

Customer Perceptions of Restaurant Cleanliness: A Cross Cultural Study

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(ABSTRACT)

What is a clean restaurant in customers' viewpoints? Restaurant cleanliness is considered one of the most significant conditions when customers evaluate overall restaurant quality or decide their levels of satisfaction. However, there have been few studies of perceptions of restaurant cleanliness in customers' eyes. Previous studies were found to use inconsistent concepts of restaurant cleanliness when evaluating restaurant cleanliness. For example, some measurement scale of restaurant quality or customer satisfaction includes only items related to a restaurant's interior appearance to measure the restaurant cleanliness. Some researchers have also included items related to server's appearance. In other studies, overall images of a restaurant were used to evaluate its cleanliness.

This study attempts to investigate the customers' perceptions of restaurant cleanliness. Understanding what customers consider when they evaluate a restaurant's cleanliness can be beneficial for hospitality managers who can use the information to increase their restaurant's quality and to satisfy their customers. In addition, this study was conducted with two different cultural groups of customers: Westerners and Asians. Understanding how different cultures perceive restaurant cleanliness can help hospitality managers who plan to expand their business in the global market.

The results of this study indicated that the items of restroom personal hygiene, restroom appearance and server's behavior all have a positive relationship with customers' restaurant quality evaluations. The level of importance of restaurant cleanliness dimensions was found to be similar between the Western and Asian samples. The server's behavior, restroom appearance and signage were found to be the most important dimensions for both groups. However, restroom personal hygiene was found to be the only dimension ranked differently by the two groups in the study. Westerners weighed the restroom personal hygiene as more important than did Asian respondents. Asian groups were found to have higher expectations for overall restaurant cleanliness dimensions than Western groups.

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CHAPTER I

INTRODUCTION

STATEMENT OF PROBLEM

Restaurant cleanliness has been perceived by researchers to be one of key factors in customers' restaurant quality evaluations (Becker, Murrmann et al. 1999; Barber and Scarcelli 2009; Jang and Liu 2009). Researchers indicated that customers will select restaurants that meet their standards for quality and value; restaurateurs who ignore this will see customer traffic decline as guests support competing restaurants (Stevens, Knutson et al. 1995). Delivering satisfactory customer service is the most important aspect of managing service quality within hospitality firms as well (Butcher, Sparks et al. 2009). Therefore, researchers have noted that in a competitive service business environment, managers should understand their customers and provide service that increases their ability to attract new customers and to win the loyalty of existing customers, as well as increasing the positive word-of-mouth effect (Boulding, Kalra et al. 1993; Berkman, Lindquist et al. 1997; Joseph, Brady et al. 2000; Walter, Edvardsson et al. 2010). In this manner, understanding customers' expectations or perceptions of restaurant cleanliness can be essential for successful restaurant management. However, it is found that previous studies used inconsistent concepts of restaurant cleanliness. For example, some studies used only the physical environment such as the interior of the dining area to evaluate restaurant cleanliness (Parasuraman, Zeithaml et al. 1988; Ryu and Jang 2008); others used restroom condition or the appearance of customer's contact employee (Becker, Murrmann et al. 1999; Barber and Scarcelli 2009; Jang and Liu 2009; Barber and Scarcelli 2010). In a Chinese study, restaurant cleanliness was evaluated as the overall images of the restaurant (Jang and Liu 2009). One scale has been developed to measure restaurant cleanliness, but it deals with physical environment quality only (Barber and Scarcelli 2010). However, when a customer evaluates the overall quality of a service, diverse dimensions have an influence on his or her rational and emotional perceptions (Berry, Wall et al. 2006). Therefore, it can be considered that restaurant cleanliness evaluation may be affected by diverse factors that customers perceive to be significant.

This study identifies the dimensions affecting customers' perceptions of restaurant cleanliness and

proceeds to modify the previously used restaurant cleanliness scale. Using the modified scale, this study investigates which dimensions have a positive effect on customer service quality evaluation.

In addition, this study compares the perceptions of restaurant cleanliness between two different cultural groups: Westerners and Asians.

OBJECTIVES OF THE STUDY

The primary objective of this study is to examine customer perceptions of cleanliness in table-service restaurants by modifying previous restaurant cleanliness measurement scale. The underlying assumption is that restaurant cleanliness is a significant factor in positive or negative determination of customer perceptions of restaurant quality. If this assumption is correct, then what kinds of items or dimensions affect customer's perceptions of restaurant cleanliness? Is the physical environment the most important consideration for a customer? If so, which items are seen as significant? Do evaluations of employees have more significance in a customer's decision about the cleanliness of a restaurant than factors in the physical environment? If so, to which items do restaurant guests pay the most attention? This study aims to develop items to evaluate restaurant cleanliness from a customer's point of view and modify the previous restaurant cleanliness scale(Barber and Scarcelli 2010). This study also compares two different cultures, Western and Asian. This comparison will be helpful to companies seeking opportunities in overseas markets, assisting them in developing appropriate strategies based on the results.

The following research objectives were developed for this research to:

1. Identify which items/dimensions restaurant customers perceive as important when they evaluate a restaurant's cleanliness.
2. Modify the previous restaurant cleanliness scale using the findings.
3. Identify the importance of cleanliness in restaurant customers' evaluations of service quality.
4. Identify and analyze whether customers from different cultural backgrounds have different viewpoints about restaurant cleanliness.

RESEARCH QUESTIONS

Based on these objectives, this study will address the following two main research questions:

- 1. Do customers consider cleanliness to be an important factor in restaurant service quality evaluation?**
 - 1-a.** Are functional cleanliness clues important to customers' restaurant service quality evaluations?
 - 1-b.** Are mechanic cleanliness clues important to customers' restaurant service quality evaluations?
 - 1-c.** Are humanic cleanliness clues important to customers' restaurant service quality evaluations?
- 2. Are there significant differences in restaurant cleanliness evaluations among customers from different cultures?**

DEFINITION OF TERMS

Service Quality: The differences between customer expectations of a service and their perceptions of the service delivered; also an overall attitude of customer's encounters with the service provider(Zeithaml, Parasuraman et al. 1990).

Satisfaction: The expectancy confirmation framework, which is a function of the degree to which expectations match, exceed, or fall short of product or service performance (Oliva, Oliver et al. 1992)

Service Encounter: The moment of social interaction between the service customer and the service provider; focuses on the interpersonal element of service firm performance(Bitner, Booms et al. 1990).

Service Behaviors: A wide range of behaviors with important implications for organizational functioning that share the central notion of intent to benefit others through service(Brief and Motowidlo 1986)

Sub-culture: Also called operating culture, sub-culture is identified through a selected combination of demographic and psychographic variables that signify sub-group identity based upon a set of shared needs, experiences, and activities(Becker and Murrmann 1999).

ORGANIZATION OF THE STUDY

This study is organized into five chapters with the specifics as follows.

Chapter I discusses research background, research questions and objectives and definitions of key terms used in this study.

Chapter II provides a review of literature on customer service quality evaluations and cleanliness in the restaurant industry.

Chapter III presents the methodology of the study. It explains steps involved in developing a restaurant cleanliness scale, sampling, data collection procedures and analysis.

Chapter IV provides the results of the statistical analysis.

Chapter V includes findings of the study in relation to the hypotheses, and provides managerial implications. Limitations of the study and suggestions for future research are also discussed in this chapter.

SUMMARY

All businesses must find ways to attract new customers and, at the same time, win the loyalty of their current customers. Satisfying customers is the most fundamental factor for maintaining and growing a business. In order to satisfy its customers, a company must provide products and services of consistently good quality to them. However, services have unique characteristics compared to products so managing service quality is considered more complex than product quality management. Researchers examined various factors affecting customer satisfaction in the restaurant experience and several of them suggested restaurant cleanliness affects customer expectation or perception of restaurant service quality (Becker, Murrmann et al. 1999; Barber and Scarcelli 2009; Barber and Scarcelli 2010) To obtain better understanding of cleanliness from a customer's point of view, this study will investigate cleanliness in restaurant service. In addition, this study compares the perceptions of restaurant cleanliness between two different cultures: Western and Asian.

CHAPTER II
REVIEW OF THE LITERATURE
INTRODUCTION

This study has three aims regarding restaurant cleanliness in service quality from a customer's point of view. First, this study aims to determine which items or dimensions of restaurant cleanliness are considered in customers' perceptions. Second, this study assesses the importance of restaurant cleanliness on customer's restaurant quality evaluation. Lastly, this study will look at whether there is a cultural difference regarding restaurant cleanliness between two cultures, Western and Asian

In order to accomplish these objectives, this chapter reviews the concepts of service quality and customer satisfaction, cleanliness in a restaurant industry, restaurant cleanliness measurement scale, customer-contact employees and cultural differences and service expectations.

SERVICE QUALITY & CUSTOMER SATISFACTION

Customer satisfaction has been discussed in the number of academic literature in the service field and researchers found that delivering superior service quality is a prerequisite for customer satisfaction (Parasuraman, Zeithaml et al. 1988; Bartikowski and Llosa 2004). Initially, Oliver (1993) (1993) suggested that service quality was the antecedent of customer satisfaction and many researchers supported his idea that satisfaction and perceived quality are highly interrelated and also that perceived quality is one of the core determinants of overall satisfaction (Churchill Jr and Surprenant 1982; Oliva, Oliver et al. 1992; Bitner and Hubbert 1994; Dabholkar, Shepherd et al. 2000).

Quality of service, however, is abstract and subjective because of the unique features of service such as intangibility, heterogeneity and inseparability of production and consumption (Parasuraman, Zeithaml et al. 1985). Thus, researchers considered delivering service or assessing service quality as posing a challenge compared to the problems and solutions of traditional product marketing (Berry 1980).

To assess the quality of a firm's service, researchers used consumers' perceptions of quality (Parasuraman, Zeithaml et al. 1988). According to Zeithaml(1988), perceived quality is the consumer's judgment about an entity's overall excellence or superiority. It is a form of attitude and results from a comparison of expectations with perceptions of performance(Zeithaml 1988). Customers compare their perceptions of the firm performance with what they believe the firm should offer to them. In other words, perceived service quality is viewed as the degree and direction of discrepancy between consumers' perceptions and expectation (Parasuraman, Zeithaml et al. 1985).

More specifically, if a customer perceives performance exceeds expectations, then the customer is satisfied. On the other hand, if perceived performance falls short of his or her expectations, then the customer is dissatisfied (Namkung and Jang 2007) Therefore, from the customer viewpoint, perceived quality is a highly subjective and differs based on those who judge the product or service(Holbrook and Corfman 1985).

Researchers found that customer's perceived quality of service or products and satisfaction are positively correlated with each other. Therefore, if a customer evaluates a product or service that has high quality then the customer may perceive high satisfaction (Oh 2000). Moreover, researchers suggested that perceived quality and satisfaction can be a good predictor of customer's intention to revisit. In other words, if customers believe a service is beyond their desired-service level, their favorable behavioral intentions such as revisit will be increased (Zeithaml, Berry et al. 1996).

Researchers examined the relationship between customer satisfaction and behavioral intentions in their studies(Fishbein and Ajzen 1975; Oliver 1981; Cronin Jr and Taylor 1992). For example, Oliver (1981) and Cronin &Taylor (1992) found that customer satisfaction may reinforce customer to use of a certain brand of service on a given occasion. Behavioral intention was firstly conceptualized by Fishbein and Ajzen (1975), and the term had been specified as a surrogate indicator of actual behavior in marketing studies. Certain behaviors such as saying positive things about the company to others, recommending the company or service to others, and being a loyal to the company can be indicators of favorable post purchase behavioral intentions (LaBarbera and Mazursky 1983; Frederick and Sasser 1990; Boulding, Kalra et al. 1993; Rust and Zahorik 1993). Conversely,

dissatisfied customers will show unfavorable behavioral intentions such as complaining, switching to competitors, and decreasing the number of business interactions with a company (Hirschman 1970; Fornell and Wernerfelt 1987; Zeithaml, Berry et al. 1996). Therefore, customer satisfaction can be a practical consideration of customers' post purchase behavioral intention such as a revisit or word of mouth which is essential to the success of business(Namkung and Jang 2007).

