependent variable for the model is RevPAR index (last month used for following analysis but using three months, six months and 12 months averages also produced similar results), and type of strategy employed was the main independent variable we proposed that could affect the performance. In addition to type of strategies, size of the properties, class segments of properties, and operation type of properties were used as control variables.

One important consideration is the design of the study. If we were using experimental data, we could have designed our own equally sized groups, but as we can see from our results, non-experimental design groups may have size differences. When there are unequal sample sizes, the largest sample size will have greater influence on the solution because of greater deviation from grand mean (Howell, 2012; Karl, 2014). While equal sample sizes were required and regression coefficients represents a comparison of base group to the average of the group means (Cohen et al., 2013; Meyers, Gamst, & Guarino, 2006), in the event where unequal sample size reflects the population (e.g. non-experimental design) weighted mean analysis is needed (Karl, 2014; Keppel & Zedeck, 1989). Therefore, this study employed weight-adjusted analysis.

Table 18: Regression - Performance outcome

Variables	Coeff	SD
In-house	0.000	(.)
Centralized	6.578**	(2.053)
Third Party	-3.818	(3.022)
Corporate	3.676+	(1.895)
Mixed	6.601***	(1.666)
size	-10.020***	(0.951)
Class	-12.361***	(0.714)
Independent	0.000	(.)
Franchised	13.645***	(3.310)
Chain Owned/Managed	27.263***	(4.297)
_cons	157.471***	(4.209)
R-sq	0.201	
adj. R-sq	0.197	
F	46.709	p=0.000
Notes: + p<0.10 * p<0.05 ** p<0.01 *** p<0.001		

We present regression analysis results in Table 18 where in-house strategy was used as a base. The result of other strategies indicates mean differences and significant results. As we can see from the Table 18, the overall result of the regression analysis is significant ($F=46.71$ $p=0.00$) and explains 19.7 percent of variance in the performance outcome. Size and class are categorical and ordered variables that are statistically significant and negative. Operation type is not an ordered variable and independent properties were used as a base value. Franchised and chain owned/managed properties were statistically significant and both positively affect the performance.

Following the regression analysis, pairwise comparison of means was investigated for all strategy choices as follows. When there are more than two choice, determining the right choice requires comparing alternatives. Pairwise comparison used to compare choices “head to head” to

determine which choice is better. A pairwise comparison is done using the following calculations: $n(n-1)/2$ (n is the number of variables).

Table 19: Pairwise comparison of means

Pairwise comparisons of means	Contrast	Std. Err.	t	P > t
Centralized vs In-house	6.58	2.05	3.20	0.00
Corporate outsourcing vs Centralized	-2.90	1.94	-1.49	0.14
Corporate outsourcing vs In-house	3.68	1.89	1.94	0.05
Corporate outsourcing vs Third party	7.49	2.97	2.52	0.01
Mixed vs Centralized	0.02	1.74	0.01	0.99
Mixed vs Corporate outsourcing	2.92	1.53	1.91	0.06
Mixed vs In-house	6.60	1.67	3.96	0.00
Mixed vs Third party	10.42	2.82	3.69	0.00
Third party vs Centralized	-10.40	3.08	-3.38	0.00
Third party vs In-house	-3.82	3.02	-1.26	0.21

The comparison of centralized strategy and in-house strategy (Table 19) is statistically significant and positive ($\bar{x} = 6.58$), which indicates that centralized strategy has higher performance, compared to in-house strategy. While corporate outsourcing strategy has a lower performance ($\bar{x} = -2.90$) outcome compared to centralized strategy, results were not statistically significant. Corporate outsourcing strategy is statistically significant and positive ($\bar{x} = 3.68$) in comparison to in-house strategy. The corporate outsourcing strategy also outperforms third party outsourcing ($\bar{x} = 7.49$) and was statistically significant.

There is no major mean difference between mixed strategy and centralized strategy ($\bar{x} = 0.02$) and was not found to be statistically significant. Mixed strategy outperforms corporate outsourcing strategy ($\bar{x} = 2.92$) but is statistically significant on a 10 percent level ($p=0,057$). Comparing mixed strategy and in-house strategy is statistically significant with mixed strategy

outperforming in-house strategy ($\bar{x} = 6.60$). Mixed strategy showed the highest value compared to third party outsourcing strategy ($\bar{x} = 10.42$) and was statistically significant. The third party outsourcing strategy underperforms in comparison to a centralized strategy ($\bar{x} = -10.40$) and was statistically significant. The third party outsourcing strategy also underperforms in-house strategy ($\bar{x} = -3.82$) but the result is not statistically significant.

CHAPTER SIX: DISCUSSION, LIMITATION AND FUTURE RESEARCH

6.1. Outsourcing intention

6.1.1. Summary of findings

A final usable sample of 374 respondents was collected and used for further analysis. The study randomly split data in two parts, one for the purpose of unidimensionality and reliability of the data, and the other part for model validation. The majority of properties in our dataset (85.6%) have less than 150 rooms and there are only 14 properties (2.1%) with greater than 300 rooms. Most of the properties are in midscale to upscale class (80%) and there are 48 properties (7.21%) in luxury upper upscale class with 85 of them (12.76) in economy class.

The study utilized path analysis and hierarchical multiple regression analysis to test the proposed hypotheses. The results found that specificity is significant and negatively associated with outsourcing intention, and uncertainty is significant and positively associated with outsourcing intention as proposed. The moderating effect of organizational capability is also significant and changes from base model to final model with moderator being statistically significant. Table 20 summarizes these results. The findings support all of the proposed hypotheses. These findings are discussed in more detail in the following section.

