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Comparing Self-Service Technologies and Human Interaction Services in the Hotel Industry

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COMPARING SELF-SERVICE TECHNOLOGIES AND HUMAN INTERACTION SERVICES IN THE HOTEL INDUSTRY

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ABSTRACT

Due to the development of technology, one of the major trends in the hospitality industry is service migration from human interaction services (HISs) to self-service technologies (SSTs). Therefore, it is important to examine customers service perceptions based on two different service provisions: SSTs and HISs. This study investigated similarities and differences between SST and HIS customer service perceptions based on several service quality dimensions, their effects on customer satisfaction and service loyalty in the hotel industry. Initially, this study conceptualized the service quality dimensions with six major dimensions (i.e., reliability, responsiveness, tangibles, competence, efficiency, and enjoyment) and hypothesized to have a positive influence on customers satisfaction, and subsequently, on service loyalty. A total of 275 useable responses were collected through an online self-administrative survey on Qualtrics.

The results indicated that the service quality for SST and HIS customers could be evaluated through three major factors: interactive quality, tangibles, and enjoyment. Overall, interactive quality and enjoyment had a significant effect on customer satisfaction and service loyalty, while tangibles showed a direct impact on service loyalty. In addition, hotel customers had a higher level of interactive quality and service loyalty when they received service from HISs. On the other hand, hotel customers tended to show a higher level of enjoyment when they receive service from SSTs. This study contributes theoretical implications as it suggests the service quality framework that can be applied to both SST and HIS service settings. Furthermore, this study provides hotel managers with a comprehensive understanding of customer service perceptions towards SSTs in contrast to HISs.

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CHAPTER ONE: INTRODUCTION

1.1. Background

Technology has been a key medium of successful operations in the hospitality industry because it helps service organizations perform their tasks efficiently (Meuter, Ostrom, Roundtree, & Bitner, 2000). In addition, technology also allows service firms to meet or exceed customers' expectation more effectively (Fisher & Beatson, 2002). Due to the development of technology, one of the major trends in the hospitality industry is that services have increasingly migrated from traditional human interaction services (HISs) which are delivered by personnel service providers, to self-service technologies (SSTs) which are co-produced by customers (Kattara & El-Said, 2014; Lin & Hsieh, 2011).

In the past, service firms were required to hire many frontline staff members to run their operations. However, nowadays, hospitality firms do not need to hire many service employees compared to when they offered only HISs to customers, because SSTs have altered several job positions (Meuter *et al*., 2000). In view of that, one of the major benefits of applying SSTs from the organization's perspective is the reduced operation cost due to lower personnel expenses (Meuter, Bitner, Ostrom, & Brown, 2005). There are even hotel and restaurant chains such as Yotel and Eatsa which offer only SSTs to their customers.

A proliferation of SSTs has changed customers' lifestyle as well. For instance, a number of today's consumers have started to order customized food through self-service kiosks at restaurants, to check-in and pick up their boarding passes via self-check-in kiosks at airports and to use the self-check-in and out systems in hotels. According to Meuter *et al*. (2000), SSTs allow

customers to enjoy more independent service with the flexibility of time and physical space. Therefore, more customers have shown a positive attitude towards SSTs at the service encounter of late.

In spite of this growing service exchange, some researchers and managers are still skeptical to adopt SSTs in the hospitality industry (Beaston, Coote, & Rudd 2006; Makarem, Mudambi, & Podoshen, 2009; Kattara & El-Said, 2014; Klier, Klier, Müller, & Rauch, 2016). They have insisted that traditional HISs strongly affect positive service outcomes, such as customer satisfaction, in comparison with SSTs (Beaston *et al*., 2006; Makarem *et al*., 2009). Although several operators currently believe that SSTs will be the main form of service delivery in the future, still more people consider that HISs will remain as the main service channel in the hospitality industry (Kattara & El-Said, 2014). In fact, despite the predominant service evolution from HISs to SSTs, some service organizations still offer services via frontline employees only, even eliminating SST gadgets to further enhance their relationship with their consumers (Klier *et al*., 2016).

According to Cunningham, Young, and Gerlach (2008), more employee engagement means that there are more opportunities to impress and amaze customers. They also admitted that more contacts between customers and service staffs would bring a higher risk of negative outcomes such as service failures at the service encounter (Cunningham *et al*., 2008). In other words, human capital contribution and implementation of SSTs in the hospitality setting are very complex. Similarly, Kattara and El-Said (2014) posited that customers' preferences between HISs and SSTs might vary depending on the service contexts. Accordingly, "customers' preference for receiving a direct person contact is the most important reason for preferring

human interaction encounters; customers' preference for speed and easy service is the main reason for preferring technology-based self-service" (p.67).

Therefore, it is necessary to investigate similarities and differences between two different service encounter options: SSTs and HISs. In the hotel industry, for instance, SSTs have been introduced predominantly in the check-in process, while altering the logistics of the moment of truth by allowing customers to check-in without any interactions with staffs (Deel, 2010). However, the lodging industry is one of the most service-oriented as well as labor-intensive industries (Chathoth, 2007). Thus, it is doubtful that customers would expect to serve themselves via SSTs rather than receive the service from service employees in hotels. Similarly, Beatson, Coote, and Rudd (2006) insisted that SSTs are replacing service encounters with service employees, but several hotels have found it difficult to introduce SSTs while maintaining high service quality due to the lack of human interaction. This could have potential effects on customers' service perceptions as well as satisfaction, and subsequently, future consumer behavior such as service loyalty.

1.2. Problem Statement

The adoption of SSTs has increased substantially in recent years in the hospitality industry. However, many hospitality operators and managers still hesitate to implement SSTs because of the possibility that this type of technology would not be well accepted by customers (Oh, Jeong, & Baloglu, 2013). Therefore, it is important to investigate customer' service perceptions towards SSTs compared to traditional HISs. Despite the importance of examining two different service settings which are SSTs and HISs, few systematic studies have been done

to identify and compare customers' evaluations regarding SSTs and HISs at the service encounter. In addition, no conceptual service quality framework has been researched which can be applied to both HIS and SST settings. Although there are some studies that contrasting HISs with SSTs (e.g., Kattara & El-Said, 2014; López-Bonilla & López-Bonilla, 2013), such studies tend to produce general comparisons based on customers' overall preferences or satisfaction.