Based on these findings, scholars emphasized the importance of quality and they developed measuring instruments to assess quality. For example, SERVQUAL has been used in worldwide to assess customer service quality evaluation. This instrument was developed using banking, credit card, appliance repair or maintenance, long-distance telephone, and securities brokerage sectors for a sample. SERVQUAL was designed to measure the difference between customers' expectations for service performance prior to the service encounter and their subsequent perceptions of the service received and five dimensions, reliability, assurance, tangibles, empathy and responsiveness, were measured (Parasuraman, Zeithaml et al. 1985; Zeithaml, Parasuraman et al. 1990).

Reliability is the ability to perform the promised service consistently. Assurance is the knowledge of employees and their ability to convey trust and confidence. Tangibles are appearance of physical facilities, equipment personnel and communication materials. Empathy is the provision of caring, individualized attention to customer. Lastly, responsiveness is the willingness to help customers and to provide prompt service. (Zeithaml, Parasuraman et al. 1990).

Since SERVQUAL was developed, this model has been applied indiscriminately across a wide variety of services, but there were concerns that the model was not appropriate to identify characteristics most critical to successful service delivery in certain business setting such as the hospitality industry (Becker, Murrmann et al. 1999). Researchers argued that the five-sector solution is not relevant across service industries because when a SERVQUAL instrument is applied to specific industry settings, the instrument would foster omission of items which are critical to a proper service quality assessment (Saleh and Ryan 1991; Babakus and Boller 1992).

For example, the hospitality industry sectors are labor intensive, and the face-to-face interaction between service providers and their customers is an essential feature which differs from

such organizations as banks, credit card, repair and maintenance, and telephone companies that Zeithaml et al (1990) used to develop the SERVQUAL model (Becker, Murrmann et al. 1999).

More specifically, in the hospitality industry such as restaurants and hotels, product (meal or bed), behavior of employees, and environment of restaurant or hotel are transferred between the service customer and service provider (Reuland, Choudry et al. 1985). Therefore, these three attributes should be considered by hospitality business owners to satisfy their customers. For these reasons, scholars developed service quality measure instruments for the hospitality industry such as LODGSERV(Knutson, Stevens et al. 1990), and DINESERV(Stevens, Knutson et al. 1995).

SERVICE QUALITY & CUSTOMER SATISFACTION IN THE RESTAURANT

According to the National Restaurant Association, there were about 960,000 restaurants and foodservice outlets all throughout the United States and the association projected sales were \$604 billion in 2011 which is equal to 4percent of the U.S. gross domestic product. It is the nation's second-largest private sector employer employing 12.8 million individuals (National Restaurant Association [NRA], 2011). The restaurant industry has largely grown and is substituting home cooked meals for both eat-in and take out paralleling at change in the American way of life which increasingly has longer work hours and heavy family schedules that leave Americans with less time to cook (Andaleeb and Conway 2006). According to the 2011 restaurant industry fact sheet from the NRA, 43% of adults responded that restaurants are an essential part of their lifestyle and 86% of adults said going out to a restaurant is a nice break from the monotony of daily life. Customers have more options in their restaurant selections than before, and customers today are not static as they test a variety of goods and services in order to achieve a different decision (Williams 2000). Therefore the restaurant industry is more highly competitive environment than in the past.

Restaurant managers now need to understand the uniqueness of their customers and what contributes to their value to retain and attract new customers and at the same time remain competitive and profitable (Walter, Edvardsson et al. 2010). Researchers have used SERVQUAL to measure the service quality of a restaurant, however; attempts have been made to develop a new measurement

instrument that is more appropriate to the restaurant industry. For example, DINESERV has been used as a reliable, relatively simple tool for determining how customers view a restaurant's quality: and it measures services in terms of five factors-good quality, service quality, price and value, atmosphere, and convenience (Stevens, Knutson et al. 1995).

Delivering quality, in either products or services, is a significant component of the competitive strategy (Becker, Murrmann et al. 1999). Academic researchers have conducted many studies regarding restaurant service quality and customer satisfaction, and they found that the following variables contribute to restaurant customer satisfaction: food quality, human service, physical environment, cleanliness, convenient location, speedy service, and reasonable price and value (Lee and Hing ; Stevens, Knutson et al. 1995; Pettijohn 1997; Qu 1997; Wall and Berry 2007; Barber and Scarcelli 2009).

Wall and Berry (2007) suggested three terms: functional, mechanic and humanic clues as three dimensions that transferred from restaurant service provider to the customer. A functional clue is the technical quality of the food itself and the accuracy or efficiency of the service. A mechanic clue indicates nonhuman elements in the service environment consisting of the ambience and other design including equipment, facility layout, lighting, and color. The last clue is a humanic one which covers the performance, behavior, and appearance of the employees. They identified that dining is a multilayered experience so at least these three types of clues affect a customer's evaluation of a particular establishment (Wall and Berry 2007).

RESTAURANT CLEANLINESS

Cleanliness is an essential aspect of the restaurant industry. As dining-out rate has been increased, the issues of restaurant cleanliness and food safety have become increasingly emphasized from both managerial and customer viewpoint. According to the Center for Science in the Public Interest (2008), overall half of all food-borne illnesses were contracted from dining on food prepared outside the home and many of the food-borne illnesses happened because restaurants didn't follow proper food handling steps.

As such, providing safe and clean restaurant environment by reducing the burden of disease from food is the responsibility of restaurant owners, employees, country and state health officials. In addition, the restaurant industry is facing a stricter regulatory environment. In 2009, five organizations, the U.S. Food and Drug Administration (FDA), the Centers for Disease Control and Prevention (CDC) of the U.S, the department of Health and Human Services (HHS), the Food Safety and Inspection Service of the U.S. and the U.S. department of Agriculture (USDA) released Food Code 2009. The Food Code offers guidelines aimed at prevention and reduction of food-borne illness and death from food produced at the retail level. The Food Code itself is not required but has been adopted by 48 of 56 states and territories which representing 79% of the U.S. population (FDA, 2011).

Food Code 2009 consists of eight chapters and each chapter releases information and guidelines for food safety and sanitary restaurant environment. It is found that Food Code 2009 has stricter regulation than the previous 2005 edition. For example, the recent edition suggests restaurants to hire at least one certified food protection manager. Also, “food allergy awareness” was additionally included to food safety training program (Food 2009).

Center for Disease Control [CDC] and academic scholars introduced dangerous problems in restaurant cleanliness.

For example, holding temperatures is one of the most important methods of controlling the growth of bacteria in food. Proper temperature control prevents many types of pathogens from multiplying to the levels that cause food-borne illness(Association 2010).

Second, inappropriate hand washing of a bacteria infected worker can cause food-borne illness and the report estimates this causes 20% of total food-borne illness (Todd, Greig et al. 2007). Hands are the main conduit spreading viruses and pathogens, and can carry millions of germs. Poor hand washing practices by foodservice workers can have disastrous and far-reaching consequences by contaminating food that is then served to dinners.

Third, FDA estimates that nearly 16 percent of full-service restaurants were not adequately cooking food (Food 2006). Undercooked meat, poultry, and eggs can harbor enough bacteria to sicken diners. Salmonella and E. coli O157:H7 are linked to the most harmful bacteria for undercooked

meats.

The fourth regards contaminated food contact surfaces. In 2004, FDA found that over 56 percent of full-service restaurants were not following appropriate guidelines for sanitizing equipment and food contact surfaces (Food 2006). Where bacteria exist, so does the prospect of cross-contamination. Counters and other food preparation surfaces that are inadequately cleaned or food preparation areas that are improperly separated, can promote the transfer of bacteria from one food to another, resulting in widespread contamination.

The fifth is food from unsafe sources food safety risks in a restaurant begins with the purchase of raw food from suppliers. Bacteria that exist in raw food can multiply and produce toxins if the food is inadequately refrigerated during shipping and handling, even before it reaches the restaurant. For products that are commonly served without cooking, such as raw oysters, leafy greens and some processed goods, contamination that occurs prior to entering the restaurant can go directly to a consumer at the table.

So far, this chapter looked at restaurant cleanliness from a managerial viewpoint. All aspects discussed above should be significantly considered by restaurant managers and employees for safe food and clean environment. However, it is also important to understand customer' expectations or perceptions of restaurant cleanliness. If a restaurant business manager or employee fully understands what aspects a customer considers in determining restaurant cleanliness then they can design their products and service to meet customers' expectations. Several scholars have conducted studies about restaurant cleanliness and they found relationship between customer satisfaction, service quality evaluation and restaurant cleanliness (Stevens, Knutson et al. 1995; Becker, Murrmann et al. 1999; Barber and Scarcelli 2009; Barber and Scarcelli 2010).

In 2004, Center for Science and Public Interest [CSPI] surveyed 1,200 consumers to identify five additional concerns in restaurant cleanliness from customers' view points. According to the survey, employee cleanliness and hygiene, especially employee hands (79%), presence of rodents and insects (63%), improper use of dirty wipe cloths (57%), presence of ill restaurant workers (56%), and bare hands coming into contact with food (55%) were considered by survey respondents (Klein, De

Waal et al. 2010).

Brewer and Rojas (2008) conducted study to investigate customer attitude toward food safety issues. In the study, they collected 402 data samples and according to their study, nearly half (47%) of the consumers responded that they consider eating safe very significant. Also, 42.6% of the total respondents believed food from a restaurant was the most likely source of food borne illness. Furthermore, the study indicated that consumers were very concerned about inspections of restaurant cleanliness (59%) (Brewer and Rojas 2008). As researchers introduced, restaurant customers were found to have some doubts for food safety and cleanliness.

As mentioned above, cleanliness is a key consideration in meeting, government and state regulations as well as to meeting restaurant consumer's standard of restaurant quality. Many studies found that cleanliness is a significant factor in a customers' evaluation of restaurant quality, which can affect customers' level of satisfaction (Zeithaml, Parasuraman et al. 1990; Pettijohn 1997; Qu 1997; Becker, Murrmann et al. 1999; Bienstock, DeMoranville et al. 2003; Threemitaya 2003; Aksoydan 2007; Barber and Scarcelli 2009; Jang and Liu 2009; Barber and Scarcelli 2010).

Bienstock et al.(2003) evaluated food safety and sanitation procedures in relation to customer perceptions of service quality in restaurants using three items; dining room cleanliness, restroom cleanliness and food safety. According to their study, unless food safety and cleanliness were obvious to customers, the link to service quality was not evident (Bienstock, DeMoranville et al. 2003). Threemitaya(2003) found, in Thailand, that restaurant hygiene and cleanliness were the first factors customers considered when dining out. Zeithaml et al.(1990) and Aksoydan(2007) suggested that food service establishments that failed to meet the standards of food hygiene and cleanliness expected by customers would be assessed as having poor or low quality service. Pettijohn et al.(1997) found quality, cleanliness, and value to be the three most important attributes customers consider in selecting fast-food restaurants. The cleanliness of the restroom was also found to be an important criterion when a customer evaluates the overall quality of a foodservice establishment (Klara 2004; Barber and Scarcelli 2009).

To date, however, there is no consistent instrument for measuring cleanliness in a restaurant.

A majority of the previous studies used items in the physical environmental to test a customer's perception of cleanliness in a restaurant. In particular, Barber and Scarcelli(2010) have developed a cleanliness measurement scale for restaurants which is the only cleanliness scale available for restaurant settings. Their scale included physical factors such as the exterior or interior of the restaurant, as well as restroom cleanliness. Since services are intangible and usually cannot be experienced prior to a purchase, customers tend to rely on tangible environmental clues to guide their expectations about a given service encounter (Shostack 1977). However, as mentioned earlier, service is a multilayered experience affected by numerous factors. Wall and Berry (2007) suggested these factors fall into three clues: functional, mechanic and humanic. Therefore, it is important to develop a reliable measure for cleanliness in restaurants that includes more than just physical environmental factors.

DINESERV, which is a widely-used restaurant service quality measurement scale, also restricts the dimension of 'cleanliness' to the facilities and staff members' appearance (Stevens, Knutson et al. 1995). In a study of Chinese restaurant service quality, 'cleanliness' is used vaguely to indicate customers' overall perception of a restaurant(Qu 1997). One study examined service staffs' visible sanitation practices to test customers' expectations of service quality using four items: neatness of hair style, cleanliness of hair, condition of nails and hands, and behavior in touching the surfaces of eating utensils (Becker, Murrmann et al. 1999).