Table 20: Hypothesized relationships and results

Hypotheses	Results
H1: The more the RM system is perceived to be property specific, the less it is likely to be outsourced.	Supported
H2: The higher the level of uncertainty associated with technology and environment, the more it is likely to be outsourced.	Supported
H3: Organizational capability has a moderating role in the relationship between asset specificity and outsourcing decision.	Supported

6.1.2. Discussion, limitation and future research

Many researchers have argued the limitations of relying solely on a TCE approach, and recommend the use of both TCE and the RBV approach in addressing this important gap in literature (Holcomb & Hitt, 2007; McIvor, 2009; Tseng & Chen, 2013; Verwaal et al., 2009); which this study addressed by examining transaction cost economics and resource based view factors in the context of revenue management outsourcing intentions for lodging properties in the US. The study found support for the three hypotheses discussed previously. First, consistent with previous findings (Aubert et al., 2004; Peris Bonet et al., 2010; Silverman, 1999; Tseng & Chen, 2013; Walker & Weber, 1984; Watjatrakul, 2005), the findings from this study demonstrate that transaction cost economics factors have a significant effect on outsourcing intention. The study proposed that there is a negative and significant relationship between asset specificity and outsourcing intention. The results support this hypothesis (-0.54***, -0.50***, -0.412***) for all three models that were tested. One of the important questions to consider here whether revenue decisions are generic or should be considered different for each property. If decisions makers believe that revenue management decisions do not require any property specific information (e.g. generic forecasting), they might consider outsourcing as a viable option. This is in comparison to others whom believe that revenue management decisions should be based on property specific

information (e.g. a revenue decision requires specific information related to the property and a related revenue management system custom-tailored to the property). Asset specificity also considered as moderator between generic competitive strategies and outsourcing and found low asset specificity play greater role in outsourcing activity with hotel properties (Espino-Rodríguez & Lai, 2014).

Similarly, this study also proposed that when there are many unknown factors involved with revenue management, implementation outsourcing could be considered as viable option. For example, in the presence of high levels of uncertainty, a commitment to utilizing the resources inherent to the property may expose the firm to unforeseen contingencies (Holcomb & Hitt, 2007). In a case such as this, properties may transfer this uncertainty risk to third parties to reduce their own risk. For example, Verwaal et al. (2009) found a positive relationship with uncertainty and outsourcing due to increasing costs associated with in-house strategies, in cases where markets have an incentive advantage in the ability to flexibly respond to environmental changes. Coping with this uncertainty risk falls within distinct categories: accepting the risk, avoiding it (e.g. not getting involved in a risky situation), transferring the risk (e.g. sharing the risk with another party) and reducing it (e.g. actively taking action the likelihood of the risk, impact of the risk, or both)(Rogers, Pawar, & Braziotis, 2012). The approach to uncertainty in this study related to transferring the uncertainty risk to a third party. The results supported this hypothesis as well (0.29***, 0.20***, 0.119***) for all three models tested. Further studies may also incorporate the concept of outcome uncertainty where the intentions of the third party entity are unknown. This may also be related to issues of trust and uncertainty of the capabilities of the third party in their agreed-upon functions.

Another question considered in this study was the concept that focusing only on the transaction cost economics approach creates limited explanatory power; in that transaction cost economics and resource based perspective could work as complimentary to each other (Williamson, 1999). Following this argument, this study incorporated organizational capability as a moderator between specificity and outsourcing intention. Findings from this study could complement some of the previous findings that attempted to combine these two approaches (Alvarez-Suescun, 2010; Mayer & Salomon, 2006; McIvor, 2009; Peris Bonet et al., 2010; Silverman, 1999; Watjatrakul, 2005). Therefore, this study provides an approach to revenue management outsourcing decisions from the perspective of transaction cost economics and resource based view. When firms have organizational capabilities, they have more flexibility to make decisions to outsource or employ an in-house strategy depending on how they perceive the revenue management function (property specific or not). On the other hand, if they believe they do not have the organizational capabilities to handle revenue management functions themselves, they might not consider the possibility of whether a revenue management function is specific to the property or not. The results indicate that organizational capability plays a moderator role between specificity and outsourcing intention. One of the important consideration is based on the relational perspective and it argues that when firms not able to attain predetermined goals by themselves, they can utilize outsourcing to organizational capability and achieve competitive advantage (Grover, Cheon, & Teng, 1996). Which could help to explain success of mixed strategies, firms could combine own resources with outsourcing where they might feel need of assistance.

As with any research, this study is not free from limitations. The data sample collected in this study was limited to only US hotel properties. Thus, there may be cultural or psychological

factors associated with American business practices that may limit the generalizability of the findings. Also, all of the constructs used in this study were measured using perceptual scales. It would be more ideal for these scales to be compared to other more objective measurements, as the collected data is based on the perceptions of the sample. However, given the nature of the study, this was not easily available due to the paucity of previous scales related to revenue management studies. Non-response bias is of course present due to the use of surveys in data collection. The lack of information collected on the sample previous to survey distribution made it difficult to control for this type of bias, and as a result, respondents may not accurately represent the target population. The way in which organizational capability is measured is not optimal. This is in part due to responses, which are skewed towards having a higher level of organizational capability in the firm than what should be present. Future studies should find a less subjective method by which to measure this concept. Finally, as the study used data collected from self-reporting participants and subjectively measured the included dependent and independent variables, there may be common method bias present in the results. This limitation may have been alleviated somewhat by the use of hierarchical multiple regression over multiple models, as suggested in Gilley & Rasheed (2000).

This study offers theoretical implications through the use of both transaction cost economics and resource based view to explain outsourcing in a revenue management context. Through the use of these two theories, the concept of organizational capacity and its use in moderating outsourcing strategies is discussed; giving a unique contribution to the body of knowledge. The conceptual models presented in this study also allows for expansion of literature related to revenue management principles by providing a framework upon which future studies may be able to better explore factors contributing to decision makers' strategies.

From a managerial perspective, this study offers numerous implications. Decision makers in lodging firms are able to recognize the multiple concepts included in revenue management system implementation, beyond a focus on only one aspect. An example of this may be a manager who is considering the property's strategy, but has only considered the specificity factor of the system. Without considering the organizational capability of the firm, the decision may not be as well informed as it could otherwise be. The model also offers third party revenue management firms insights into how they can isolate the strengths and weaknesses within lodging firms, enabling a more focused approach in selling and marketing services. To this end, a third party vendor may be better able to recognize the limited organization capacity of a hotel and revise their efforts to offer their revenue management services accordingly.