Moreover, even though there are extensive studies have been done regarding the relationships between service quality, customer satisfaction, and loyalty (e.g., Bloemer, De Ruyter, & Wetzels, 1999; Cristobal, Flavián, & Guinaliu, 2007), only a few studies have examined the disparities of customer satisfaction and service loyalty levels affected by service encounters regarding SSTs and HISs. This lack of studies also applies to the hospitality context which is categorized as a labor-intensive industry. Similarly, although SSTs represent an inevitable trend in the lodging industry, more research is needed in order to better understand the relationship between SSTs, HISs and consumer service perceptions (Deel, 2010). Therefore, it is worthwhile to compare the multiple dimensions of service quality perceptions between SST and HIS customers and to investigate their effects on customer satisfaction and service loyalty in the hotel industry.

1.3. Purpose of the Study

Several types of SSTs have been widely implemented in hotels such as online self-reservations or self-check-out through in-room televisions. Among SST systems, self-check-in kiosks represent the most prevalent technology in the lodging industry, as they were originally designed to replace hotel service employees (Deel, 2010). This study aims to examine the

similarities and differences of customers' service evaluations between two different service options (i.e., SSTs and HISs) based on key service quality constructs. To do so, this research will investigate the effects of multiple service quality dimensions (i.e., reliability, responsiveness, tangibles, competence, efficiency, enjoyment) on customer satisfaction and subsequently, service loyalty during the check-in process in hotels. These effects will be further explored by comparing two different service providers: SSTs (i.e., self-service kiosks) and HISs (i.e., front office employees).

1.4. Significance of the Study

This study will examine the impacts of customers' service perceptions on satisfaction, and further, on service loyalty. Since service quality has multiple dimensions, which are applicable for both SSTs and HISs, this study could provide significant empirical results regarding service quality perceptions of self-service kiosks and service employees at their service encounters. Although there are several service quality instruments for traditional HISs, the systematic service quality measurements for SSTs have been relatively lacking. In addition, this research could contribute to the related self-service technology literature, as it will investigate the service perception of customers and their future behaviors (i.e., service loyalty) in a hotel setting. Particularly through the direct comparison of service quality evaluations between customers who received SSTs and HISs, this study will broaden the existing literature which has either focused on SSTs or HISs.

Furthermore, the results of this study will provide strategic implications to hotel organizations, as it considers both traditional services and technology-based self-services from

the perspective of customers. Although several hotels are already actively utilizing such innovative SSTs, many operators are still hesitating to replace human interaction with this automated service delivery mode (Lin & Hsieh, 2006). Thus, the results of this research may provide hotel managers with a better understanding of customers' service perceptions towards HISs and SSTs at the service encounter, and to assess the effects of such perceptions on customer satisfaction and service loyalty.

CHAPTER TWO: LITERATURE REVIEW

2.1. Self-Service Technologies (SSTs)

SSTs as known as technology-based self-services which mainly reflect services that are provided by customers themselves via the usage of different types of technology without any direct contacts with frontline employees at the service encounter (Meuter *et al*., 2000; Beatson *et al*., 2006). In the process of SSTs, customers are considered as co-producers and contribute to the service delivery procedure (Lin & Hsieh, 2011). Due to the advanced information technology, as well as revolutionized service landscape, many industries including the hospitality industry have started to adopt SSTs since a couple of decades ago (Lin & Hsieh, 2011).

One of the major advantages of SSTs is cost saving because the self-service technology can substitute employees (Dabholkar, 1996; Sur, 2008). At first, SSTs were implemented predominantly in retail and transportation industries. However, it has become an unavoidable trend in the hospitality industry because of its potential impact to reduce the number of employees and the total service processing time (Chen, 2011). Thanks to SSTs, customers are now able to receive more accurate and consistent services at any time and anywhere (Law, Leung, & Buhalis, 2009; Ong, 2010). Higher levels of perceived service customization and greater control on service delivery processes due to the involvement of customers have also been crucial strengths of SSTs (Dabholkar 1996; Meuter *et al*., 2000). As a result, SSTs have a competitive advantage in the hospitality industry (Kattara & El-Said, 2014).

SSTs have been used widely from Automated Teller Machines (ATMs) to various services over the Internet such as self-online package tracking, automated phone systems such as

phone banking, as well as self-check-outs at supermarkets, also common in these days (Meuter *et al*., 2000). In the hospitality industry, SSTs include self-checking-in and printing boarding pass kiosks at the airports, online booking reservation systems, mobile apps for ordering food, and self-ordering and paying through kiosks at restaurants. In hotels, SSTs especially have been used in several ways, such as self-reservation systems through websites or apps, self-check-in kiosks, self-check-out services on hotel televisions, self-serving in-room minibars, and room service via self-ordering systems. Despite the usage of SSTs, personal or face-to-face services are particularly important in the hotel industry for determining hotel consumers' satisfaction as well as commitment (Chen, 2011; Beatson *et al*., 2006).

Since the late 1990s when SSTs started to be implemented in several service processes and industries, SSTs have been a debatable topic in the hospitality industry. Bitner, Ostrom, and Meuter (2002) insisted that SSTs increase customer satisfaction and loyalty, as it successfully alters the traditional services. Moreover, faster speed, cheaper costs, and easier access to the services of SSTs have led customers to prefer the use of such technologies (Bitner *et al*., 2002). Furthermore, Chen, Chen, and Chen (2009) posited that SSTs have a positive influence on customers' satisfaction, and further, it affects continuance usage intention due to its perceived usefulness of SSTs. Collier and Barnes (2015) also found that hedonic aspects oriented from SSTs are a significant predictor of customer delight. Lastly, Chen (2011) insisted that SSTs could offer people flexible services regardless of time and location.