Table 2.1 presents items related to restaurant cleanliness previously used to measure service quality in the literatures. These items are classified into three categories as functional, mechanic and humanic clues.

Table 2.1 Restaurant Cleanliness Related Items Categorized as Three Clues

Types of Service Clues	Items
Functional Clues	<ul style="list-style-type: none"> ▪ Food <ul style="list-style-type: none"> -Freshness -Presentation -Healthy menu options -Temperature of food ▪ Exterior of restaurant <ul style="list-style-type: none"> -Garden and driveway -Building exterior -Parking lot -Age of building -Neighborhood of restaurant ▪ Restroom appearance <ul style="list-style-type: none"> -Dirty or soiled sink -Dirty floor -Dirty, cracked wall, and ceiling tiles -Trash in toilets -Odor in restroom
Mechanic Clues	<ul style="list-style-type: none"> ▪ Interior of restaurant <ul style="list-style-type: none"> -Seat cushions -Carpet and floors -Windows -Furniture -Bar/lounge -Windowsills ▪ Restroom personal hygiene <ul style="list-style-type: none"> -No toilet paper -No soap -No hot water -No paper towels/drying device ▪ Dining room personal health <ul style="list-style-type: none"> -Place ware and eating utensils (plates, forks, etc.) -Glassware -Table cloth and napkins
Humanic Clues	<ul style="list-style-type: none"> ▪ Server's appearance <ul style="list-style-type: none"> -Hair style - Uniform -Hand and Nails -Accessories ▪ Server's behavior <ul style="list-style-type: none"> -Bare-hand contact with food -Improper handle glassware and dishes -Eating/ drinking -Smoking -Sickness (coughing, sneezing, runny nose, etc.) -Multitasking employee

Based on the aforementioned discussion, this study will test the effect of restaurant cleanliness on customer service quality evaluation. Moreover, this study will revise current service quality measurement for restaurant cleanliness by including the aspects of all three clues (i.e. functional, mechanic, and humanic).

Hypothesis 1

Customer perceptions of restaurant cleanliness will have a positive effect on customer's evaluations of service quality.

H1-a. Functional clues will have a positive effect on customer evaluations of service quality.

H1-b. Mechanic clues will have a positive effect on customer evaluations of service quality.

H1-c. Humanic clues will have a positive effect on customer evaluations of service quality.

SERVICE ENCOUNTER

In service management literature, the term "service encounter" is widely established and indicates the contact situation between service customer and service provider (Stauss and Mang 1999). Zeithaml (1981) explained service encounters using the term "moments of truth." This term stems from the characteristic of services such as intangibility and customer participation in the service production process. With these unique characteristics, customers evaluate the quality of service based on their perceptions of service situations. In the literature, service encounter is defined either narrowly or broadly (Stauss and Mang 1999).

The narrow understanding limits the service encounter to the personal interaction between the customer and the employees (Surprenant and Solomon 1987). In this narrow definition, Surprenant and Solomon (1987) defined service encounter as "dyadic interaction between a customer and a service provider", Solomon, Surprenant, Czepiel and Gutman (1985, p.100) defines it as "form of human interaction". On the other hand, in a broader definition, Shostack (1985, p.243) defines a service encounter as a "period of time during which a consumer directly interacts with a service". In this broader definition, all aspects of the service which the customer may come in contact with are included. This includes not only interactions with the service staff, but all contacts with different

elements that are also part of the service encounter such as physical facilities (building, equipment), service systems and other customers. Both narrow and broad definitions emphasize that service quality depends on the success of the service encounter.(Stauss and Mang 1999).

CUSTOMER-CONTACT EMPLOYEES

As the literature reviews suggest, quality of service is affected by diverse factors. Among various factors, service staff, especially a customer-contact employee is discussed in many studies because of the interactive nature of the service delivery(Grönroos 1984). Grönroos(1984) found that customer contact with an employee's behavior can positively or negatively affect customer's perceptions of service performance. Such behaviors usually are associated with what are called "process" opposed to the "outcome" or "technical" quality(Grönroos 1984).

Zeithaml and Bitner (2000) described a customer-contact employee as a link between the external customer and the internal operations of the organization. Therefore, the customer-contact employee plays a critical function in understanding, filtering, and interpreting information and resources to and from the organization and its external constituencies (Tsang and Ap 2007). Given that hospitality services are labor intensive and consist of face-to-face encounters between service providers and customer(Becker, Murrmann et al. 1999), it becomes clear that humanic clues should be considered for overall quality management in the hospitality industry including the restaurant business.

In a restaurant setting, customer contacts occur with several different employees during customers' restaurant experience. The Bureau of Labor Statistics (2001) classifies food and beverage preparation and service occupations into fifteen types of occupations and among them five occupations are related with the restaurant business: hosts and hostesses, bartenders, waiters and waitresses, dining room and cafeteria attendants and bartender helpers and cooks. The Bureau defined each occupation but in many restaurants specific employee duties vary considerably depending on the establishment. For example, a full service restaurant frequently hires other staff such as hosts and hostesses, cashiers or dining room attendants but in many casual restaurants, wait staff are asked to perform expanded duties than definition of their occupations.

For example, it is quite common for a wait staff to greet customers, escort them to their seats and hands them a menu, take food and drink orders, and serve food and beverages. The service provider also answers questions, explains menu items and specials, keeps tables and dining areas clean, and resets for new diners. Wait staff, also called server, is the largest group of restaurant workers and they are in the front line of customer service most expect to have contact with customers (Bureau of Labor Statistics, 2001).

CULTURAL DIFFERENCES AND SERVICE QUALITY EVALUATION

In recent years, service has increasingly become a global business. As a result of increasing globalization, service companies are trying to conduct business with customers of different cultures (Stauss and Mang 1999). Since customer contact and interaction with employees are necessary part of service delivery, researchers emphasized the importance of understanding cultural differences. Many cross-cultural studies suggested that consumers' expectations and perceptions of what constitutes good service are inevitably culturally bound so that culture affects customers' service assessments (Zeithaml, Parasuraman et al. 1990; Becker, Murrmann et al. 1999; Mattila 1999). Therefore, if service managers understand their customers' cultural characteristics then they can allocate limited resource more effectively (Furrer, Liu et al. 2000).

Hofstede's definition of culture has been the most widely employed among numerous cross-cultural studies. Hofstede (1988, p.6) defined "culture" that "the collective programming of the mind which distinguishes the members of one human group from another." While identifying four universal dimensions: power distance, uncertainty avoidance, individualism-collectivism, and masculinity-femininity (Hofstede 1984).

Power distance is defined as "the extent to which the lesser power members of institutions and organizations within a country expect and accept that power is distributed unequally."

Uncertainty avoidance is defined as "the extent to which the members of a culture feel threatened by uncertain or unknown situations."

Individualism "pertains to societies in which the ties between individuals are loose." In

contrast, collectivism “pertains to societies in which people from birth onwards are integrated into strong, cohesive groups, which through a lifetime continue to protect them in exchange for unquestioning loyalty.” Individualistic people prefer to act as individuals rather than as members of groups.

Masculinity and femininity represent “the dominant sex role pattern in the vast majority of both traditional and modern societies.” Masculine societies value male assertiveness, and feminine societies value female nurturing.

Another scholar, Hall (1966) defines culture as deep, common, unstated experiences which members of same culture share. Communication was an important issue in his studies because he believed communication is a direct reflection of a culture. Therefore, understanding communication style (i.e., how one receives, interprets, and responds) would assist to understand the cultural differences (Hall 1977). Two different communication cultures: high-context (HC) and low-context (LC) were suggested. In the high context culture (HC), individuals tend to communicate with physical context or explicit message. On the other hand, low context culture uses explicit way of communication such as full description with precision and clarity (Hall 1966).

Based on dimensions discussed above, many studies have found distinct cultural differences between the Western and the Asian. Even though in some Asian cultures with degree of Westernization, some unique Asian cultures such as Confucian philosophy remains vital distinguishing them from their Westerner counterparts (Tan and Farley 1987).

Most Asian countries (i.e., Hong Kong, India, Singapore, Thailand, etc.) are characterized by large power distance. Conversely, the cultures of many Western countries (i.e., Canada, Germany, the United Kingdom, the United States, and the Scandinavian nations) are less accustomed to status differences, producing low scores on the dimension of power distance (Hofstede 1984). These differences affect service styles. Broadly speaking, service styles in Asia are more people-oriented than in the West, where the efficiency of service delivery is highly valued (Riddle 1992). One study found that Asian customers tend to have higher expectations for the quality of interactions in service encounters. Whereas Western customers are more likely to focus on the outcome rather than the

process through which service is delivered(Mattila 2000)

Difference of communication context was also found between the Western and the Asian. Many Asian cultures are characterized by high-context communication while Western cultures are more low-context communication (Hall 1966).

Cross-cultural studies of Western and Asian restaurant customer service quality evaluations have revealed that customers from different cultures consider different factors when they evaluate the quality of a restaurant's service (Becker and Murrmann 1999; Mattila 1999). Restaurant cleanliness or sanitation was found to be a factor affecting customers' service quality evaluations. Becker et al. (1999) ascertained that customers in American and Hong Kong have different expectations of restaurant service with regard to restaurant sanitation (Becker, Murrmann et al. 1999). According to their studies, sanitation was ranked most important by the respondents in the U.S. and was of secondary importance to the customers in Hong Kong among six service dimensions: Sanitation, Cordiality, Professionalism, Accommodation, Knowledge and Entertainment. Although, both groups indicated that sanitation was a significant dimension, there were differences in the way sanitation was assessed. American respondents indicated that they place more weight on the avoidance of contact between servers' hands and eating utensils, as well as the condition of servers' hair. However, respondents in Hong Kong place more importance on how well -manicured a server's hands are. This supports the idea that customers from different cultures have different expectations or perceptions of service quality. Therefore, it is believed that managers should pay attention to cultural differences when they expand in the global economy (Hofstede 1984). Therefore, the following hypothesis is

Hypothesis 2

There are significant differences in how different cultures perceive restaurant cleanliness.

SUMMARY

This chapter summarized the literature on service quality and satisfaction, service encounters, customer-contact employees, cleanliness in restaurants, and cultural differences in service quality evaluation. The literature review indicated that restaurant customer satisfaction is affected by diverse factors such as products, humanic service, and atmosphere. Furthermore, the literature highlights that cleanliness is a significant factor for customer evaluations of service quality in restaurants. However, previous studies only restricted their investigations to the physical environment of a restaurant, disregarding more dimensions such as food or human service to evaluate restaurant cleanliness. Based on the literature review, the research hypothesis states that all three clues: functional, mechanic and humanic, will affect customers' evaluation of service quality. This chapter also reviewed the literature regarding cultural differences in service quality evaluation. Based on this review, the research hypothesis states that Western and Asian customers will have different perceptions of restaurant cleanliness.

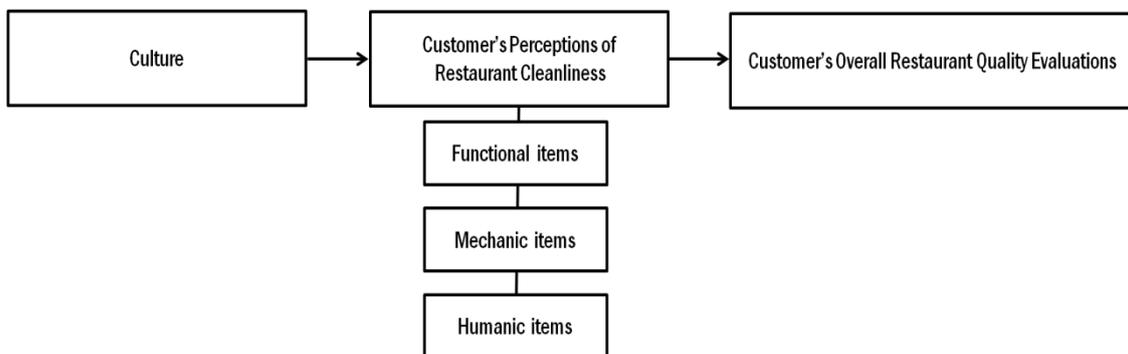
CHAPTER III
METHODOLOGY
INTRODUCTION

The primary purpose of this study is to examine customer perceptions of cleanliness in table-service restaurants by modifying previous restaurant cleanliness measurement scale proposed by Barber and Scarcelli (2010). To achieve this purpose, this study will investigate the factors or items that most greatly impact customer perceptions of cleanliness in table service restaurants. In addition, this study also seeks to identify cultural differences between the Western and Asian participants in service quality evaluations and restaurant cleanliness perceptions. This chapter discusses the methods employed to carry out the research. It is divided into the following sections: research design, research hypotheses, and sample and data selection.