Future research in revenue management outsourcing strategies is hoped to expand upon the findings and generalizability of this study. One way this may be accomplished is to further break down revenue management as a whole. While this study examined the concept of revenue management as a single entity, there are multiple facets included in its practice. Future studies may be able to isolate individual factors, such as forecasting and feedback systems, in order to better understand the specific concerns over implementation decisions. Another potential area of research may examine the nature of the relationship between lodging firms and third party vendors to examine how levels of trust, previous experiences with these kinds of arrangements and other contractual concerns influence the decision to outsource revenue management. Likewise, research on the behalf of the third party vendors is needed to examine their perceptions of differing types of hotel firms and the resulting contractual relationship that will be established. Finally, this study identified a limited number of psychological and social factors that may have influenced individuals in their decision making. Incorporating concepts from other established

theories may yield a greater understanding of other effects on these decisions. Examples of other relevant streams of knowledge include ease of use, perceived usefulness and social norms, all of which exist in the Technology Acceptance Model (Venkatesh & Davis, 2000). The inclusion of these or other factors into future models may allow for further understanding of revenue management implementation decisions.

6.2. Performance of Implementation Strategies

6.2.1. Summary of findings

The summary of the study's results can be seen in Table 18 and 19. Several conclusions related to the effect of revenue management implementation strategy on resulting performance can be drawn, suggesting the superiority of select strategies over others. These results can be considered to have important implications for the lodging industry. A final useable sample of 591 properties was collected with available data concerning their choice of implementation strategy and RevPAR index. These properties were classified by strategy: 250 properties employed an in-house strategy, 127 used a mixed strategy, 112 a centralized, 79 outsourced to a corporate center and 23 used third party outsourcing. Initially, a one-way repeated measures test was conducted to test that there was no difference in performance for selected properties. The average performance for each group was tested over the previous 1-month, 3-month, 6 month and 12 month time periods.

The results of this test showed variation in performance for the implemented strategy. The ANOVA test indicated a non-significant time effect (Wilks' Lambda = 0.99, $f(3.589) = 1.696$, $p = 0.167$) with regards to the selected revenue management strategy. However, the

strategies were found to be significantly ($F = 4.37, p = 0.002$) different in the resulting performance measure, suggesting that certain strategies were superior in their ability to produce a more optimal result. A regression and pairwise comparison test confirmed the difference in strategy choice on performance. Examining both graphical and statistical analyses suggests that a mixed strategy ($\bar{x} = 110.29$) produced the highest level of performance, followed by a relatively small and not statistically significant difference in centralized ($\bar{x} = 109.16$) strategy, corporate-based ($\bar{x} = 108.22$) strategy, in-house ($\bar{x} = 101.20$) strategy and finally third party outsourcing strategy. The difference between the centralized and corporate-based strategies were not found to be significant.

6.2.2. Discussion, limitation and future research

In this second study, we examined the difference in performance based on the choice of revenue management implementation strategy, divided into five types: in-house, centralized, corporate outsourcing, third party outsourcing and a mixed strategy comprised of some combination of the other types. Previous studies discussing performance resulting from outsourcing strategies offered mixed outcomes (Gilley et al., 2004; Tanriverdi & Venkatraman, 2005). Our findings indicate the higher performance level of corporate-based outsourcing strategies in comparison to third parties. While the results show significant differences between every category other than the centralized and corporate outsourcing strategies, some of the categories were very close in their resulting performance levels. For example, the mixed strategy was found to be the most optimal with regards to resulting performance, however was not that

dissimilar and statistically insignificant from the following two strategies, centralized and corporate outsourcing, when the actual values are compared.

The high value of a mixed strategy's effect on resulting performance may indicate that a property's management is willing to deviate from the traditional practice of adjusting to a single strategy based on market and firm factors, instead pursuing the optimal solution by whatever means possible. As the mixed strategy is able to incorporate the high level of property-specific expertise inherent to an in-house strategy with the potentially higher level of resources of a third party, the end result may be reflected in the higher level of performance found in this study. This adaptation also suggests a more knowledgeable and sophisticated decision maker who may more fully realize the benefits of specific aspects of the revenue management system and its capabilities. Studies building upon the findings of this paper may consider testing the various levels of mixed strategies by analyzing the contributions of internal versus external approaches and the myriad potential strategies, which can be implemented as a result. The specific analysis of these different types of mixed strategies may also allow for a better concept of what combination of strategies can produce optimal results for specific categories of hotel properties.

Surprisingly, the in-house strategy was low in performance values in comparison to the mixed, centralized and corporate outsourcing strategies. This runs counter to the belief that an in-house revenue management strategy would allow for a greater level of information related to individual properties, as well as the ability to make a more informed decision accordingly. One of the reasons behind this finding may be related to the relatively ambiguous nature of what is incorporated in an in-house strategy. Although a simple definition can be attached to the notion of an in-house strategy, in practice the involved implementation can vary widely. Some properties may feature an individual involved in roles other than revenue management using

simple spreadsheet software to make decisions. Other hotels may employ significantly more sophisticated technology and dedicated personnel for revenue management purposes. In any case, future studies should consider breaking down the category of in-house strategy to acknowledge the disparity in resources being used at individual properties and measure the resulting performance. Supporting this is the concept that the use of an in-house strategy is at least partially derived from desired cost savings. In situations where a property's in-house strategy employs a dedicated staff and cutting-edge technologies, the actual cost may be equal or higher than the use of a third party entity. By better understanding the precise level of revenue management involvement used in an in-house strategy, a more accurate comparison of performance can be attained.

The centralized and corporate outsourcing strategies were very close in resulting performance value, as well as most popular in chain-owned / managed properties. This finding was somewhat unsurprising, considering the expectation that a brand would have a higher level of access to their brand-specific resources and subsequently a clearer picture of successful revenue management solutions. Similarly, the brand may be able to utilize their resources to more accurately process external data, such as economic and consumer trends in an effort to produce a better forecast. This type of advantage is then passed along to the chain's properties, who are able to enjoy the benefits of more informed revenue management decisions.