In spite of the numerous benefits of SSTs, a few disadvantages of SSTs cannot be ignored. As per Dabholkar and Spaid (2012), because of the technology itself and SST users, it is impossible to avoid SST failures completely. One of the dissatisfying factors of SSTs is there is

no service recovery function on SSTs (Bitner *et al*., 2002). López-Bonilla and López-Bonilla (2013) also mentioned that there is evidence that some customers consider the introduction of technology in the service process as a threat due to the sense of insecurity regarding the solution of technology related problems. Therefore, customers may feel frustrated when there are any service failures while using SSTs. In addition, Meuter *et al*. (2000) found that technology failures, as well as process failures, and the poor design of SST gadgets, highly affect customer dissatisfaction. Simultaneously, Chen (2011) posited that malfunctions, design limitations, and higher sunk costs such as maintenance fees, constitute significant drawbacks of SSTs.

2.2. Human Interaction Services (HISs)

HISs are traditional human touch services provided by frontline employees through direct contacts with customers at the service encounter (Bitner, Booms, & Tetreault, 1990; Kattara & El-Said, 2014). According to Surprenant and Solomon (1987), a service encounter is "the dyadic interaction between a customer and a service provider" (p. 87). In the past, HISs were the only service option that most people felt familiar with. Along these lines, a number of researchers have examined the interaction between employees and customers (Kattara & El-Said, 2014).

Many studies highlighted the importance of human interactions at the service encounter because they highly affect customers' service evaluations and satisfaction in the hospitality industry (Bitner *et al*., 1990; Wu & Liang, 2009). For instance, Ko (2017) confirmed the significant role of human interactions in the service process and, such interactions were shown to be a critical reason for customers' loyalty towards hospitality firms. Therefore, intimate customer-to-employee relationships highly affect overall customer satisfaction as well as

behavioral loyalty. They also enhance customer-to-firm relationships (Guenzi & Pelloni, 2004). Similarly, "the existence of a friendly interpersonal relationship with a service employee can drive the firm's success by fostering customer satisfaction, behavioral loyalty, and loyalty intention" (Guenzi & Pelloni, 2004, p.377).

Likewise, Keng, Huang, Zheng, and Hsu (2007) found that not only physical environmental interaction encounters, but also personal interaction encounters, have positive influences on customers' experiential value and satisfaction. In addition, as per Chen (2011), HISs allow people to have more trustful relationships via the close interaction in the hospitality industry. Considering the importance of non-verbal and verbal communication, both employees and customers can understand each other's feelings better through HISs as well (Chen, 2011).

Nonetheless, HISs cannot be free from its limitations. Most of all, HISs require higher expenses because organizations need to pay wages as well as other compensations for their employees (Dabholker 1996; Selnes & Hansen, 2001). Furthermore, HISs do not offer consistent services to customers, since all humans are different and personal mistakes from employees cannot be completely avoided (Chen, 2011). Finally, HISs require more times to conclude during the service process compared to SSTs (Chen, 2011).

2.3. Evolution of Service Quality

When customers are purchasing services, there are few tangible cues in contrast with purchasing goods (Dabholker, 1996). Due to the lack of tangible evidence, consumers tend to rely on other multiple cues for evaluating service quality, and these service cues have been investigated by many researchers over time. Service quality has been recognized as the gap

between customers' expectations towards the service and their actual service perceptions (Parasuraman, Zeithaml, & Berry,1988; Orel & Kara, 2014). It has a significant impact on both customers and service providers. This is because service quality improves service organizations' sales, images, and total benefits, and customers tend to look for high-quality services from service providers (Dabholker, 1996).

Initially, Parasuraman, Zeithaml, and Berry (1985) suggested ten crucial service quality dimensions in order to evaluate general services provided by service employees. Since then, a number of researchers have suggested modified service quality measurements through their research. One of the most popular service quality models among researchers is SERVQUAL by Parasuraman *et al*. (1988), which consists of five different dimensions (i.e., reliability, responsiveness, assurance, empathy, and tangibles), and it is suitable for measuring traditional HIS encounters. Although a few scholars have refuted SERVQUAL due to conceptual and practical issues, it is an inevitable fact that many researchers still have developed HIS quality in various contexts based on this (Robinson, 1999).

Since the hotel industry is one of the service-oriented fields, many scholars have investigated service quality in hotels. At first, Knutson, Stevens, Wullaert, Patton, and Yokoyama (1990) researched the SERVQAUL model in the lodging industry and suggested LODGSERV, which has the same scale as SERVQUAL. Later, Akan (1995) suggested seven dimensions of service quality that can be used in hotels: courtesy and competence of the personnel, communication and transactions, tangibles, knowing and understanding the customer, accuracy and speed of service, solutions to problems, and accuracy of hotel reservation. In a similar vein, Mei, Dean, and White proposed a new hotel service scale named HOLSERV, which

consists of employees, tangibles, and reliability. Also, a new hotel service measurement by Min, Min, and Chung (2002) had six dimensions such as tangibles, working environment, guest room setting, responsiveness, reliability, and amenity.

Getty and Getty (2003) also developed a new lodging service scale as known as lodging quality index with five items: tangibility, reliability, responsiveness, confidence, and communication. Akbaba (2006) also identified five dimensions of hotel service quality which are tangibles, adequacy in service supply, understanding and caring, assurance, and convenience. Briggs, Sutherland, and Drummond (2007) also revealed a lodging service scale which consists of personal service, value for money, friendliness, attention to detail, high standards, uniqueness, natural approach, tangibles, efficiency. Finally, Shahin and Dabestani (2010) proposed 12 different hotel service quality measurements: reliability, responsiveness, security and confidentiality, access and approachability, communication, understanding the customer, credibility, tangibles, courtesy, price, competence, and flexibility. By reviewing the previous literature regarding hotel service quality scale, it is noticeable that reliability, responsiveness, and tangibles are the most frequently mentioned service factors for HIS quality. Table 1 summarizes the evolution of HIS quality in a hotel context.