RESEARCH QUESTIONS AND HYPOTHESES

To modify the previous restaurant cleanliness scale, this study investigated customers' perceptions of restaurant cleanliness. This section discusses the research questions and hypotheses guiding this study. The theoretical model for this study is illustrated in Figure 3.1, a demonstration of the series of hypotheses employed.

Figure 3.1 Theoretical Framework



This study addresses the following two research questions; the first research question has three sub-research questions:

1. Do customers consider cleanliness to be an important factor for restaurant quality?

1-a. Are functional cleanliness items important to customers' restaurant quality evaluations?

1-b. Are mechanic cleanliness items important to customers' restaurant quality evaluations?

1-c. Are humanic cleanliness items important for customers restaurant quality evaluations?

2. Are there significant differences in restaurant cleanliness evaluations between customers from different cultures?

Based on the research questions for this study, two main hypotheses are developed to investigate the relationship between restaurant cleanliness and customer evaluations of restaurant quality. The hypotheses this study proposes are as follows:

Hypothesis1.

Customer perceptions of restaurant cleanliness will have a positive effect on customer evaluation of restaurant quality.

H1-a.Functional items will have a positive effect on customer evaluations of service quality.

H1-b.Mechanic items will have a positive effect on customer evaluations of service quality.

H1-c.Humanic items will have a positive effect on customer evaluations of service quality.

Hypothesis2.

There are significant differences in how different cultures perceive restaurant cleanliness.

RESEARCH DESIGN

This study will be conducted in three stages.

Stage one. A focus group of college students at Virginia Tech University was used to investigate customer's perceptions of restaurant cleanliness. Also, focus group discussions were conducted to revise earlier service quality measurement instruments for restaurant cleanliness. Because this study incorporates two different cultural viewpoints, two focus groups- Westerners and Asians were conducted. The Western group consisted of three American college students and the Asian group consisted of five international students from an Asian country. During the 90 minute focus group session, participants were asked to identify specific considerations that they take in evaluating cleanliness in table-service restaurants. Also, items organized in Table 2.1 were discussed and participants freely added or disregarded some items. The final items collected from two focus groups are displayed in Table 3.1. There were no big differences between the considerations of focus group participants and restaurant regulation. Most items that focus group participants agreed the importance of restaurant cleanliness were included to food safety and restaurant cleanliness regulatory items. However, one participant told that he tends to be stricter for popular chain restaurant than local small restaurant when evaluating cleanliness. Since his opinion was not agreed by most participants that this item was not included to the questionnaire.

Table 3.1 Results of Two Focus Groups on Restaurant Cleanliness Items

Types of Service Clues	Items
Food	<ul style="list-style-type: none"> -Freshness -Presentation -Temperature of food -Unprotected food (e.g. uncovered condiments on the table) -Food contact surface (e.g. plates, glassware)
Environment	<ul style="list-style-type: none"> ▪ Exterior of restaurant ▪ Interior of restaurant <ul style="list-style-type: none"> -Carpet and floors -Windows& Windowsills -Tablecloths -Open kitchen -Presence or evidence of vermin in food or non-food areas -Humidity -Restaurant inspection score posted ▪ Restroom <ul style="list-style-type: none"> -Dirty floor -Trash in toilets -Odor in restroom -No toilet paper -No soap -No hot water -No paper towels/drying device
Server	<ul style="list-style-type: none"> ▪ Server's appearance <ul style="list-style-type: none"> -Hair style - Uniform -Hand and Nails -Accessories ▪ Server's behavior <ul style="list-style-type: none"> -Bare-hand contact with food -Eating/ drinking -Smoking -Sickness (coughing, sneezing, runny nose, etc.) -Tasking order (e.g. serving food right after wiping table)

Stage two. Based on the results of the focus groups, a questionnaire was developed (See appendix A). The questionnaire included the scale of customers' general perceptions of restaurant cleanliness, and importance of restaurant cleanliness along demographic information. This study chose Chinese as represent for Asians; therefore the developed questionnaire had to be translated into Chinese before being distributed to Chinese participants. Proper back translation by individuals who are familiar with both languages and culture was required to maintain equivalence(Adler 1983). Therefore, the questionnaire was translated and back-translated from English to Chinese by Chinese professor in HTM department in Taiwan who are familiar with both English and Chinese language.

Stage three. Developed questionnaire was used to survey for Western participants and translated version of the questionnaire was used for Asian samples. Because this study was conducted with respondents from two different cultures, the Western and the Asian, casual full-service restaurants were selected for the study. The two cultures may have different restaurant concepts and environment so it is important to focus on a single, well-defined type of restaurant. Based on the focus group interviews with Western and Asian students, specific examples of chain operations were selected and provided in the survey questionnaire. All restaurants selected have similar levels of service and price ranges. In addition, casual full-service restaurants were defined as restaurants with an informal atmosphere in which a host escorts patrons to a table, a menu is presented at the table by a wait staff, and the bill is collected either at the table by a wait staff or at the checkout counter by a cashier.

INSTRUMENTATION

The final questionnaire was divided into three sections. The first section consisted of eight questions regarding customers' general perceptions of restaurant cleanliness. The first part used a five-point Likert scale with 1=strongly disagree and 5=strongly agree. The second part was comprised of twenty nine questions regarding to restaurant cleanliness items; this part measures the importance of each item when evaluating restaurant cleanliness. Restaurant cleanliness items were categorized into four sections: food, environment, rest room and wait staff. A five-point Likert scale with 1=not at all

important and 5= extremely important was used. The third part included demographic questions about survey respondents.

General perceptions of restaurant cleanliness

The first section consists of eight questions related to general perceptions of restaurant cleanliness. For example, the survey asked respondents to rate the importance of restaurant cleanliness when evaluating overall restaurant quality. Also, it investigated the importance of restaurant cleanliness when deciding future revisits, and the relationship between restaurant cost and level of expectations of cleanliness. The impact of restaurant cleanliness to the overall level of satisfaction and tendency to complain about cleanliness were included in the first section of the survey. Responses were based on a Five-point Likert scale with 1=strongly disagree and 5=strongly agree.

Restaurant cleanliness items

The second section asked the importance of restaurant cleanliness when evaluating restaurant cleanliness. Twenty-nine restaurant cleanliness items were included and these items were categorized into four parts: food, environment, rest room and wait staff. Respondents were asked to rate the importance of each item referring to dining experiences at casual restaurants such as TGI Fridays or Chili's. Responses were based on a five-point Likert scale with 1=not at all important and 5=extremely important.

Demographic items

The last section was designed to collect demographic characteristics of respondents such as gender, age, ethnic group, household type, living area, dining frequency, and restaurant work experience. Many hospitality studies on customer expectations and perceptions of service found that gender, age and ethnicity.

SAMPLE AND DATA SELECTION

The data consists of two samples, Western and Asian. Western population was sampled from American students enrolled at Virginia Tech while Asian population was sampled from university students in Taiwan. Convenience sampling was employed to obtain a large number of completed questionnaires quickly and economically; a survey was distributed to respondents directly. To distribute questionnaire to American participants, author contacted professor and instructor of hospitality and tourism management department in VT and under their permissions, visited four HTM undergraduate courses to distribute questionnaires. For Asian sample, author contacted a HTM professor in Tunghai University in Taiwan and she distributed Chinese version questionnaire to her students and collected data. Data collected resulted in 153 Western samples and 100 Asian samples.

To reduce for heterogeneity, casual table service restaurants were described as specific chain restaurant operations; T.G.I Fridays and Chili's were given as examples. These chain operations were defined as a casual table service restaurants where the wait staff takes order, deliver meals and provide services for dining customers(Becker, Murrmann et al. 1999).

ANALYSIS

Version 20 of the Statistical Package for the social sciences (PASW 20) was used to code and analyze the data. Descriptive statistics were used to analyze general perceptions of restaurant cleanliness and demographic information. Exploratory factor analysis was conducted to reduce twenty nine restaurant cleanliness items into distinct dimensions. Multiple regression was used to investigate which restaurant cleanliness dimensions have a positive effect on restaurant quality evaluation. General linear model was used to analyze the Multivariate Analysis of Variance (MANOVA) across two groups.

CHAPTER IV

RESULTS

INTRODUCTION

The primary purpose of this study was to identify customers perceptions of restaurant cleanliness by modifying previous “Cleanliness Measurement Scale”(Barber and Scarcelli 2010) including more than the environmental dimensions of a restaurant. In addition, using the modified scale, this study investigated the different perceptions of restaurant cleanliness of two distinct cultures, the Western and the Asian.

This chapter presents the results of the data analysis used to achieve the research objectives testing the research hypotheses proposed in the previous chapter. This chapter is divided into the following sections: profile of respondents, general perceptions of restaurant cleanliness, restaurant cleanliness item factor analysis, scale reliability and validity and hypothesis testing.

PROFILE OF RESPONDENTS

Table 4.1 illustrates the demographic profile of the Western and Asian participants of this study. The Western sample consisted of 153 surveys and the Asian sample consisted of 100 surveys. In this study, male respondents represented 41.8% and 27% of the Westerners and Asians, respectively. Of Western respondents, 53.9% were age 20 and under, 40.1% were 21 to 23, 2.6% were 24 to 26 and 3.3% were 27 and older. In the Asian sample 46% were age 20 and under and 41% were 21-23 years old. Those in the Western sample were predominantly Caucasians (85.6%) and most respondents in the Asian sample were Asians (95%). Household types for Westerners were single adult (67.3%), family with children (29.4%) and married couples without children (3.3%). However, almost all the Asian respondents were single adult (98%). The majority of Western respondents reported that they live in a suburban area, while “urban area” was reported the most often by Asian respondents. In the sample of Westerners 47.7% had some restaurant work experience and 84% of the Asian sample had a some work experience in restaurants.

Table 4.1 Summary of General Demographic Information

		Western		Asian	
		Frequency	Percent (%)	Frequency	Percent (%)
Gender	Male	64	41.8%	27	27.0%
	Female	89	58.2%	73	73.0%
Age	20 and under	82	53.9%	46	46.0%
	21-23	61	40.1%	41	41.0%
	24-26	4	2.6%	12	12.0%
	27-29	3	2.0%	1	1.0%
	30 and over	2	1.3%	0	0.0%
Ethnicity	Caucasian	131	85.6%	5	5.0%
	Asian	13	8.5%	95	95.0%
	African-American	7	4.6%	0	0.0%
	Hispanic	2	1.3%	0	0.0%
Academic status	Freshman	52	34.0%	2	2.0%
	Sophomore	24	15.7%	47	47.0%
	Junior	16	10.5%	24	24.0%
	Senior	61	39.9%	12	12.0%
	Others	0	0.0%	15	15.0%
Household	Single adult	103	67.3%	98	98.0%
	Married-couple without children	5	3.3%	0	0.0%
	Family with children	45	29.4%	0	0.0%
	Others	0	0.0%	2	2.0%
Living area	Urban	13	8.6%	76	76.0%
	Suburban	96	63.2%	14	14.0%
	Rural	43	28.3%	10	10.0%
Restaurant work experience	Yes	72	47.7%	84	84.0%
	No	79	52.3%	16	16.0%

GENERAL PERCEPTIONS OF RESTAURANT CLEANLINESS

The first section of the restaurant cleanliness questionnaire was composed of eight questions regarding general perceptions of restaurant cleanliness. Table 4.2 indicates the results from Western and Asian respondents. About 90% of each sample agreed or strongly agreed that restaurant cleanliness is important to them. In addition, more than 90% of both groups responded that restaurant cleanliness is an important factor when evaluating the overall quality of a particular restaurant. Moreover, restaurant cleanliness was found to be an important factor in a customer's decision about whether or not to return to the restaurant in the future. Of the respondents 95.4% of Westerners and 96% of Asians agreed or strongly agreed that restaurant cleanliness is an important factor in their future decision about whether or not to return to a particular restaurant.