The strategy with the poorest performance, third party outsourcing, may have many reasons for the low associated values. One of these may be due to the issue of specificity, as a third party entity may not be able to capitalize on information specific to an individual property in comparison to other strategies. Due to this lack of relation to the local market, the third party may be unable to respond to changes as quickly as an internally-focused strategy. Also, the third

party may have multiple hotel properties using their services, leading to a lack of individual attention and a related gap in response to a given property's concerns. An additional concern in this scenario may be the property's dependence on the third party for revenue management decisions, as a result of actively losing tacit knowledge of the RM process to the other entity. We have to consider a limitation of causality here. We assume third party outsourcing has a poor performance but if the property was already a low performer (this was not controlled for in this experiment), implementation of third party outsourcing may not be good enough to make the property improve.

The decision to enter into a third party arrangement may also give clues as to the business values of a property's management. As one of the general managers who responded to the survey stated, the use of a third party outsourcing strategy, "will free up my time". While this may be a convincing reason for some decision makers, this type of response may also be indicative of the level of importance placed in revenue management functions for a property. Under this mentality, revenue management may be considered just another issue to take care, as opposed to a crucial process that can govern the financial performance of a hotel. In turn, this may give a more thorough explanation for the low levels of performance emanating from the use of a third party strategy. Future studies in this area may be able to better answer this question by exploring the level of third party involvement used in a mixed implementation strategy. Should a mixed strategy with a high level of third party outsourcing produce a relatively good performance result, there may be other unknown factors associated with this phenomenon.

This study is also not without limitation. The selection of RevPAR as a dependent variable represents only one of many possible metrics by which hotel performance can be measured. While RevPAR is generally held to be one of the most influential key indicators of

lodging performance, there may have been other variables that could have shown additional findings. Similar to the previous study, the selection of US hotels also limits the findings to American hotels, which may not be generalizable to other global markets. Potential external factors, such as economic conditions and legal regulations were also not considered in this study. As such, future studies may be able to confirm the findings by conducting the research at a different point of time and using a different set of STR property data.

Implications for practitioners are evident through the use of revenue performance as a dependent variable. The selection of outsourcing strategy appears to have preference among varying sizes and classes of hotels, suggesting an optimal strategy based on the characteristics of a hotel property. While this study did not pinpoint specific factors that may distinguish these dimensions from one another, the superior performance associated with a mixed outsourcing strategy suggests that managers should not discount any one method in their efforts to find the best method for their property. Future research may be able to dig deeper into this area, isolating better-performing mixes of strategies that may work well for different classes of hotels, or what specific functions of revenue management may be better for third party vendors to operate over performing a function in-house.

Other potential areas of research involve the level of investment and costs associated with the implementation of revenue management systems in an effort to compare financial performance. The completed surveys of managers and owners indicated concerns related to the cost of implementation of revenue management systems. This study used one of the most recognized indices of hotel performance in RevPAR as its dependent variable. However, the consideration of cost may overshadow the findings of this paper. For example, the inclusion of cost for the implementation of a specific strategy may result in what was a superior strategy

becoming much more undesirable due to the loss of profit. As there are undoubtedly costs arising from the maintenance, training and labor of in-house revenue management systems, gaining a clearer picture of everything involved with this form of implementation may help to explain the findings of this paper, as well as provide more helpful insights for practitioners. A study examining the difference in performance resulting from changing from one revenue management strategy to another may also yield important findings that support or refute the findings of this current work.

6.3. Conclusion

Based on a review of literature review on transaction cost economics and resource based view, this study developed a model (Figure 2 and 3), which proposed the relationship between outsourcing intention and transaction cost economics based on the variables of specificity and uncertainty. The model also proposed that the organizational capability of the property could moderate the relationship between specificity and outsourcing intention. The study argued that if the property does not have the capability to handle revenue management itself (low organizational capability), the perceived specificity of revenue management becomes less important because their choice is limited. On the other hand, if the property does have the capability to handle revenue management (high organizational capability), perceived specificity of revenue management becomes more important on the outsourcing decision of the property.

This study focused on lodging properties that are located in the USA. The survey questionnaire and scales are gathered from already established scales in the outsourcing field, with a native English editor used to check the quality and clarity of wording. The survey was

also checked by professionals in academia and experts in the lodging field for content validity. The email list of properties was obtained from STR (Smith Travel Research), a professional company that collects lodging related geographic, non-geographic and revenue related metrics. The study utilized an online survey tool, Qualtrics, to collect self-administered survey data based on revenue management strategies. The survey questionnaire was published online and invitation letters were sent to hotel properties.

As research in the area of revenue management is still in its relative infancy, this study has attempted to contribute to the body of knowledge by examining the important concepts of RM system implementation strategies and resulting performance. By creating and testing a model based on the strongly grounded theories of transaction cost economics and the resource-based view, the study builds upon a solid theoretical framework for its base. As well, the concept of organizational capacity adds an important factor in the consideration of revenue management decisions. The findings of the second study highlight the variety of approaches and corresponding performance for US hotels, giving us insights into the importance of selecting the strategy that is optimal for a given property.

Of note, the results showing the low performance of third party outsourcing were somewhat surprising. It would hold to reason in most cases that a third party outside of the chain's control would still feature a high level of specialization in revenue management, thus performing equally or superior to the hotels themselves. In some cases, this could be attributed to property managers either not realizing the benefits of proper revenue management or relegating the function as merely another department to be maintained. In these cases, the specific needs of the property may not be addressed, and thus the full levels of potential benefits from revenue management procedures are never realized.

With a constantly advancing level of technology, the premise of this study becomes even more important for the understanding of revenue management decisions. As newer software is able to utilize more sophisticated techniques resulting from Big Data and data analytic methods, the level of organizational capability, asset specificity and uncertainty are almost certain to change within the near future. Continuations of this stream of literature should acknowledge the increasing complexity due to these techniques and weigh the ability for third party, centralized hubs and in house to handle these types of approaches appropriately. Simultaneously, the resulting performance of these strategies may also be profoundly affected due to a higher level of precision in tracking customer data and understanding seasonal trends on a more detailed level.