Table 1: Evolution of HIS Quality in a Hotel Context

Author(s)	Method	Key Dimensions
Knutson, Stevens, Wullaert, Patton, & Yokoyama (1990)	Interview and survey	Tangibility, reliability, responsiveness, assurance, empathy
Akan (1995)	Survey	Courtesy and competence of the personnel, communication and transaction, tangibles, knowing and understanding the customers, accuracy and speed of service, solutions to problems, accuracy of hotel reservations
Mei, Dean, & White (1999)	Survey	Employees (behavior and appearance), tangibles, reliability
Min, Min, & Chung (2002)	Survey	Tangibles, working environment, guest room setting, responsiveness, reliability, amenity
Getty & Getty (2003)	Survey	Tangibility, reliability, responsiveness, confidence, communication
Akbaba (2006)	Survey	Tangibles, adequacy in service supply, understanding and caring, assurance, convenience
Briggs, Sutherland, & Drummond (2007)	Survey, interview, and content analysis	Personal service, value for money, friendliness, attention to detail, high standards, uniqueness, natural approach, tangibles, efficiency
Shahin & Dabestani (2010)	Survey	Reliability, responsiveness, security and confidentiality, access and approachability, communication, understanding the customer, credibility, tangibles, courtesy, price, competence, flexibility

In contrast to HISs, the service quality of SSTs has not been comprehensively studied yet. In particular, the SST quality in a hotel context is relatively rare since SSTs have been implemented relatively later than other industries such as retail and transportation. At first, Dabholkar (1996) recognized the necessity of systematic service quality measurements for SSTs for the first time because he thought some measurements for traditional face-to-face services were hard to convey into SSTs due to its unique characteristics. Therefore, he suggested an attribute service quality model which consisted of five different service criteria: speed of delivery, ease of use, reliability, enjoyment, and control (Dabholkar, 1996). Afterward, Dabholkar and Bagozzi (2002) developed a SST quality scale for fast-food restaurants with three primary key constructs, which are ease of use, performance, and fun.

Yen (2005) proposed online self-service quality measurements that included efficiency, ease of use, performance, perceived control, and convenience. Later on, Lee, Fairhurst, and Lee (2009) suggested SST quality in a retail context consisting of reliability, personal attention, comfort, and features. Similarly, Ding, Hu, and Sheng (2011) developed e-SELFQUAL with four factors, such as perceived control, service convenience, customer service, and service fulfillment. Finally, Lin and Hsieh (2011) suggested SSTQUAL through qualitative research, which includes seven different dimensions: functionality, enjoyment, security, assurance, design, convenience, and customization. After reviewing the literature, it was recognized that enjoyment and efficiency are the two most popular service quality dimensions for SSTs. Table 2 summarizes the evolution of SST quality in the different sectors.

Table 2: Evolution of SST Quality in Different Sectors

Author(s)	Method	Context	Key Dimensions
Dabholkar (1996)	Scenario and survey	Restaurant	Speed of delivery, ease of use, reliability, enjoyment, control
Dabholkar & Bagozzi (2002)	Scenario and survey	Restaurant	Ease of use, performance, fun
Yen (2005)	Survey	Online travel agencies, bookstore	Efficiency, ease of use, performance, perceived control, convenience
Lee, Fairhurst, & Lee (2009)	Survey	Retail	Reliability, personal attention, comfort, features
Ding, Hu, & Sheng (2011)	Survey	Online retail	Perceived control, service convenience, customer service, service fulfillment
Lin & Hsieh (2011)	Literature review and interview	Banking, transportation	Functionality, enjoyment, security, assurance, design, convenience, customization

Even though service quality has been researched broadly in various industries, no any service quality construct is applicable for both SST and HIS delivery modes. Therefore, based on the related literature which investigates SSTs, traditional HISs, and hotel service quality, this study suggests a new service quality scale in order to systematically compare SSTs with HISs in hotels. Each service quality construct will be described in a subsequent section.

2.4. Service Quality and Customer Satisfaction

Customer satisfaction has been researched extensively by hospitality because customers are the most primary source of revenues for organizations (Tam, 2004). However, Caruana (2002) argued that "without a clear and broadly accepted conceptual and operational definition the development of satisfaction measurement instruments is somewhat arbitrary, and any conclusions about interactions with other constructs are problematic" (p. 816). Thus, it is crucial to comprehend the meaning of satisfaction and its relationships with other attitudinal and behavioral variables in the study. In general, satisfaction is conceptualized as an affective state or overall emotional reaction which comes from a service evaluation procedure (Tam, 2004; Beatson *et al*., 2006). Therefore, customer satisfaction reveals an emotional outcome from a cognitive service quality evaluation process in this study as well.

As mentioned earlier, customers can evaluate service through multiple service quality dimensions. Not only can each service quality determinant influences on customer service perceptions, but service quality perceptions can also build up as an overall service quality evaluation (Dabholkar, Shepherd, & Thorpe, 2000). In other words, service quality is not a straightforward sum of different service criteria. Therefore, it is important to examine each

service quality criterion individually. This is also true in both SST and HIS contexts. While some researchers have suggested separated service quality measurements for SSTs and HISs, SST customers still demand similar service availabilities that they can get from the traditional service channels (Yang & Fang, 2004). In other words, consumers want to receive the best possible service, whether the service is delivered through SSTs or HISs.

Chen (2011) insisted that some service quality criteria for HISs can be implemented for SSTs, and simultaneously, service measurements for SSTs can also be accomplished by human capital, which means that both service delivery modes possess common components. Therefore, it may be possible to conduct an alternative service quality measurement which assesses both HISs and SSTs. Based on the related literature, this study conceptualized a service quality scale with six major dimensions: reliability, responsiveness, tangibles, competence, efficiency, and enjoyment. These service quality dimensions are hypothesized to have a positive influence on the customers' satisfaction, especially in a hotel context. The following sub-sections explain these relationships in detail.