Regarding the cost of a restaurant and expectations of restaurant cleanliness, both group demonstrated similar responses. Concerning restaurants that are more expensive, both groups responded that they have higher expectations of cleanliness. On the other hand, regarding low-budget or inexpensive restaurants, 32% of Westerners and 35% of Asians agreed that they have lower expectations of cleanliness. However, 37.4% of Westerners and 28% of Asians answered that they still have high expectations of restaurant cleanliness even for low budget restaurants. Survey results also indicated that a clean restaurant will increase the overall level of satisfaction of its customers. On the other hand, more than 90% of both groups agreed that a dirty restaurant will decrease their overall level of satisfaction.

The last question was about complaints. About 14% of Westerners and 42% of Asians responded that they tend to complain to restaurant employees if they perceive that a restaurant is dirty. As the overall results indicated, restaurant cleanliness was found to be an important factor in customers' restaurant quality evaluations, future purchasing decisions and overall level of satisfaction. However, it was found that even though respondents from two different cultural groups answered that they perceive restaurant cleanliness to be a significant factor for their dining experience, they tend not to complain when they recognize that a restaurant's level of cleanliness does not meet their standards.

Table 4.2 Summary of General Perceptions the Restaurant Cleanliness

		Western		Asian	
		Frequency	Percent (%)	Frequency	Percent (%)
Restaurant cleanliness is important to me (Mean=4.69/ SD=.54)	Strongly disagree	1	0.7%	0	0.0%
	Disagree	0	0.0%	0	0.0%
	Neutral	0	0.0%	4	4.0%
	Agree	31	20.3%	36	36.0%
	Strongly agree	121	79.1%	60	60.0%
Restaurant cleanliness is important to me when evaluating overall restaurant quality (Mean=4.53/ SD=.60)	Strongly disagree	1	0.7%	0	0.0%
	Disagree	0	0.0%	0	0.0%
	Neutral	3	2.0%	5	5.0%
	Agree	51	33.3%	48	48.0%
	Strongly agree	98	64.1%	47	47.0%
Restaurant cleanliness is important to me when I decide whether I will return to a restaurant or not (Mean=4.45/SD=.61)	Strongly disagree	1	0.7%	0	0.0%
	Disagree	0	0.0%	0	0.0%
	Neutral	6	3.9%	3	3.0%
	Agree	67	43.8%	49	49.0%
	Strongly agree	79	51.6%	47	47.0%
I have high expectations of cleanliness for high-budget restaurants (Mean=4.74/SD=.57)	Strongly disagree	1	0.7%	0	0.0%
	Disagree	0	0.0%	0	0.0%
	Neutral	2	1.3%	8	8.0%
	Agree	20	13.2%	22	22.0%
	Strongly agree	128	84.8%	70	70.0%
I have low expectations of cleanliness for low-budget restaurants (Mean=2.99/SD=1.02)	Strongly disagree	13	8.6%	3	3.0%
	Disagree	44	28.8%	25	25.0%
	Neutral	47	30.7%	37	37.0%
	Agree	41	26.8%	28	28.0%
	Strongly agree	8	5.2%	7	7.0%
A clean restaurant will increase my overall level of satisfaction (Mean=4.42/SD=.62)	Strongly disagree	1	0.7%	0	0.0%
	Disagree	0	0.0%	0	0.0%
	Neutral	9	5.9%	2	2.0%
	Agree	71	46.4%	49	49.0%
	Strongly agree	72	47.1%	48	48.0%
A dirty restaurant will decrease my overall level of satisfaction (Mean=4.43/SD=.70)	Strongly disagree	1	0.7%	0	0.0%
	Disagree	3	2.0%	2	2.0%
	Neutral	6	3.9%	4	4.0%
	Agree	65	42.5%	40	40.0%
	Strongly agree	78	51.0%	54	54.0%

I tend to complain to restaurant employee if I perceive that a restaurant is dirty. (Mean2.85/SD=1.03)	Strongly disagree	17	11.1%	0	0.0%
	Disagree	73	47.7%	13	13.0%
	Neutral	42	27.5%	45	45.0%
	Agree	17	11.1%	28	28.0%
	Strongly agree	4	2.6%	14	14.0%

FACTOR ANALYSIS

The next step of the data analysis was to factor-analyze the patterns of item responses concerning restaurant cleanliness. Factor analysis is used to define the underlying structure among the variables in the analysis; this technique helps to identify the underlying structure to allow for further examination (Hair, Anderson et al. 1998). Principal components analysis with VARIMAX rotation was used to assess underlying dimensions in the data and to identify items associated with each factor. Factor analysis narrows down the total 29 restaurant cleanliness items to a set of seven dimensions. Factor loadings have substantially larger standard errors than typical correlations. Thus, factor loadings should be evaluated at considerably stricter levels (Hair, Anderson et al. 1998). Factor loadings of .50 or greater are considered practically significant to obtain a .05 significance level (p) and a power level of 80%. There is also the assumption of standard errors of factor loadings being larger than typical correlation coefficients (Hair, Anderson et al. 1998). Employing the principal components factor analysis, seven factors with an eigenvalue greater than one explained 62.366% of the variance of restaurant cleanliness items. At the first trial of full factor analysis, four items; exterior, unprotected food, humidity and tasking order, were deleted as they did not have high loading values on any factors. At the second factor analysis, it was found that one item, server's eating and drinking did not load highly on any factors. After this item was deleted, the third factor analysis was conducted. All remaining twenty-four items were categorized into the seven dimensions. Table 4-2 shows VARIMAX rotated components factor matrix for twenty four restaurant cleanliness items.

Table 4.3 VARIMAX Rotated Components Factor Matrix for Restaurant Cleanliness Items

Variables	VARIMAX rotated loadings						
	1	2	3	4	5	6	7
Tablecloths	.795	.137	.048	.152	.137	.137	.024
windows or windowsills	.722	.265	.186	.097	.015	-.004	.081
open kitchen	.709	.059	-.074	.075	.074	.138	.085
floor and carpet	.702	.299	.063	.209	.101	.046	.127
food contact surface	.524	.105	.244	.021	.054	.323	.169
Uniform	.187	.782	.081	.153	.085	.175	.004
Accessories	.253	.761	.103	.047	.093	.065	.028
hair style	.117	.724	.092	.075	.173	.077	.277
hands and nails	.299	.560	-.037	.258	.303	.108	.213
no soap	.111	-.059	.841	.160	.047	.045	.035
no hot water	.091	.139	.824	.079	-.051	.130	.183
no paper towels or drying device	.032	.176	.779	.246	.080	.123	.040
Odor	.118	.013	.170	.852	.153	.073	.022
Floors	.258	.235	.085	.726	-.014	.179	.146
Trash	.118	.159	.311	.661	.131	.096	.040
Smoking	.049	.130	.024	.015	.809	-.001	.040
coughing and sneezing	.080	.027	.008	.141	.808	.065	.212
bare hand contact	.170	.258	.053	.103	.742	.186	-.034
Freshness	.129	.039	-.019	.198	.141	.765	.080
Temperature	.160	.092	.137	.187	.101	.707	.086
Presentation	.117	.360	.288	-.134	-.048	.667	-.031
employee hand washing signage	.053	.171	.249	.079	.095	-.053	.748
restaurant inspection score posted	.254	.299	.226	-.086	.099	.114	.575
Vermin	.182	-.063	-.225	.261	.089	.265	.553

Table 4.4 Summarized Factor Analyses of Restaurant Cleanliness Items

	Factor Loadings	Eigenvalue	Percentage of variance explained	Cronbach's Alpha
Factor1: Restaurant interior appearance		6.97	29.0	.802
Tablecloths	.795			
windows or windowsills	.722			
open kitchen	.709			
floor and carpet	.702			
food contact surface	.524			
Factor 2: Server's appearance		2.18	9.1	.814
Uniform	.782			
Accessories	.761			
hair style	.724			
hands and nails	.560			
Factor3: Restroom personal hygiene		1.70	7.1	.828
no soap	.841			
no hot water	.824			
no paper towels or drying device	.779			
Factor 4: Restroom appearance		1.55	6.5	.784
Odor	.852			
Floors	.726			
Trash	.661			
Factor 5: Server's behavior		1.31	5.4	.752
Smoking	.809			
coughing and sneezing	.808			
bare hand contact	.742			
Factor 6: Food condition		1.14	4.8	.670
Freshness	.765			
Temperature	.707			
Presentation	.667			
Factor 7: Signage		1.05	4.4	.492
employee hand washing signage	.748			
restaurant inspection score posted	.575			
Vermin	.553			
Total			66.3	

RELIABILITY AND VALIDITY

Reliability is used to assess the degree of consistency among multiple measurements of a variable. There are two dimensions: repeatability and intent consistency. All twenty-four restaurant cleanliness items measure the same idea as the importance of restaurant cleanliness. Regarding reliability, Cronbach's alpha measurement was the most widely used to assess the consistency of the entire scale (Hair, Anderson et al. 1998). Cronbach's alpha provides the estimate of the degree of the inter-correlations among the items (Churchill and Iacobucci 2009).

The purpose of validity is to determine whether the survey measured what it is intended to measure. In other words, validity analysis is used to assess the accuracy of what researchers intend to measure. Three different types of validity are commonly evaluated: convergent validity, discriminant validity and face validity. Convergent validity is the extent to which a specific construct converge or shares a high proportion of variance in common. Discriminant validity is the ability to measure dissimilar concepts to low correlation (Hair, Anderson et al. 1998). However, measuring validity is difficult to assess, so face validity was confirmed by HTM faculty members and graduate students.

Each factor was named based on the common characteristics of included items, and Table 4.3 provides the list of the seven factors and included items with associated factor loadings, eigenvalues, and reliability scores. The factor pattern was found to interpret and account for 66.3% of the total variance.

The first factor was composed of five items and explained 29.0% of the total variance. Items on this factor were associated with the interior appearance of the restaurant. This factor had an eigenvalue of 6.97 and a reliability of .802.

The second factor was named server's appearance and was comprised of four items. This factor had an eigenvalue of 2.18 and explained 9.1% of the total variance; Cronbach's alpha was assessed at .814.

The third factor, restroom personal hygiene, was made up of three items and explained 7.1% of the total variance. The three items possessed an eigenvalue of 1.70 and presented a reliability of .828.

The fourth factor, restroom appearance consisted of three items. The items resulted in an Eigenvalue of 1.55, and had total variance explanation of 6.5%, with a Cronbach's alpha of .784.

The fifth factor dealt with a server's behaviors. The reliability measured .752 while the percentage of variance explained was 5.4% and the Eigenvalue was 1.31. Items loading on this factor were associated with the servers' behavior as it affected food safety and the server's personal hygiene.

The sixth factor related to food appearance included three items. This factor had an Eigenvalue of 1.14 and accounted for 4.8% in explaining the variance; Cronbach's alpha was .670.

The last factor was labeled as signage. This factor accounted for 4.4% in explaining the total variance and had an Eigenvalue of 1.05. The reliability for the seventh factor was .492. Research commonly suggests that Cronbach's alpha be .70 or above, and that those with correlations .3 or below should be deleted from the scale. However some researchers suggested that Cronbach's alpha from .50 to .90 can be considered as an adequate range (Helms, Henze et al. 2006).

The results of the factor analysis were found to be different from the original three sub-hypotheses of the first hypothesis. This study assumed that the customers' perceptions of restaurant

cleanliness would consist of three dimensions: functional, mechanic and humanic. However, the factor analysis found that the customers' perceptions of restaurant cleanliness consist of more complex and specific dimensions than those suggested by the original sub-hypotheses. For example, the mechanic dimension, which relates to the physical environment of the restaurant, was divided into four dimensions: interior appearance of the restaurant, restroom appearance, restroom personal hygiene and signage. Employee related dimensions such as server's appearance and server's behavior can be categorized into humanic dimensions. Lastly, food condition is related to functional dimension.

THE FIRST HYPOTHESIS TESTING

This section presents the results of the statistical analysis conducted in order to test the first research hypothesis. The first hypothesis deals with the relationship between the customers' perceptions of restaurant cleanliness and restaurant quality evaluation. The first hypothesis assumed that three dimensions of restaurant cleanliness would affect customers' restaurant quality evaluation. However, as the factor analysis results indicated, the three sub hypotheses of the first hypothesis were found to be different. Therefore, seven dimensions of restaurant cleanliness established by the factor analysis were employed to test the first hypothesis and factor scores of each dimension were used as independent variables. As dependent variables, scores of the second question in the section on general perceptions of restaurant cleanliness, which asked about the importance of restaurant cleanliness in evaluating overall restaurant quality, were employed. Multiple regression analysis was used to analyze the relationship between the dimensions of restaurant cleanliness and the overall restaurant quality evaluation.