Outsourcing decisions could be driven by cost reduction, access to superior techniques (algorithmic approaches, system integration, economic and social data, etc.), increasing available time for managers, an increase in focus on core capabilities and access to expertise in the field where outsourcing companies should focus on their efforts to enhance their marketing strategies. Firms should take stock of what their RM capabilities are in an effort to identify specific components, which may be able to be more efficiently managed by third party outsourcing entities with higher skills and capabilities in comparison to certain functions, which may be more effectively managed in-house. In this fashion, properties are able to create a more optimal mixed strategy in an effort to produce superior performance levels.

Overall, what should and does matter to a hotel firm is the ability for whatever chosen type of revenue management system to optimize revenue. If financial performance and related firm value increase, the decision should be deemed correct despite the possibility of not realizing its full potential. The optimal solution may of course lie in some mixture of strategies that would require trial and error on the part of hotel properties, before finding the right combination of

resource utilization and transaction efficiency. Of course, there will undoubtedly be other methods, which are developed as a response to a more connected business environment and its consumers. As the lodging industry constantly reinvents itself, only time will tell what the future holds for the concept of revenue optimization.

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Appendix A: Chapter 5 - EFA Results

Appendix A presents detailed results of EFA analysis that discussed and summarized in chapter 5.

A.1 Exploratory factor analysis of outsourcing intention

This scale is the dependent variable for the outsourcing intention analysis. It was adapted and reworded from Saaksjarvi and Morel (2010)'s intention to purchase scale for the intention of revenue management outsourcing. KMO result is 0.73, which indicates that we have a good measure of sampling adequacy. A significant Bartlett's test of sphericity ($p=0.00$) indicates overall significance for all correlations within a correlation matrix. This scale is an unidimensional scale with eigenvalue of 2.51 and explains 83.7 percent of the total variance. Factor loadings are very high (lowest is 0.89) and reliability coefficient (Cronbach's alpha) is 0.9 (Table A.1).

Table A. 1: EFA - Outsourcing intention

<i>Factors</i>	<i>Mean</i>	<i>SD</i>	<i>Factor Loadings</i>	<i>Communality</i>	<i>Reliability Coefficient</i>
Outsourcing Intention					0.90
How positive or negative is your judgment toward outsourcing the revenue management system?	3.73	1.76	0.91	0.84	
How appealing do you (or the hotel management) find the revenue management system outsourcing option?	3.55	1.84	0.94	0.89	
How likely is your hotel to outsource the revenue management system in the next 5 years?	3.15	2.05	0.89	0.79	
Eigenvalue			2.51		
Explained variance by factors (%)			83.69%		
KMO Measure of Sampling Adequacy	0.73				
Bartlett's Test of Sphericity	0.00				

Note: Items loading less than 0.4 was omitted. Extraction method: principal component analysis. Rotation method: Varimax with Kaiser normalization.

A.2 Exploratory factor analysis of specificity and uncertainty

Asset specificity and uncertainty are the main independent variables used in the analysis of outsourcing intention. The study adapted measures from Poppo and Zenger (2002) and Jain and Thietart (2013) and was reworded for a revenue management context. KMO measure of sampling adequacy resulted in values of 0.64 and 0.84, which shows good measure of sample. The overall significance of model is significant, as indicated by Bartlett's test of sphericity ($p=0.00$). Both of the scales have eigenvalue of 2.15 and 3.03, and explain 69.7 and 75.6 percent of the total variance respectively. Factor loadings vary from 0.53 to 0.90 and reliability coefficients are 0.77 and 0.89 for specificity and uncertainty, respectively (Table A.2 and A.2.1).

Table A. 2: EFA - Specificity

<i>Factors</i>	<i>Mean</i>	<i>SD</i>	<i>Factor Loadings</i>	<i>Communality</i>	<i>Reliability Coefficient</i>
Specificity					0.77
To what degree should revenue managers acquire property specific information to adequately perform RM functions?	6.20	1.17	0.88	0.78	
To what degree should the revenue management system be custom-tailored to the property?	6.02	1.25	0.89	0.80	
How costly would it be to switch your revenue management system to another type of strategy?	5.70	1.24	0.73	0.53	
Eigenvalue			2.15		
Explained variance by factors (%)			69.78%		
KMO Measure of Sampling Adequacy	0.64				
Bartlett's Test of Sphericity	0.00				

Note: Items loading of less than 0.4 were omitted. Extraction method: principal component analysis. Rotation method: Varimax with Kaiser normalization.

Table A.2.1: EFA - Uncertainty

<i>Factors</i>	<i>Mean</i>	<i>SD</i>	<i>Factor Loadings</i>	<i>Communality</i>	<i>Reliability Coefficient</i>
Uncertainty					0.89
How easy is it to evaluate the performance requirements of the revenue management function?	3.42	1.37	0.83	0.69	
How easy is it to evaluate the human resource competencies required for the RM function?	3.49	1.49	0.90	0.82	
How easy is it to evaluate the activities needed for the RM function?	3.30	1.47	0.90	0.80	
How easy is it to evaluate the changes in technology related to the revenue management function?	3.67	1.43	0.85	0.73	
Eigenvalue			3.03		
Explained variance by factors (%)			75.72%		
KMO Measure of Sampling Adequacy	0.84				
Bartlett's Test of Sphericity	0.00				

Note: Items loading of less than 0.4 were omitted. Extraction method: principal component analysis. Rotation method: Varimax with Kaiser normalization.

A.3 Exploratory factor analysis of organizational capability

Organizational capability is an important indicator of hotel properties' ability to complete given tasks and it may have a moderating effect on the specificity. The study adapted measurement from Lahiri et al. (2012) and reworded for revenue management context. KMO result is 0.86, which indicates we have a good measure of sampling adequacy. A significant Bartlett's test of sphericity ($p=0.00$) indicates overall significance of all correlations within a correlation matrix. This scale is unidimensional with eigenvalue of 3.4 and explains 86 percent of the total variance. Factor loadings are very high (lowest is 0.92) and reliability coefficient (Cronbach's alpha) is 0.95 (Table A.3).