2.4.1. Reliability

As per Parasuraman *et al*. (1985), reliability is the performable ability of service firms to offer consistent services and to keep their promises to customers. However, since this definition mostly relates to service personnel, it is hardly applicable for SST settings directly. On the other hand, Johnston (1995) described reliability as the ability to deliver punctual services and keep agreements with customers. In addition, Dabholkar (1996) defined reliability as "how accurately

customers' orders will be filled" (p.39). Based on these various definitions, reliability stands for accuracy and consistency of the service process in this study.

Several researchers have insisted that reliability has a strong effect on customers' service perceptions. For instance, Berry, Zeithaml, and Parasuraman (1985) found that reliability has the most powerful relationship with customer satisfaction, while Johnston (1995) stated that reliability has the strongest negative relationship with customer dissatisfaction. Also, Dabholkar *et al*. (2000) asserted that reliability affects service quality, customer satisfaction, and behavioral intention consecutively. Bauer *et al*. (2006) posited that reliability is one of the major factors which determine online service quality, and that reliability is the most crucial determinant of the customers' service quality perception and customer satisfaction.

Dabholkar (1996) proposed reliability as one of the SST quality determinants since customers consider it as a crucial service aspect in the SST process due to higher performance risks than HISs. Further, through qualitative research, the author found a close relationship between reliability and service evaluations in a SST setting (Dabholkar, 1996). Bauer *et al*. (2006) also asserted that reliability needs to be emphasized in the service quality construct since it has high importance in predicting customers' perceived service value and satisfaction. In addition, Al-Rousan and Mohamed (2010) confirmed the significant relationship between reliability and customers' loyalty in hotels. Thus, the following hypothesis is stated:

Hypothesis 1: Reliability is positively related to customer satisfaction

2.4.2. Responsiveness

Responsiveness signifies the willingness or readiness of employees to provide services to customers. It involves the timeliness of services such as the ability to respond to customers' requests or problems in minimal waiting times (Parasuraman *et al*., 1985; Johnston, 1995). Similarly, Parasuraman *et al*. (2005) described responsiveness as the "effective handling of problems and returns" and contained it as one of online service quality measurements (p. 220). In the current study, responsiveness represents the promptness of the service process.

There are several studies that revealed the effects of responsiveness on customers' service perceptions. As per Yang and Fang (2004), responsiveness is the most often-mentioned service quality factor which affects customer satisfaction as well as dissatisfaction in online service settings. Similarly, Olorunniwo, Hsu, and Udo (2006) found that the significance of the co-relationship between responsiveness and service quality was comparatively higher than the other service criteria.

Waiting times for receiving services, as well as the speed of service delivery processes, were also taken into consideration in the SSTs quality model presented by Dabholkar (1996). Accordingly, customers who prefer SSTs are relatively more sensitive to time than others. However, not only SST customers but also HIS customers may consider the speed of service delivery as an important factor, due to today's fast-paced lifestyles. Al-Rousan and Mohamed (2010) also found that responsiveness has a strong impact on customers' loyalty as a service quality factor in hotels. Therefore, this study proposes the following hypothesis:

Hypothesis 2: Responsiveness is positively related to customer satisfaction

2.4.3. Tangibles

Tangibles reflect the physical evidence of services such as physical facilities, equipment, personnel, communication materials, and servicescape (Parasuraman *et al*., 1985; Sureshchandar, Rajendran, & Anantharaman, 2002). In addition, tangibles tend to be man-made environments including service personnel's appearance, equipment' exterior, and the effects of the atmosphere (Saravanan & Rao, 2007). On the other hand, Olorunniwo *et al*. (2006) insisted that tangibles should not only include physical surroundings but also technological advances. Therefore, this study defines tangibles as the human-made environments which affect the atmosphere of the service delivery, such as exterior aspects and high-tech advances.

Wakefield and Blodgett (1999) insisted that tangible environment plays a vital role in customers' perceptions. According to Sureshchandar *et al*. (2002), the physical environment influences customer behavior as well as the image of service organizations. Lin and Hsieh (2011) also mentioned that attractive design, aesthetic, and ergonomic values which are tangible aspects affect customer service quality perceptions. In addition, Santos (2003) found that good appearance attracts both initial and repeat visits, including online service setting. Considering that the most service determinants are intangible in nature, tangibles should also be included in a service quality context. As per Olorunniwo *et al*. (2006), tangibles are required to be a consideration in the hotel guests' service quality evaluation. Accordingly, Al-Rousan and Mohamed (2010) asserted that tangibles have the strongest effects on customers' loyalty among other service quality dimensions in hotels. Hence, the following hypothesis is suggested:

Hypothesis 3: Tangibles are positively related to customer satisfaction

2.4.4. Competence

Traditionally, competence has been described as the capability of required skills and knowledge to perform various services to customers (Parasuraman *et al*., 1985). Also, it includes "the carrying out of correct procedures, correct execution of customer instructions, the degree of product or service knowledge exhibited by contact staff, the rendering of good, sound advice, and the general ability to do a good job" (Johnston, 1995, p.70). Similar to reliability, some aspects of competence also have limitations in its application to a SST context, as it contains service personnel's knowledge. Therefore, in this study, competence demonstrates the ability to solve the customer-oriented tasks and offering of proper information to customers during the service delivery process.

According to Yang and Fang (2004), competence is one of the main drivers of online service satisfaction as well as traditional service satisfaction. They found that competence is the second most-mentioned service quality dimension in an online service process and that it determines customers' satisfaction and dissatisfaction (Yang & Fang, 2004). In addition, the competence of the service performance process could influence customers' overall value, satisfaction, intention to visit and recommend (Prasad, Wirtz, & Yu, 2014). In other words, Prasad *et al*. (2014) insisted that competence supports the service quality construct in the hotel industry and service providers are core manifestations of customers' service quality perceptions. Therefore, this research proposes the following hypothesis:

Hypothesis 4: Competence is positively related to customer satisfaction

2.4.5. Efficiency

In general, efficiency is referred to the effectiveness level of the relationship between "outputs" and corresponding "inputs" (Duncan & Elliott, 2004). In other words, when people put minimum inputs to produce a maximum attainable output, it is recognized as high efficiency. Similarly, Parasuraman *et al*. (2005) conceptualized efficiency as service which is simple and easy to use, properly structured and requires minimum effort to be input from customers. Hence, in this research, efficiency stands for the effectiveness of customers' efforts to get service done such as the ease and speed of the service transaction.