Table 4.5 Summarized Multiple Regression Results

	Sum of Squares	Df	Mean Square	F	Sig.
Regression	16.000	7	2.286	7.475	.000 ^b
Residual	74.305	243	.306		
Total	90.305	250			

Variables	B	SE	Beta	t	Sig.
(Constant)	4.530	.035		129.776	.000
Restaurant interior appearance	.059	.035	.099	1.694	.092
Server's appearance	-.019	.035	-.031	-.532	.595
Restroom personal hygiene	.155	.035	.258	4.442	.000
Restroom appearance	.167	.035	.278	4.786	.000
Server's behavior	.072	.035	.120	2.057	.041
Food condition	.052	.035	.087	1.497	.136
Signage	.009	.035	.015	.251	.802

$R^2=0.177$, adjusted $R^2=0.153$

As displayed in Table 4.5, the results of the analysis of seven dimensions of restaurant cleanliness together accounted for 17.7% of the variance in the importance of cleanliness to respondents. The overall regression is statistically significant ($F=7.475$, $P<.05$). The first hypothesis assumed that the perceptions of restaurant cleanliness have an effect on customers' evaluations of restaurant quality. Among the seven dimensions, three dimensions were found to have a significant influence on the customer's service quality evaluation. Restroom personal hygiene ($B=0.155$, $P<.05$) was found to be statistically significant showing a positive relationship to the restaurant quality evaluation. Restroom appearance ($B=0.167$, $P<.05$) had a significance influence on the customers' restaurant quality evaluation. Finally, the behavior of the server ($B=0.072$, $P<.05$) was found to influence the restaurant quality evaluation. Therefore, this study supported hypothesis 1. Also, more specifically mechanic dimension and humanic dimension were found to have positive impact on restaurant quality evaluation.

IMPORTANCE LEVELS OF DIMENSIONS OF RESTAURANT CLEANLINESS

To compare the perceptions of restaurant cleanliness between Westerners and Asians, seven restaurant cleanliness dimensions were coded into the summary variables. After that, analysis of each of the seven factors was conducted to see whether the two sample groups prioritize the dimensions of restaurant cleanliness differently. The results showed that Western and Asian samples had similar priorities of restaurant cleanliness dimensions except for one dimension, restroom personal hygiene.

CROSS-CULTURAL COMPARISON

All seven factors were used to compare the importance of restaurant cleanliness between the Western and Asian samples. Multivariate analysis of variance was used to assess the effect of cultural differences on the importance of restaurant cleanliness variables associated with casual restaurant dining. In addition, this analysis technique was used to compare other demographic information such as gender, age, academic status, ethnicity and restaurant work experience. The General Linear Model procedure allows for the analysis of variance for multiple dependent variables (Norusis 2005). The MANOVA is an extension analysis of variance (ANOVA) to accommodate more than one dependent variable (Hair, Anderson et al. 1998). The results in Table 4.6 show the multivariate analysis for each factor.

Table 4.6 Comparison of Importance Levels for Summary Dimension of Restaurant Cleanliness

	Western (n=151)		Asian (n=100)		F ratio	P level
	Mean	SD	Mean	SD		
Multivariate test					2.439	.000
Univariate tests						
Factor1						
Restaurant interior appearance	3.34	.82	3.46	.72	2.46	.118
Factor2						
Server's appearance	3.05	.90	3.42	.80	1.72	.191
Factor3						
Restroom personal hygiene	4.08	.84	3.32	1.01	4.21	.041
Factor4						
Restroom appearance	4.06	.77	4.28	.66	3.12	.079
Factor5						
Server's behavior	4.46	.68	4.63	.55	6.36	.012
Factor6						
Food condition	3.89	.69	3.84	.65	.026	.872
Factor7						
Signage	3.90	.74	3.85	.70	.015	.903

The two dimensions of server's behavior and restroom personal hygiene were found to be significant at the $p=.05$ level. In addition, restroom appearance was found to be partially significant at the $p=.10$ level.

The next table, Table 4.7 represents the analysis of individual items of each of the seven dimensions. According to the results, there were significant differences in the preference level for multiple restaurant cleanliness related items.

Table 4.7 Multivariate Analysis of the Dimensions of Restaurant Cleanliness

	Western		Asian		F value	P level
	M	SD	M	SD		
Factor1: Restaurant interior appearance						
Table cloths	3.60	1.16	3.75	.90	10.52	.001
Windows and windowsills	3.02	.98	3.21	.91	.21	.646
Open kitchen	2.86	1.30	3.31	1.17	.93	.336
Floor and carpet	3.25	.96	3.48	.92	.00	.959
Food contact surface	3.88	1.08	3.54	.94	1.48	.226
Factor2: Server's appearance						
Uniform	2.99	1.06	3.43	1.04	.87	.353
Accessories	2.55	1.10	2.91	1.16	.03	.858
Hair style	3.06	1.18	3.22	.99	3.07	.081
Hands and nails	3.59	1.12	4.12	.90	14.97	.000
Factor3: Restroom personal hygiene						
No soap	4.33	.81	3.43	1.11	17.38	.000
No hot water	3.68	1.27	2.73	1.34	.59	.443
No paper towels or drying device	4.22	.89	3.80	1.06	4.20	.041
Factor4: Restroom appearance						
Odor	4.31	.88	4.50	.73	4.01	.046
Floors	3.72	1.02	4.15	.82	8.72	.003
Trash	4.10	.89	4.18	.81	2.38	.124
Factor5: Server's behavior						
Smoking	4.49	.90	4.59	.75	3.04	.083
Coughing and sneezing	4.60	.69	4.69	.65	1.64	.202
Bare hand contact	4.31	.87	4.61	.67	13.29	.000
Factor6: Food condition						
Freshness	4.33	.78	4.43	.78	.88	.350
Temperature	4.11	.87	4.03	.83	.24	.628
Presentation	3.23	.99	3.06	.89	3.96	.048
Factor7: Signage						
Employee hand washing signage	3.94	1.11	3.74	1.09	.01	.930
Restaurant inspection score posted	3.18	1.17	3.23	1.12	.30	.584
Vermin	4.55	.83	4.58	.73	.53	.466

The server's behavior was found to be the most important dimension by both Western and Asian samples. This dimension was found to be statistically significant overall with .012. Additionally, among the three items in this dimension, the server's bare hands making contact with food was found to have a statistical significance at .000. This analysis indicated that the Western sample had a statistically significant difference in the importance of the servers' bare-hand contact with food. The Asian sample had higher mean expectations in the dimension for restaurant server's behavior than the Western samples did.

Restroom appearance was ranked the second most important factor for the Asian sample and the third most important factor for the Western sample. In this factor, the Asian sample was also found to have higher expectations of all included items than the Western sample. Odor in the restroom was found to be the most important item when both samples evaluated restaurant cleanliness. Trash and floors were rated accordingly by both groups. Of the individual items in this scale, odor and floors were found to have statistical significance at .046 and .003.

Signage was ranked the third most important dimension by Asian groups and the fourth most important by the Western sample. Among three items in the signage factor, the Asian sample had higher means of restaurant inspection signage and vermin. On the other hand, the Western sample had higher mean of employee hand washing signage. None of the individual items was found to differ statistically significantly between the two groups.

Food condition was the fourth most important factor for the Asian sample and the fifth most important factor for the Western sample. Although the food condition factor was not significant overall, one single item, food presentation, was found to be statistically significant at a level of .048.

The appearance of the restaurant interior was the fifth most important factor for the Asian sample and the sixth most important factor for the Western sample. Although this factor was found to be not statistically significant overall, table cloths were found to be one item that was statistically significant with .001. In this factor, except for the food contact surface, the Asian sample had higher means in the other four restaurant interior items.

The appearance of server was the sixth most important factor for Asian groups and the least significant factor for Western groups. While this dimension was not found to be statistically significant in overall, the condition of server's hands and nails was found to be statistically significant with .000. The Asian group rated all items of a server's appearance as of higher importance than Western groups did.

As mentioned above, two groups, Western and Asian, were found to have similar ranking orders for the dimensions of restaurant cleanliness. However, the importance of the dimension of restroom personal hygiene was ranked differently between these groups. The Western sample ranked restroom personal hygiene as the second most important factor but the Asian sample considered this dimension as the least important factor in their restaurant cleanliness evaluations. In addition, the factor for overall restroom personal hygiene was found to be statistically significant at .041. Among all the individual items, having no soap and no paper towels or other drying device were found to be statistically significant. In this dimension, Western groups were found to have higher means regarding the all three items than Asian groups.

ADDITIONAL TESTS ON DEMOGRAPHICS

The MANOVA results also indicated that demographic variables such as living area have a significant impact on the ratings of the importance of restaurant cleanliness dimensions. On the other hand, gender and restaurant work experience were not found to have a statistically significant difference for the seven dimensions of restaurant cleanliness. Ethnicity and household were not applicable to MANOVA test. To conduct the MANOVA, cases in each cell should exceed at least the number of dependent variables(Pallant 2007). However, the variables Hispanic (n=2) in ethnicity and married-couple without children in household (n=5) didn't meet this assumption of sample size, so the MANOVA could not be conducted for ethnicity and household variables.

Table 4.8 displays the multivariate analysis of the importance of restaurant cleanliness items by living area.

Table 4.8 Multivariate Analysis of the Dimensions of Restaurant Cleanliness by Living Area

	Urban (n=89)		Suburban (n=109)		Rural (n=52)		F	Sig
	Mean	SD	Mean	SD	Mean	SD		
Restaurant interior appearance	3.46	.69	3.34	.85	3.35	.80	3.280	.039
Server's appearance	3.40	.86	3.01	.87	3.24	.86	.108	.897
Restroom personal hygiene	3.58	1.02	3.84	.90	3.99	1.05	1.283	.279
Restroom appearance	4.29	.65	4.00	.75	4.17	.77	1.871	.156
Server's behavior	4.63	.58	4.48	.65	4.44	.69	1.343	.263
Food condition	3.89	.66	3.83	.69	3.91	.66	.012	.988
Signage	3.80	.74	3.88	.76	4.03	.56	2.985	.052

The interior appearance of the restaurant ($F=3.28$, $p=.039$) was found to be significantly different. Three groups showed the similar priorities for restaurant cleanliness dimensions. The server's behavior was the most important dimension for all three groups when evaluating cleanliness of a restaurant. On the other hand, the server's appearance was the least important dimension for all groups. For the further analysis, MANOVA was conducted on restaurant interior appearance items. As Table 4.9 indicates tablecloths ($p=.007$) and food contact surface ($p=.001$) were found to be individually significant.

Table 4.9 Multivariate Analysis of Restaurant Interior Appearance by Living Area

	Urban (n=89)		Suburban (n=109)		Rural (n=52)		F	Sig
	Mean	SD	Mean	SD	Mean	SD		
Tablecloths	3.70	.88	3.61	1.15	3.68	1.16	5.032	.007
Windows or Windowsills	3.28	.80	2.97	1.00	3.04	1.01	1.834	.162
Open kitchen	3.18	1.18	3.01	1.13	2.83	1.30	1.758	.740
Floor and carpet	3.49	.88	3.25	.91	3.26	1.10	7.228	.175
Food contact surface	3.63	.95	3.80	1.16	3.83	.89	.302	.001

SUMMARY

This chapter provided the study respondents' general demographics and general perceptions of restaurant cleanliness. In addition, it presented the seven dimensions of restaurant cleanliness with the associated factor loading, percentage of variance explained, and Cronbach's alpha. Subsequently, factor scores of seven dimensions were used in multiple regression analysis to investigate the relationship between restaurant cleanliness and overall restaurant quality evaluation. And finally, this study used multivariate analysis of variance to compare the perceptions of restaurant cleanliness of two cultural groups: Westerners and Asians.