Table A. 3: EFA - Organizational capability

<i>Factors</i>	<i>Mean</i>	<i>SD</i>	<i>Factor Loadings</i>	<i>Communality</i>	<i>Reliability Coefficient</i>
Organizational Capability					0.95
We manage our human resources efficiently.	5.61	1.07	0.93	0.86	
We manage our information systems efficiently.	5.58	1.14	0.92	0.85	
We manage various revenue management-related changes efficiently.	5.57	1.11	0.93	0.86	
We manage to satisfy most of our revenue management requirements.	5.70	1.09	0.94	0.88	
Eigenvalue			3.44		
Explained variance by factors (%)			86.05%		
KMO Measure of Sampling Adequacy	0.86				
Bartlett's Test of Sphericity	0.00				

Note: Items loading less than 0.4 were omitted. Extraction method: principal component analysis. Rotation method: Varimax with Kaiser normalization.

A.4 Exploratory factor analysis of attitude toward RM outsourcing

The study adapted the attitude toward RM outsourcing measure from Gewald et al. (2006) and was reworded for the revenue management context. KMO result is 0.84, which indicates we have a good measure of sampling adequacy. A significant Bartlett's test of sphericity ($p=0.00$) indicates overall significance of all correlations within a correlation matrix. This scale is unidimensional with eigenvalue of 3.44 and explains 86 percent of the total variance. Factor loadings are very high (lowest is 0.92) and reliability coefficient (Cronbach's alpha) is 0.95 (Table A.4).

Table A. 4: EFA - Attitude toward outsourcing

<i>Factors</i>	<i>Mean</i>	<i>SD</i>	<i>Factor Loadings</i>	<i>Communality</i>	<i>Reliability Coefficient</i>
Attitude					0.95
Overall, my attitude towards the outsourcing of the revenue management function is positive.	3.68	1.59	0.93	0.87	
The outsourcing of business processes is an attractive alternative to in-house revenue management.	3.44	1.53	0.94	0.88	
I believe that the benefits of outsourcing revenue management function outweigh the associated risk.	3.47	1.55	0.92	0.84	
Overall, the outsourcing of the revenue management function provides our hotel with added value.	3.44	1.52	0.92	0.85	
Eigenvalue			3.44		
Explained variance by factors (%)			86.08%		
KMO Measure of Sampling Adequacy	0.84				
Bartlett's Test of Sphericity	0.00				

Note: Items loading less than 0.4 were omitted. Extraction method: principal component analysis. Rotation method: Varimax with Kaiser normalization.

A.5 Exploratory factor analysis of perceived risk toward RM outsourcing

This study also adapted the perceived risk toward RM outsourcing measure from Gewald et al. (2006) and was reworded for the revenue management context. KMO result is 0.73, which indicates we have a good measure of sampling adequacy. A significant Bartlett's test of sphericity ($p=0.00$) indicates overall significance of all correlations within a correlation matrix. This scale is unidimensional with eigenvalue of 2.39 and explains 79.6 percent of the total variance. Factor loadings are high (lowest value is 0.88) and reliability coefficient (Cronbach's alpha) is 0.87 (Table A.5).

Table A. 5: EFA - Perceived risk toward outsourcing

<i>Factors</i>	<i>Mean</i>	<i>SD</i>	<i>Factor Loadings</i>	<i>Communality</i>	<i>Reliability Coefficient</i>
Perceived Risk					0.87
Outsourcing of the revenue management function is associated with a high level of risk.	4.81	1.25	0.88	0.77	
There is a high level of risk that the expected benefits of outsourcing will not materialize.	4.74	1.26	0.88	0.78	
Overall, I consider the outsourcing of the revenue management function to be risky.	4.92	1.27	0.91	0.84	
Eigenvalue			2.39		
Explained variance by factors (%)			79.59%		
KMO Measure of Sampling Adequacy	0.73				
Bartlett's Test of Sphericity	0.00				

Note: Items loading less than 0.4 were omitted. Extraction method: principal component analysis. Rotation method: Varimax with Kaiser normalization.

Appendix B: Chapter 5 - CFA Results

Appendix B presents detailed results of CFA analysis that discussed and summarized in chapter 5.

B.1 CFA summary and validity of outsourcing intention

The outsourcing intention dimension is measured by three items as shown in Table B.1. The CFA results show satisfactory results for this scale. First, chi square has a value of 0, as when the model fits the data perfectly, the probability level cannot be computed and has zero degrees of freedom with zero chi-square statistics. The reason for these results can be explained as “changing the scale unit of the unobserved error variable does not change the overall model fit” (Arbuckle, 2005). Such a model is called saturated or a just-identified model (Arbuckle, 2005). Because a probability level cannot be assigned to chi-square, we should check other fit indices. The RMSEA and SRMR was 0.00 and is considered a good fit if less than 0.05, higher than 0.90 GFI (0.94), CFI (1.00), and TLI (1.00) All of these values show a very good fit between the model and the data.

The standardized loadings of all items were higher than 0.81. The squared multiple correlations also ranged from 0.65 to 0.92. The standardized loadings were used as indicator variables and could be used to calculate composite reliability (Fornell & Larcker, 1981) with our result showing composite reliability of 0.91, which is much higher than the recommended threshold level of 0.70 (Hair et al., 2010). The average variance extracted value of outsourcing intention is also 0.77 and was higher than the recommended value of 0.50. Overall, considering these results, we can argue that outsourcing intention dimension as measured by the adapted three items resulted in good fit indices and reliability supporting convergent validity, (Flynn,

Sakakibara, Schroeder, Bates, & Flynn, 1990) and the data should be accepted for further analysis.