According to Talluri, Kim, and Schoenherr (2013), the concept of efficiency fits very well to the service sector, as it deals with the efficient use of limited service resources such as human, equipment, and facilities during the service delivery procedure. Duncan and Elliott (2004) found a positive correlation between efficiency and customer service. Similarly, Schneider, White, and Paul (1998) also found a positive influence of efficiency on overall customer service perceptions. As per Santos (2003), respondents agreed that the service efficiency is an indispensable aspect of the service process. In addition, service efficiency has a significant role in the customers' service provider evaluation processes (Talluri *et al*., 2013). This is because "operating efficiency and service quality can be in a compatible and/or synergic relationship" (Talluri *et al*., 2013, p. 2549).

As per Parasuraman *et al*. (2005), there are noteworthy impacts of efficiency on customer overall service quality perceptions, perceived value, and loyalty intentions. It has the most critical effects on those three variables compared with other service quality dimensions such as fulfillment and privacy (Parasuraman *et al*., 2005). Lastly, efficiency has been a considerably

crucial factor in the hotel industry because it enhances hotel organizations' service performances and its competitive advantages, which means that efficiency is a significant factor for hotel consumers (Poldrugovac, Tekavcic, & Jankovic, 2016). Thus, the following hypothesis is proposed:

Hypothesis 5: Efficiency is positively related to customer satisfaction

2.4.6. Enjoyment

Enjoyment particularly differs from other service quality factors, since it is the only a hedonic aspect in the service quality scales (Collier & Barnes, 2015). Traditionally, enjoyment is considered to be a sense of pleasure regarding service experiences (Klinger, 1971). In addition, Collier and Barnes (2015) argued that fun, which reflects hedonic features of the service process, can also be conceptualized as enjoyment. Thus, in this study, enjoyment represents a positive hedonic aspect that customers can experience during service delivery procedures.

Dabholkar (1996) proposed that the enjoyment should be considered as a major service quality measurement. Accordingly, motivation such as enjoyment positively affects customer service quality perceptions and future intentions (Dabholkar, 1996). In addition, Bauer *et al*. (2006) verified that enjoyment is the strongest antecedent of customer profitability. Collier and Barnes (2015) also mentioned that enjoyment has a positive relationship with customer delights. This is because hedonic factors such as enjoyment have more effects on customers' satisfaction and word of mouth intentions compared to other utilitarian aspects (Jones, Reynolds, & Arnold, 2006).

Lin and Hsieh (2011) insisted that enjoyment, as intrinsic motivation, can play a crucial role in technology service quality. Orel and Kara (2014) also asserted that enjoyment has a significant impact on SST customer service perceptions. Also, enjoyment has direct and indirect relationships with customer satisfaction and customer loyalty respectively (Orel & Kara, 2014). According to Boslo and Lewis (2008), HISs also contribute a sense of enjoyment due to the positive interaction with service employees, and it affects overall service experiences of hotels. Hence, this study proposes the following hypothesis:

Hypothesis 6: Enjoyment is positively related to customer satisfaction

2.5. Customer Satisfaction and Service Loyalty

A number of researchers have recognized a strong positive relationship between service quality and customers' attitudinal and behavioral outcomes in a service environment, such as satisfaction and loyalty. For example, Taylor and Baker (1994) found the significant connection between service quality, customer satisfaction, and purchase intentions. In addition, Yang and Fang (2004) found that noteworthy relationships with satisfaction and online service quality dimensions. What is more, service attributes can play an important role in building and maintaining loyalty in a service context (Dick & Basu, 1994). Zeithaml, Berry, and Parasuraman (1996) also found the strong relationship between overall service quality and service loyalty. Similarly, Bloemer *et al*. (1999) verified significant relationships between several service quality items and service loyalty.

The concept of service loyalty has been studied extensively, with two major service loyalty dimensions known as behavioral and attitudinal loyalty in early days. Behavioral loyalty

is referred to loyalty which focuses on its behavioral dimension, while attitudinal loyalty is based on customers' personal preferences and intentions (Gremler & Brown, 1996). Several researchers have started to consider a cognitive form of loyalty which reflects the loyalty that comes up first in customers' mind when they need to make a purchase decision (Gremler & Brown, 1996; Caruana, 2002). Based on these three different service loyalty dimensions, service loyalty is defined as "the degree to which a customer exhibits repeat purchasing behavior from a service provider, possesses a positive attitudinal disposition toward the provider, and considers using only this provider when a need for service arises" (Gremler & Brown, 1996, p. 173). Therefore, this study defines service loyalty as loyalty which incorporates behavioral, attitudinal and cognitive loyalty derived by two service delivery modes (i.e., self-service kiosks and service employees).