Multiple regression results indicated that overall restaurant cleanliness dimensions were statistically significant to restaurant quality evaluation. More specifically, three dimensions of restaurant cleanliness- server's behavior, restroom appearance and restroom personal hygiene- were found to have a positive impact on customers' overall restaurant quality evaluations. Therefore, hypothesis 1 was supported and this study partially supported the second sub hypothesis and the third sub hypothesis.

The MANOVA results showed significant differences between Westerners and Asians in their perceptions of restaurant cleanliness. Therefore, hypothesis 2 was supported. Both groups had similar priority of restaurant cleanliness dimensions. The server's behavior was the most important dimensions for both Westerners and Asians. Restroom personal hygiene was the only dimension that the group scored differently. Westerners scored restroom personal hygiene as the second most important factor for restaurant cleanliness. However, Asians considered it to be the least important dimension.

Table 4.10 Summary of Hypotheses Testing

Hypotheses	Results
H1: Customer perceptions of restaurant cleanliness will have a positive effect on customer evaluation of restaurant quality.	Supported
H1-a. Functional items will have a positive effect on customer evaluations of service quality.	Not supported
H1-b. Mechanic items will have a positive effect on customer evaluations of service quality.	Partially supported
H1-c. Humanic items will have a positive effect on customer evaluations of service quality.	Partially supported
H2: There are significant differences in how different cultures perceive restaurant cleanliness.	Supported

CHAPTER V

SUMMARY, CONCLUSIONS, LIMITATIONS, AND RECOMMENDATIONS

INTRODUCTION

The main purpose of this study is to investigate restaurant cleanliness by expanding the previous restaurant cleanliness measurement scale including more diverse dimensions affecting customers' restaurant quality evaluations. Also, this study compared perceptions of restaurant cleanliness of two different cultural groups- Westerners and Asians- using the modified restaurant cleanliness scale. Focus groups, factor analysis, multiple regression, and MANOVA were used and the results were discussed in the previous chapters. Chapter V will discuss the findings, implications, limitations of the research, recommendations for future research, and conclusion.

DISCUSSION OF FINDINGS

Findings of this study according to the research objectives and hypotheses suggested in Chapter 1 will be discussed in the following section.

Research Objectives

1. Identify which items/dimensions restaurant customers perceive as important when they evaluate a restaurant's cleanliness.
2. Modify the previous restaurant cleanliness scale using the findings.
3. Identify the importance of cleanliness in restaurant customers' evaluations of restaurant quality.
4. Identify and analyze whether customers from different cultural backgrounds have different viewpoints about restaurant cleanliness.

First, two focus groups - one consisting of Western participants and the other composed of Asian participants- were conducted to identify restaurant cleanliness items considered importantly by customers when evaluating restaurant cleanliness. During the focus groups, participants freely discussed restaurant cleanliness items and added or deleted entries on the list of the restaurant

cleanliness items collected from the restaurant cleanliness measurement scale and literature review. With the results of the focus groups, a restaurant cleanliness survey questionnaire including twenty-nine restaurant cleanliness items for this study was developed and tested on two different samples: Westerners and Asians.

After data collection, this study conducted factor analysis to create dimensions of the restaurant cleanliness items. Factor analysis results indicated seven dimensions for restaurant cleanliness items: restaurant interior appearance, server's appearance, restroom personal hygiene, restroom appearance, servers' behavior, food condition and signage. The results of factor analysis were different from those of the sub-hypotheses of hypotheses 1 which was proposed in Chapter 1. This study assumed that restaurant cleanliness items might be categorized into the three dimensions: functional, mechanic and humanic dimensions. However, factor analysis results suggested that restaurant cleanliness items be categorized into more than three dimensions. Therefore, three sub-hypotheses of hypotheses 1 were not applicable to test.

Instead of the three dimensions, seven dimensions were employed to test hypothesis 1. According to the multiple regression analysis, overall dimensions of restaurant cleanliness had a positive effect on restaurant quality evaluations; this result supported hypothesis 1. Among seven dimensions, server's behavior and restroom personal hygiene were found to have a positive impact on restaurant customers' overall quality evaluations.

Another finding of this study is that there is a significant difference in the perceptions of Westerners and Asians regarding a restaurant's cleanliness. Among seven dimensions, server's behavior and restroom personal hygiene were found to be statistically significant. In addition, restroom appearance was found to be partially significant. Both groups showed mostly similar priorities for the seven restaurant cleanliness dimensions. Only one dimension, restroom personal hygiene, was ranked exceptionally differently by the two groups.

The server's behaviors such as contact with food with bare hands, smoking or sneezing were ranked as the most important dimension by both Westerners and Asians when evaluating restaurant cleanliness. All the behaviors included in this dimension are regulated by food code 2009 and

SERVSAFE qualification because they can have negative impacts on food safety causing cross-contamination. In this dimension, Asians presented as having higher expectations than Westerners for all three items.

Restroom appearance was viewed as the second most important dimension for Asian groups and the third most important dimension for Westerner groups. Asians were found to have higher expectations for all three items in this dimension, as well.

Signage such as employee hand-washing notices and restaurant inspection score posts were ranked the third most important factor for Asians and the fourth most important for Westerners. Asians were found to place more importance on restaurant inspection score and the evidence of vermin when they evaluate restaurant cleanliness. On the other hand, Westerners were found to have higher expectations for employee hand washing signage than did Asians.

Food conditions such as freshness of ingredients, temperature of food and presentation of dishes were considered the fourth most important dimension factor for Asians and the fifth most important dimension for Westerners.

Restaurant interior appearance was ranked as the fifth most important dimension by Asians and the sixth most important dimension by Westerners. Despite not showing higher expectations for the food contact surface, Asians were found to have higher expectations for the other four items.

The server's appearance was viewed as the sixth most important dimension for Asians and least important factor for Westerners when they evaluate restaurant cleanliness. Asians had higher expectations for all four items than Westerners. Both groups ranked server's hands and nails as the most important items in this dimension but server's accessories were considered to be the least important item.

The last dimension, restroom personal hygiene was the only one ranked differently by the two groups. The Westerner group ranked this dimension as the second most important factor on a restaurant cleanliness evaluation while the Asian group considered this dimension as the least important among seven dimensions. This is the only dimension that Westerner samples ranked higher for all items than did Asian samples.

The findings of this study show what constitutes customers' perceptions of restaurant cleanliness. Previous researchers emphasized physical environment such as restaurant interior or wait staff's appearance, for example hair style or neatness of uniforms to determine restaurant cleanliness (Lee and Hing ; Stevens, Knutson et al. 1995; Chow, Lau et al. 2007). However, as this study indicated the restaurant's interior and server's appearance were found to be less important dimensions when customers evaluate restaurant cleanliness. Rather server's behavior, restroom appearance, signage and restroom personal hygiene were found to be considered important when customers evaluate restaurant cleanliness.

Another finding of this study is the impact of culture on customers' perceptions of restaurant cleanliness. Even though both groups showed similar preferences among the restaurant cleanliness dimensions, several differences were found.

First, Westerners were found to be especially concerned with cleanliness of hands. Westerners placed significant importance on the restroom personal hygiene dimension also they ranked high scores for individual items such as employee hand washing signage and server's hands and nails. Asians also placed significant importance on employee hand washing signage and wait staff's hands and nails but Asians were found to be less concerned with restroom personal hygiene items which may affect cleanliness of their hands. From the results, it can be assumed that Westerners focus on cleanliness of hands whether the wait staff's hands or their own. However, Asians consider cleanliness of hands but their main concern is on the cleanliness of the staff's hands.

Another cultural finding is that Asians were more rigorous about restaurant cleanliness. Asian samples were found to consider almost all dimensions for restaurant cleanliness evaluations. Also, in most items, Asians held higher expectations than did Westerners.

IMPLICATIONS

This section indicates both managerial and theoretical implications drawn from the results of this study. This restaurant cleanliness research presents theoretical implications for not only the restaurant industry but also the overall service industry by expanding the current level of knowledge in hospitality literature.

The importance of restaurant cleanliness has been emphasized pervasively in many restaurant studies but few studies have been conducted regarding what constitutes customers' consideration of restaurant cleanliness. The purpose of this study was to investigate customers' perceptions of restaurant cleanliness by modifying the restaurant cleanliness measurement scale (Barber and Scarcelli 2010) including various details affecting restaurant cleanliness and these details which were collected from customers' viewpoints. It was found that evaluation of service is affected by diverse factors. Therefore, it is believed that evaluations of restaurant cleanliness also should be affected by diverse dimensions in service encounter. This is the first research to include various dimensions in the restaurant cleanliness measurement scale. Although, some researchers have proposed scales for restaurant cleanliness measurement, they were focused on limited dimensions. This study expanded those scales including diverse dimensions and also examined the modified scale empirically.

In addition, this study compared perceptions of restaurant cleanliness of two different cultural groups: Westerners and Asians. Despite the restaurant industry increasingly become global business, few studies investigating the different cultural background of customers' perceptions of restaurant cleanliness.

Generally, Western and Asian cultures are believed to have different characteristics so Westerners and Asians will have different perceptions for the same service. For example, Asian cultures are generally characterized by large power distance (Hofstede 1980) and high-context culture (Hall 1977), while Western cultures are characterized by lower power distance and low-context culture. Some cultural studies found that Western consumers tend to turn to the physical environment for making judgments on service quality because concrete cues are more direct than those provided by

encounters with service employees and so are easier for Westerners to evaluate.(Mattila 1999). Also, Western customers are likely to focus on the outcome rather than the process component of the service delivery (Mattila 1999). Conversely, Asian customers tend to have higher expectations for the interaction quality in service encounters.

Cultural difference was also found in this restaurant cleanliness research. Both the Western and Asian sample agreed on the importance of restaurant cleanliness and mostly they had similar priorities for the seven dimensions. However, the Asian sample had higher expectations in many items than the Western sample; in particular, Asians were found to have more rigorous standards for wait staff than Westerners.

The results of the study indicate that cleanliness is a key consideration for meeting regulations as well as restaurant customers' standard of quality so restaurant operators and employees should recognize the importance of restaurant cleanliness. There were no big differences between what study participants consider important when they evaluate restaurant cleanliness and what FDA regulates. However, from the focus group, one participant announced that he had stricter standard of cleanliness for popular chain restaurants than local restaurant. While this opinion was not shared by most focus group participants, it can be imperative for chain restaurant operators to keep a level of cleanliness at least equal with other restaurants in the same branch. Since customers are familiar with popular chain restaurant setting and service, it is possible that if some items don't meet customers' standard of cleanliness than customers can easily notice the point even they visit the branch for the first time.

Also, they should be informed that restaurant cleanliness is perceived by customers through integral dimensions rather than by evaluating specific items. Therefore, restaurant operators should pay attention to diverse items to ensure the highest level of restaurant cleanliness.

It is imperative for restaurant operators to understand what matters most to patrons in evaluating restaurant cleanliness, so operators can effectively manage their limited resources and put them to the best use. Also, study results indicated that restaurant cleanliness is important for customer' satisfaction level and future revisit decisions. In addition, study respondents agreed that whether they

go to high or low cost restaurants, they consider cleanliness important. Finally, the study found that respondents tend not to complain even when they perceive the restaurant is not clean. Therefore, methods of communication for relaying complaints should be developed in order to give customers a way to express dissatisfaction with any aspect of restaurant cleanliness.

LIMITATIONS AND FUTURE RESEARCH

This research has some limitations. The first limitation concerns the sampling frame used. Since this study used convenience sampling, it can't represent an entire population. In addition, this study chose Americans as representatives of Western culture and Taiwanese as representatives of Asian culture. However, it is hard to generalize Americans and Taiwanese to represent all Westerners and all Asians. Also, this study used student sample; but students may not be a main target market for table service restaurants. Therefore, for future research, this study should be replicated within a broad setting.

The second limitation concerns the use of focus groups to identify restaurant cleanliness items. A major issue with focus group is the small group size. Because of this small size, there is a possibility that some variables may be missed. Also, the focus group participants were all students, so it is hard to say their opinions represents all customers. For future study, restaurant cleanliness items should be collected from target customers.

The last limitation is the use of a Likert-scale when rating importance. It is possible that customers are being subjective when they state something is important. Therefore, to minimize this problem, other methods such as experimental design and choice modeling may be useful.

Future research should continue to identify what attributes are important when customers evaluate restaurant cleanliness. In particular, future study should test among diverse demographic groups such as age and income levels.