Table B. 1: CFA - Outsourcing intention

<i>Factors</i>	<i>Standardized Loading</i>	<i>z value</i>	<i>Error Variance</i>	<i>Squared Multiple Correlations</i>	<i>AVE</i>	<i>CR</i>
Outsourcing Intention					0.77	0.91
How positive or negative is your judgment toward outsourcing the revenue management system?	0.86	37.77	0.26	0.74		
How appealing do you (or the hotel management) find the revenue management system outsourcing option?	0.96	55.47	0.08	0.92		
How likely is your hotel to outsource the revenue management system in the next 5 years?	0.81	29.59	0.35	0.65		
Fit Index	Value					
Chi-Square (χ^2)	0.00 (1.00)					
RMSEA	0.00					
GFI	0.94					
CFI	1.00					
TLI	1.00					
SRMR	0.00					

AVE (Average Variance Extracted); CR (Composite Reliability); RMSEA (Root mean Square Error of Approximation); GFI (Goodness of Fit Index); CFI (Comparative Fit Index); TLI (Tucker - Lewis Index); SRMR (Standardized Root Mean Squared Residual)

B.2 CFA summary and validity of specificity

The specificity scale was measured by three items as shown in Table B.2. The CFA table shows satisfactory results for this dimension. First, chi square has a value of 13.36 ($p=0.42$) which is a good sign for not having significant results, but we should also check other fit indices. The RMSEA (0.01) and SRMR (0.02) are considered a good fit if less than 0.05. Values higher than 0.90 are appropriate for GFI (0.99), CFI (0.99), and TLI (0.99), showing a very good fit between the model and the data.

The standardized loadings of all items were acceptable with the lowest value of third item (0.47). The squared multiple correlations ranged from 0.23 to 0.81. The standardized loadings were also used as indicator variables and could be used to calculate composite reliability (Fornell & Larcker, 1981). Our result shows a composite reliability of 0.78, which is higher than the recommend threshold level of 0.70 (Hair et al., 2010). The average variance extracted value of outsourcing intention is also 0.56 and higher than the recommended value of 0.50. Overall, considering these results we can argue that specificity dimension as measured by the adapted three items has good fit indices and reliability supporting convergent validity (Flynn et al., 1990) and should be accepted for further analysis.

Table B. 2: CFA - Specificity

<i>Factors</i>	<i>Standardized Loading</i>	<i>z value</i>	<i>Error Variance</i>	<i>Squared Multiple Correlations</i>	<i>AVE</i>	<i>CR</i>
Specificity					0.56	0.78
To what degree should revenue managers acquire property specific information to adequately perform RM functions?	0.81	17.09	0.35	0.65		
To what degree should the revenue management system be custom-tailored to the property?	0.90	19.02	0.19	0.81		
How costly would it be to switch your revenue management system to another type of strategy?	0.47	8.02	0.77	0.23		
Fit Index	Value					
Chi-Square (χ^2)	13.36 (0.42)					
RMSEA	0.01					
GFI	0.99					
CFI	0.99					
TLI	0.99					
SRMR	0.02					

AVE (Average Variance Extracted); CR (Composite Reliability); RMSEA (Root mean Square Error of Approximation); GFI (Goodness of Fit Index); CFI (Comparative Fit Index); TLI (Tucker - Lewis Index); SRMR (Standardized Root Mean Squared Residual)

B.3 CFA summary and validity of uncertainty

The uncertainty dimension is measured by four items as shown in Table B.3. The CFA table shows satisfactory results for this dimension. First, chi square has a value of 13.34 ($p=0.42$) which is a good sign for not having significant results, but we should also check other fit indices. The RMSEA (0.01) and SRMR (0.02) are considered a good fit if less than 0.05. Values higher than 0.90 are appropriate for GFI (0.99), CFI (0.99), and TLI (0.99), showing a very good fit between the model and the data. The standardized loadings of all items were acceptable ranging from 0.75 to 0.88. The squared multiple correlations also ranged from 0.23 to 0.44. The standardized loadings were used as indicator variables and could be used to calculate composite reliability (Fornell & Larcker, 1981). Our result shows a composite reliability of 0.89, which is higher than the recommended threshold level of 0.70 (Hair et al., 2010). The average variance extracted value of outsourcing intention is also 0.66 and was higher than the recommended value of 0.50. Overall, considering these results, we can argue that the uncertainty dimension as measured by the adapted four items show good fit indices and reliability supporting convergent validity (Flynn et al., 1990) and should be accepted for further analysis.

Table B. 3: CFA - Uncertainty

<i>Factors</i>	<i>Standardized Loading</i>	<i>z value</i>	<i>Error Variance</i>	<i>Squared Multiple Correlations</i>	<i>AVE</i>	<i>CR</i>
Uncertainty					0.66	0.89
How easy is it to evaluate the performance requirements of the revenue management function?	0.75	21.43	0.44	0.56		
How easy is it to evaluate the human resource competencies required for the RM function?	0.86	34.54	0.27	0.73		
How easy is it to evaluate the activities needed for the RM function?	0.88	37.46	0.23	0.77		
How easy is it to evaluate the changes in technology related to the revenue management function?	0.77	23.86	0.40	0.60		
Fit Index	Value					
Chi-Square (χ^2)	13.34 (0.42)					
RMSEA	0.01					
GFI	0.99					
CFI	0.99					
TLI	0.99					
SRMR	0.02					

AVE (Average Variance Extracted); CR (Composite Reliability); RMSEA (Root mean Square Error of Approximation); GFI (Goodness of Fit Index); CFI (Comparative Fit Index); TLI (Tucker - Lewis Index); SRMR (Standardized Root Mean Squared Residual)

B.4 CFA summary and validity of organizational capability

The organizational capability dimension was measured by four items as shown in Table B.4. The CFA table shows satisfactory results for this dimension. First, chi square has a value of 13.34 ($p=0.904$), which is a good sign for not having significant results but we should also check other fit indices. The RMSEA (0.01) and SRMR (0.02) are considered a good fit if less than 0.05. Values higher than 0.90 are appropriate for GFI (0.99), CFI (0.99), and TLI (0.99), showing a very good fit between the model and the data.

The standardized loadings of all items were acceptable ranging from 0.84 to 0.91. The squared multiple correlations also ranged from 0.71 to 0.84. The standardized loadings were used as indicator variables and could be used to calculate composite reliability (Fornell & Larcker, 1981). Our results show a composite reliability of 0.93 which is higher than the recommended threshold level of 0.70 (Hair et al., 2010). The average variance extracted value of outsourcing intention is also 0.75 and higher than the recommended value of 0.50. Overall, considering these results we can argue that organizational capability dimension as measured by adapted four items resulted in good fit indices and reliability supporting convergent validity (Flynn et al., 1990) and should be accepted for further analysis.