Service loyalty should be clearly distinguished from product loyalty and brand loyalty because it depends on the relationship with service providers as opposed to other types of loyalty that are aroused by tangible goods (Gremler & Brown, 1996; Macintosh & Lockshin, 1997; Caruana, 2002). In addition, as per Kandampully (1998), service loyalty precedes the other types of loyalty. To be concise, service loyalty is a service organization's commitment to customers and is manifested by a long-term relationship with the customers (Kandampully, 1998). Therefore, service loyalty is a key to service firms' long-term advantage, as it significantly reduces customer switching behaviors in the future. (Kandampully, 1998; Bloemer *et al*., 1999). According to Tam (2004), there is a significant relationship between service quality and customer satisfaction, and further, its influences on post-purchase behaviors. Based on the expectancy-disconfirmation paradigm, several studies revealed that one of the major antecedents

of service loyalty is customer satisfaction (e.g., Caruana, 2002; Gremler & Brown, 1996). Likewise, Cristobal *et al*. (2007) discovered a positive effect of perceived online service quality on customer satisfaction, and on the level of their website loyalty. Hence, this study suggests the following hypothesis:

H7: Customer satisfaction is positively related to service loyalty

2.6. Service Encounter: SSTs vs HISs

While services have continually changed from traditional HISs to SSTs, a handful of studies have compared these two different service delivery options (e.g., Chen, 2011; Kattara & El-Said, 2014). Interestingly, the literature regarding HISs' advantages is mainly focusing on customers' psychological conditions resulting from the interpersonal relationship between customers and employees. Meanwhile, the literature regarding SSTs is more concentrated on physical convenience such as service speed (Chen, 2011). Similarly, Ko (2017) mentioned that guests who choose SSTs are more motivated by extrinsic desires such as speed, while customers who elect HISs consider intrinsic values, such as interaction with staffs are more important. According to Kattara and El-Said (2014), people who prefer HISs have a lower likelihood to use SSTs, and simultaneously, customers who pursue SSTs more have a lower preference towards HISs. Such findings imply that there should be significant differences in service quality perceptions between customers who use SSTs and those who use HISs.

As more service enterprises substitute frontline employees with SSTs, several researchers have provided debatable viewpoints on these new forms of service exchanges (Dabholkar *et al*., 2000; Beatson *et al*., 2006). As per Beatson *et al*. (2006), satisfaction from HISs is stronger than

satisfaction from SSTs because interpersonal interactions are the most significant factor that drives customer satisfaction and long-term relationship with service firms. Makarem *et al*. (2009) also insisted that even technology-savvy customers consider human touch service is more important than non-interpersonal service because of the positive correlation between HISs, customer satisfaction, and behavioral intentions.

Similarly, Ganesh, Arnold, and Reynolds (2000) found that the people factor of HISs has an essential influence on not only overall customer satisfaction, but also on repurchase intentions. According to Chen (2011), frontline employees who interact with customers could exceed customers' expectations and optimize their satisfaction. For example, service staffs can recognize guests' name and their preferences which are harder for SSTs. Therefore, knowledgeable and enthusiastic frontline staffs are crucial at the service encounter, as this two relationship and social variables have a direct influence on customers' service quality perception (Hartline, Maxham, & McKee, 2000).

On the other hand, other researchers have supported the effectiveness and efficiency of SSTs over HISs. Some customers have strong intention to use SSTs due to its faster speed of service delivery (Dabholkar, 1996). According to Meuter *et al*. (2000), an absence of direct interpersonal contacts could increase customer satisfaction and encourage positive evaluations of SSTs. Bobbitt and Dabholkar (2001) also insisted that due to the sense of control, less waiting time, and fewer activities which can be performed by customers themselves, many of them are more likely to use SSTs rather than HISs. Recently, some customers place more value on SSTs, as they offer quicker service to users while providing a feeling of privacy as well as a sense of control (Kim, Christodoulidou, & Brewer, 2012).

Shankar, Smith, and Rangaswamy (2003) investigated the differences between offline and online services by comparing the level of hotel customer satisfaction and loyalty towards service providers. The results of their study showed that the level of customer satisfaction was similar in online and offline contexts. However, the levels of loyalty and the relationship between satisfaction and loyalty were different depending on the type of service provision. Specifically, service loyalty and the effect of satisfaction on loyalty in an online service setting were higher than that of an offline's (Shankar *et al*., 2003). Related studies suggested that there would be differences between SSTs and HISs regarding customers' service quality evaluations and its impacts on satisfaction, and subsequently, service loyalty. Hence:

Hypothesis 8: The type of service encounter (i.e., SSTs and HISs) moderates the effects of service quality perceptions on customer satisfaction and service loyalty

CHAPTER THREE: METHODOLOGY

3.1. Research Framework

As shown in Figure 1, this research focuses on how consumers evaluate six major dimensions of service quality (i.e., reliability, responsiveness, tangibles, competence, efficiency, and enjoyment) and investigate their effects on customer satisfaction and service loyalty. Furthermore, the mediating role of customer satisfaction between service quality constructs and service loyalty is proposed within the research framework. This relationships between service quality, customer satisfaction, and service loyalty will be further explored by comparing two different service providers: SSTs and HISs at the service encounter.