Regarding the restaurant cleanliness dimension, server's behavior was found most important for restaurant cleanliness evaluations. Therefore future research should investigate this dimension more thoroughly.

Also, future research should test this modified scale across more sample groups to confirm whether there is a cultural difference in perceptions of restaurant cleanliness.

CONCLUSION

This thesis examined customers' perceptions of table-service restaurant cleanliness. Customer's perceptions of restaurant cleanliness were found to constitute seven dimensions: interior appearance of restaurant, server's appearance, restroom appearance, server's behavior, restroom personal hygiene, server's appearance, food condition and signage. It is revealed that customer's perception of restaurant cleanliness is affected by diverse factors and customer's evaluation of restaurant cleanliness is more integral process rather than one determined by specific items.

This study compared two different cultural groups: Westerners and Asians. Both groups agreed on the importance of restaurant cleanliness. Also, both reported that restaurant cleanliness is an important factor in deciding restaurant quality and their satisfaction levels. Regarding the restaurant cleanliness dimensions, they showed mostly similar priorities in seven dimensions. However, some differences were found between the groups. Westerners placed more weight on the restroom personal hygiene dimension than Asians. Asians were found to have higher expectations for overall restaurant cleanliness items than Westerners.

Results of this study inform restaurant operators and employees that to increase the level of restaurant cleanliness, they should manage diverse dimensions. Moreover, this study can provide valuable information to restaurant operators who seek to expand their business in the global market.

Although this research used a student sample and only twenty nine restaurant-cleanliness items to investigate the research hypotheses, it provide a better understanding of how customers perceive restaurant cleanliness and also how customers of different cultural back ground perceive restaurant cleanliness differently.

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APPENDIX A. RESTAURANT CLEANLINESS SURVEY (English version)

This survey is designed to investigate your perceptions of cleanliness in casual table service restaurants. This type of restaurant is one where a wait staff takes your order, delivers your meals and provides services to you while you are dining. Please answer the following questions referring to your dining experiences at restaurants such as T.G.I. Friday's or Chili's.

General Perceptions of Restaurant Cleanliness

Please indicate how you feel about with the following issues (please check only one box).

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Restaurant cleanliness is important to me.	<input type="checkbox"/>				
Restaurant cleanliness is important to me when evaluating overall restaurant quality.	<input type="checkbox"/>				
Restaurant cleanliness is important to me when I decide whether I will return to a restaurant or not.	<input type="checkbox"/>				
I have high expectations of cleanliness for high-budget restaurants.	<input type="checkbox"/>				
I have low expectations of cleanliness for low-budget restaurants.	<input type="checkbox"/>				
A clean restaurant will increase my overall level of satisfaction.	<input type="checkbox"/>				
A dirty restaurant will decrease my overall level of satisfaction.	<input type="checkbox"/>				
I tend to complain to restaurant employees if I perceive that a restaurant is dirty.	<input type="checkbox"/>				

Restaurant Cleanliness Items

The following questions are about items that might affect restaurant cleanliness. Please indicate how important you consider these items to be when you evaluate restaurant cleanliness. This session consists of four parts: Food/ Environment/ Restroom/ Wait Staff

Food

	Not at all important	Somewhat important	Important	Very important	Extremely important
Freshness	<input type="checkbox"/>				
Presentation	<input type="checkbox"/>				
Temperature	<input type="checkbox"/>				
Food contact surface (e.g., plates, glassware)	<input type="checkbox"/>				
Unprotected food (e.g., uncovered condiments on the table)	<input type="checkbox"/>				

Environment

	Not at all important	Somewhat important	Important	Very important	Extremely important
Exterior of restaurant	<input type="checkbox"/>				
Restaurant floor and carpet	<input type="checkbox"/>				
Windows or windowsills	<input type="checkbox"/>				
Tablecloths	<input type="checkbox"/>				
Open kitchen	<input type="checkbox"/>				
Presence or evidence of vermin in food or non-food areas	<input type="checkbox"/>				
Humidity	<input type="checkbox"/>				
Restaurant inspection score posted	<input type="checkbox"/>				

Restroom

	Not at all important	Somewhat important	Important	Very important	Extremely important
Floors	<input type="checkbox"/>				
Odor	<input type="checkbox"/>				
Trash in toilets	<input type="checkbox"/>				
No soap	<input type="checkbox"/>				
No hot water	<input type="checkbox"/>				
No paper towels/ drying device	<input type="checkbox"/>				
Employee hand washing signage	<input type="checkbox"/>				

Wait staff

	Not at all important	Somewhat important	Important	Very important	Extremely important
Hair style (e.g., hair pulled back, hairnet used)	<input type="checkbox"/>				
Uniform	<input type="checkbox"/>				
Hands and nails	<input type="checkbox"/>				
Accessories (e.g., earrings, piercings)	<input type="checkbox"/>				
Bare hand contact with food	<input type="checkbox"/>				
Coughing and sneezing	<input type="checkbox"/>				
Smoking	<input type="checkbox"/>				
Eating and drinking while working	<input type="checkbox"/>				
Tasking order (e.g., serving food right after wiping table)	<input type="checkbox"/>				

Demographic Information

The following demographic information will be used to classify the survey data. Please indicate an appropriate response in each category.

1. What is your gender? ___ Male ___Female

2. What is your age? _____

3. What is your ethnic group?

___ Caucasian

___ Asian

___ African-American

___ Hispanic

___ Other (please specify)_____

4. What is your current academic status?

___ Freshman

___ Sophomore

___ Junior

___ Senior

___ Other (please specify)_____

5. Which of the following best describe your household?

___ Single adult

___ Married couple without children

___ Family with children

___ Other (please specify)_____

6. Which of the following best describes the area you live in?

___Urban ___Suburban ___Rural ___Other (please specify)_____

7. How long have you been living there?

___ Less than 5years ___ 5-9 years ___ 10-19 years ___20-29 years ___ More than 30 years

8. During the past six months, approximately how many times have you dined out at a casual table service restaurant? _____

9. Approximately how much do you spend when dining at a casual table service restaurant?
\$_____

10. What is an important aspect when you evaluate a casual table service restaurant quality?
(Check all that apply.)

Taste of food Cleanliness Price Ambience Service employee

Other (please specify)_____

11. Have you ever worked as a server or food staff in a restaurant? Yes No

Appendix B. RESTAURANT CLEANLINESS SURVEY (Chinese version)

餐廳衛生問卷調查

此調查旨在探討您對用餐餐廳衛生之看法，此次調查類型為具服務員為您點餐、上菜並提供用餐服務之餐廳，請以您於 T.G.I Friday's 或 Chili's 用餐之體驗回答下列問題。

餐廳衛生之一般觀感

請選擇對以下議題之感覺（單選）。

	非常 不同 意	不同意	中立	同意	非常 同意
餐廳衛生對我非常重要	<input type="checkbox"/>				
餐廳衛生對我評估餐廳整體品質相當重要	<input type="checkbox"/>				
餐廳衛生對我決定是否再度光臨相當重要	<input type="checkbox"/>				
對高消費餐廳之衛生具高期待.	<input type="checkbox"/>				
對低消費餐廳之衛生僅具低期待	<input type="checkbox"/>				
餐廳乾淨層度將增加我的整體滿意度	<input type="checkbox"/>				
餐廳髒亂將降低我的整體滿意度	<input type="checkbox"/>				
若感覺餐廳過於髒亂，我將告知服務人員	<input type="checkbox"/>				

餐廳衛生項目

以下項目可能影響餐廳衛生，請選擇當你評估餐廳衛生時感覺重要的項目，此處由四個部分：
食物/環境/洗手間/服務人員所組成。

食物

	完全不重要	有點重要	重要	很重要	非常重要
新鮮度	<input type="checkbox"/>				
擺盤	<input type="checkbox"/>				
溫度	<input type="checkbox"/>				
食物裝盛器皿 (如盤子及玻璃器皿)	<input type="checkbox"/>				
未加蓋之食物 (如桌上無蓋之佐料)	<input type="checkbox"/>				

環境

	完全不重要	有點重要	重要	很重要	非常重要
餐廳外觀	<input type="checkbox"/>				
餐廳地面及地毯	<input type="checkbox"/>				
窗戶或窗台	<input type="checkbox"/>				
桌巾	<input type="checkbox"/>				
開放式廚房	<input type="checkbox"/>				
害蟲出沒於食品或非食品區	<input type="checkbox"/>				
濕度	<input type="checkbox"/>				
餐廳檢查評分記錄	<input type="checkbox"/>				

洗手間

	完全不重要	有點重要	重要	很重要	非常重要
地板	<input type="checkbox"/>				
氣味	<input type="checkbox"/>				
內部垃圾	<input type="checkbox"/>				
無肥皂	<input type="checkbox"/>				
無熱水	<input type="checkbox"/>				
無紙巾/擦手巾	<input type="checkbox"/>				
員工手部清潔方案	<input type="checkbox"/>				

服務人員

	完全不重要	有點重要	重要	很重要	非常重要
髮型（如紮頭髮或使用髮網）	<input type="checkbox"/>				
制服	<input type="checkbox"/>				
手部與指甲	<input type="checkbox"/>				
附件（如耳環及穿環）	<input type="checkbox"/>				
直接以手接觸食物	<input type="checkbox"/>				
咳嗽及打噴嚏	<input type="checkbox"/>				
抽煙	<input type="checkbox"/>				
工作時吃或喝東西	<input type="checkbox"/>				
複雜的工作順序（如擦完桌子後立即送餐）	<input type="checkbox"/>				

統計資料

以下個人信息將用來分類調查問題，請於以下類別選擇適當答案。

1. 性別 男 女

2. 年齡_____

3. 族群

白人

亞洲人

非裔美國人

西班牙裔

其他 _____

4. 就讀年級?

一年級

二年級

三年級

四年級

其他_____

5. 家庭背景

單身之成人

已婚無子女

已婚有子女

其他_____

6. 居住地區

市區 郊區 鄉下 其他 _____

7. 居住時間

5年以下 5-9年 10-19年 20-29年 超過30年

8. 過去半年內，至餐廳消費之次數_____

9. 於餐廳用餐之大約消費金額\$_____

10. 評估餐廳品質之要點（可複選）

食物味道 衛生 價格 氣氛 服務人員

其他請具體敘述_____

11. 有否具餐廳服務經驗？ 是 否



MEMORANDUM

DATE: April 25, 2012

TO: Suzanne K. Murrmann, Seungah Yoo

FROM: Virginia Tech Institutional Review Board (FWA00000572, expires May 31, 2014)

PROTOCOL TITLE: The Impact of Restaurant Cleanliness on Customer Service Quality Evaluations in the United States and Taiwan

IRB NUMBER: 12-274

Effective April 24, 2012, the Virginia Tech IRB Chair, Dr. David M. Moore, approved the amendment request for the above-mentioned research protocol.

This approval provides permission to begin the human subject activities outlined in the IRB-approved protocol and supporting documents.

Plans to deviate from the approved protocol and/or supporting documents must be submitted to the IRB as an amendment request and approved by the IRB prior to the implementation of any changes, regardless of how minor, except where necessary to eliminate apparent immediate hazards to the subjects. Report promptly to the IRB any injuries or other unanticipated or adverse events involving risks or harms to human research subjects or others.

All investigators (listed above) are required to comply with the researcher requirements outlined at <http://www.irb.vt.edu/pages/responsibilities.htm> (please review before the commencement of your research).

PROTOCOL INFORMATION:

Approved as: **Exempt, under 45 CFR 46.101(b) category(ies) 2**

Protocol Approval Date: **3/27/2012**

Protocol Expiration Date: **NA**

Continuing Review Due Date*: **NA**

*Date a Continuing Review application is due to the IRB office if human subject activities covered under this protocol, including data analysis, are to continue beyond the Protocol Expiration Date.

FEDERALLY FUNDED RESEARCH REQUIREMENTS:

Per federal regulations, 45 CFR 46.103(f), the IRB is required to compare all federally funded grant proposals / work statements to the IRB protocol(s) which cover the human research activities included in the proposal / work statement before funds are released. Note that this requirement does not apply to Exempt and Interim IRB protocols, or grants for which VT is not the primary awardee.

The table on the following page indicates whether grant proposals are related to this IRB protocol, and which of the listed proposals, if any, have been compared to this IRB protocol, if required.