Table B. 4: CFA - Organizational capability

<i>Factors</i>	<i>Standardized Loading</i>	<i>z value</i>	<i>Error Variance</i>	<i>Squared Multiple Correlations</i>	<i>AVE</i>	<i>CR</i>
Organizational capability					0.75	0.93
We manage our human resources efficiently.	0.84	33.29	0.29	0.71		
We manage our information systems efficiently.	0.87	39.31	0.24	0.76		
We manage various revenue management-related changes efficiently.	0.91	51.05	0.16	0.84		
We manage to satisfy most of our revenue management requirements.	0.84	35.29	0.29	0.71		
Fit Index	Value					
Chi-Square (χ^2)	0.01 (0.904)					
RMSEA	0.00					
GFI	0.93					
CFI	1.00					
TLI	1.00					
SRMR	0.00					

AVE (Average Variance Extracted); CR (Composite Reliability); RMSEA (Root mean Square Error of Approximation); GFI (Goodness of Fit Index); CFI (Comparative Fit Index); TLI (Tucker - Lewis Index); SRMR (Standardized Root Mean Squared Residual)

B.5 CFA summary and validity of attitude

The attitude towards revenue management dimension was measured by four items as shown in Table B.5. The CFA table shows satisfactory results for this dimension. First, chi square has a value of 0.67 ($p=0.414$), which is a good sign for not having significant results but we should also check other fit indices. The RMSEA (0.00) and SRMR (0.00) are considered a good fit if less than 0.05. Values higher than 0.90 are appropriate for GFI (0.96), CFI (1.00), and TLI (1.00), showing a very good fit between the model and the data.

The standardized loadings of all items were acceptable ranging from 0.86 to 0.95. The squared multiple correlations also ranged from 0.74 to 0.91. The standardized loadings were used as indicator variables and could be used to calculate composite reliability (Fornell & Larcker, 1981). Our results show a composite reliability of 0.95, which is higher than the recommended threshold level of 0.70 (Hair et al., 2010). The average variance extracted value of outsourcing intention is also 0.83 and was higher than the recommended value of 0.50. Overall, considering these results, we can argue that attitude towards the revenue management dimension as measured by adapted four items has good fit indices and reliability supporting convergent validity (Flynn et al., 1990) and should be accepted for further analysis.

Table B. 5: CFA - Attitude toward outsourcing

<i>Factors</i>	<i>Standardized Loading</i>	<i>z value</i>	<i>Error Variance</i>	<i>Squared Multiple Correlations</i>	<i>AVE</i>	<i>CR</i>
Attitude					0.83	0.95
Overall, my attitude towards the outsourcing of the revenue management function is positive.	0.89	51.98	0.22	0.78		
The outsourcing of business processes is an attractive alternative to in-house revenue management.	0.95	105.38	0.09	0.91		
I believe that the benefits of outsourcing revenue management function outweigh the associated risk.	0.86	43.93	0.26	0.74		
Overall, the outsourcing of the revenue management function provides our hotel with added value.	0.93	85.01	0.13	0.87		
Fit Index	Value					
Chi-Square (χ^2)	0.67 (0.414)					
RMSEA	0.00					
GFI	0.96					
CFI	1.00					
TLI	1.00					
SRMR	0.00					
AVE (Average Variance Extracted); CR (Composite Reliability); RMSEA (Root mean Square Error of Approximation); GFI (Goodness of Fit Index); CFI (Comparative Fit Index); TLI (Tucker - Lewis Index); SRMR (Standardized Root Mean Squared Residual)						

B.6 CFA summary and validity of perceived risk

The perceived risk toward revenue management was measured by three items as shown in Table B.6. The CFA table shows satisfactory results for this dimension. First, chi square has a value of 0, as when the model fits the data perfectly, the probability level cannot be computed and has zero degrees of freedom with zero chi-square statistics. The reason for having these results can be explained as “changing the scale unit of the unobserved error variable does not change the overall model fit” (Arbuckle, 2005). This type of model is called saturated or a just-

identified model (Arbuckle, 2005). Because the probability level cannot be assigned to chi-square, we should check other fit indices. The RMSEA and SRMR was 0.00 and is considered good fit if less than 0.05. While GFI (0.88) is less than 0.90, other fit indices such as CFI (1.00), and TLI (1.00) show a good fit between the model and the data.

The standardized loadings of all items were higher than 0.76. The squared multiple correlations also ranged from 0.58 to 0.77. The standardized loadings were used as indicator variables and could be used to calculate composite reliability (Fornell & Larcker, 1981). Our results show a composite reliability of 0.87, which is higher than the recommended threshold level of 0.70 (Hair et al., 2010). The average variance extracted value of outsourcing intention is also 0.70 and was higher than the recommended value of 0.50. Overall, considering these results, we can argue that the perceived risk dimension as measured by adapted three items has good fit indices and reliability supporting convergent validity (Flynn et al., 1990) and should be accepted for further analysis.

Table B. 6: CFA - Perceived risk

<i>Factors</i>	<i>Standardized Loading</i>	<i>z value</i>	<i>Error Variance</i>	<i>Squared Multiple Correlations</i>	<i>AVE</i>	<i>CR</i>
Perceived risk					0.70	0.87
Outsourcing of the revenue management function is associated with a high level of risk.	0.86	30.22	0.26	0.74		
There is a high level of risk that the expected benefits of outsourcing will not materialize.	0.76	21.66	0.42	0.58		
Overall, I consider the outsourcing of the revenue management function to be risky.	0.88	31.97	0.23	0.77		
Fit Index	Value					
Chi-Square (χ^2)	0.00 (1.00)					
RMSEA	0.00					
GFI	0.88					
CFI	1.00					
TLI	1.00					
SRMR	0.00					
AVE (Average Variance Extracted); CR (Composite Reliability); RMSEA (Root mean Square Error of Approximation); GFI (Goodness of Fit Index); CFI (Comparative Fit Index; TLI (Tucker - Lewis Index); SRMR (Standardized Root Mean Squared Residual)						

Confirmatory factory analysis is used to ensure each constructs' unidimensionality and validity. Therefore, the unidimensionality and validity of each construct was examined, followed by testing the overall measurement model.