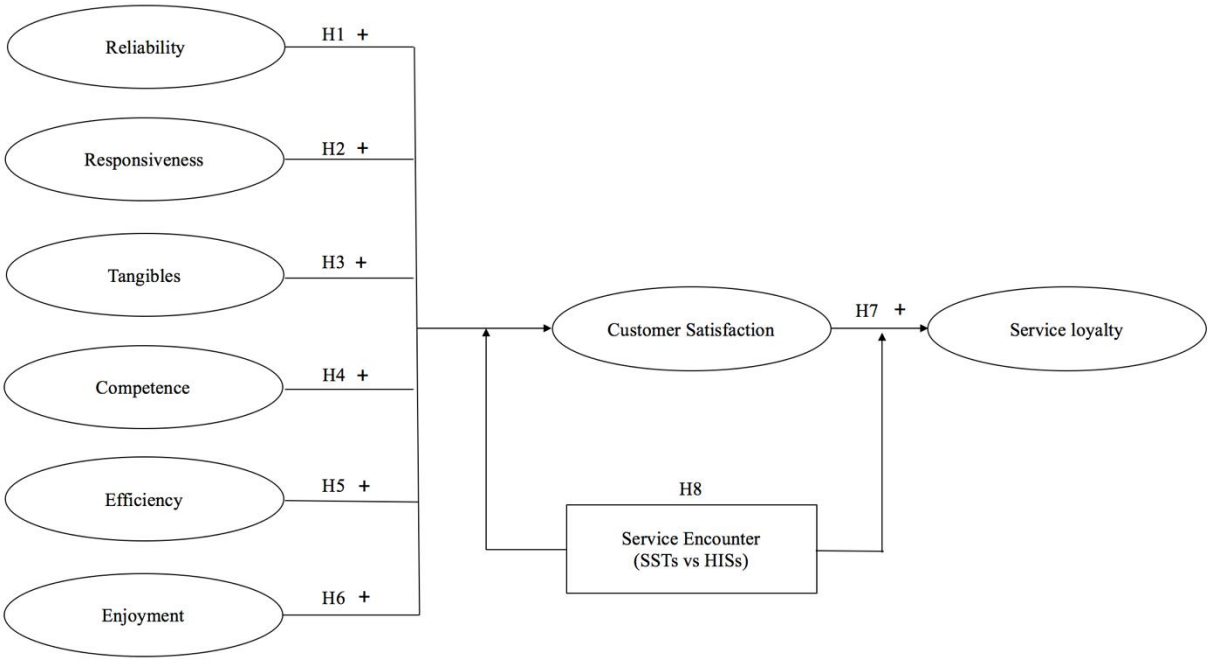


Figure 1: Research Framework

3.2. Data Collection

The target population of the study was defined as hotel customers who have stayed at a hotel in the U.S. during the last six months. The respondents were asked to recall their most recent hotel stay and evaluate the type of service that they have received and indicate their levels of satisfaction as well as service loyalty. According to Evans and Mathur (2005), collecting data from the online survey tends to have less bias comparing with traditional data collecting methods, and it is easy to enter and analyze such data (Evans & Mathur, 2005). Furthermore, an online survey offers more capabilities to researchers because they can construct the survey "to ensure that respondents answer only the questions that pertain specifically to them, thus, tailoring the survey" (Evans & Mathur, 2005, p.200). Since the survey of this research had some modified questions for two different sample groups (i.e., SST and HIS customers), conducting the online survey was an ideal data collection method. Thus, the sampling frame of the study consisted of approximately 300 adults (18 years or older) in the U.S., and the target sample was invited to take an online self-administrative on Qualtrics. Prior to collect the data, this study obtained the approval of the Institutional Review Board (IRB) from the University of Central Florida prior to collect the data. The IRB approval letter will be attached as APPENDIX A: UCF IRB APPROVAL LETTER.

3.3. Survey Instrument

The online survey instrument for this research began with a brief explanation of the study such as the purpose of the study and the approximate time to complete the survey. There were four major sections in the survey. First, in order to reach the proper target sample, a screening

question was provided: “In the past six months, how many times have you stayed at any hotels in the U.S.? (Never/ 1-2 times/ 3-4 times/ 5-6 times/ 7-8 times/ 9 times or more),” so that only respondents who had recent hotel stays could continue the survey, while others were directed to the end of the survey. After the filtering question, participants were asked general questions regarding the last hotel that they had stayed in, and the check-in method (i.e., self-service kiosks or front office employees) that was used.

Furthermore, participants needed to recall the most recent check-in experience at the hotel and evaluate the service provider by multiple service quality dimensions. In particular, depending on the respondent’s check-in method (SSTs or HISs), a few wording adaptions were made on the online survey. For instance, SST customers were given the survey question that “the self-service kiosk accurately verified my reservation request,” while HIS customers had to answer the following question: “the front office employee accurately verified my reservation request.” Lastly, socio-demographic information (e.g., gender, age, education, ethnicity, and annual household income) and other additional questions (e.g., the number of previous SST usages in hotels) were added to the questionnaire.

3.4. Measures

The measurement items were adapted from existing studies. Seven-point Likert scales ranging from strongly disagree (1) to strongly agree (7) were used for most of the construct measurements except demographic questions. The online survey for the study is attached as APPENDIX B: ONLINE SURVEY.

The suggested service quality constructs consist of six dimensions: reliability, responsiveness, tangibles, competence, efficiency, and enjoyment. *Reliability* (4 items) measured the consistency and accuracy of the service such as an absence of errors and clear service processes. The measurement items of reliability were adapted from Olorunniwo *et al*. (2006). *Responsiveness* (4 items) determined the promptness of the service such as how fast the service has been delivered. Measurement items were retrieved from Yang and Fang (2004). Furthermore, *Tangibles* (4 items) measure physical environments such as servicescapes. These measurement items were adapted from Pantouvakis (2010). *Competence* (4 items) reflected the ability to solve customers' tasks, such as how informative the service provider was during the service procedure. The measurement items were adjusted from Olorunniwo *et al*. (2006). Meanwhile, *Efficiency* (4 items) stood for the effectiveness of the service process such as ease of use or the speed of service transaction. Efficiency measurements were adopted from Parasuraman *et al*. (2005)'s study. Finally, *Enjoyment* (4 items) measured the positive hedonic experience of the service such as how customers enjoyed the service process provided by SSTs or HISs. Measurement items were adapted from Dabholkar and Bagozzi. (2002).

Customer satisfaction measured how customers are satisfied with the service that was offered by the hotel's SSTs or HISs during the checking-in process at the hotel. Customer satisfaction items (4 items) were modified from Wu (2011)'s study. On the other hand, *Service loyalty* evaluated the level of customers' loyalty towards the service provider such as SSTs or HISs. Such measurement items were adopted from Caruana (2002)'s study. Service loyalty measurements contain six items in total which incorporate three different service loyalty

dimensions: attitudinal, behavioral, and cognitive service loyalty. Table 3 summarizes the measurement items of major variables which have been used in this research.

Table 3: Measurement Items

Construct	Measurement Items	Author(s)
Reliability	1. The self-service kiosk/ The front office employee accurately verified my reservation requests. 2. The check-in process was error-free. 3. The self-service kiosk/ The front office employee performed the right service the first time. 4. The check-in process was consistent.	Olorunniwo *et al*., 2006
Responsiveness	1. I received a prompt response to my requests from the self-service kiosk/ the front office employee. 2. The self-service kiosk/ The front office employee quickly resolved my problems that I encountered. 3. The self-service kiosk/ The front office employee handled the customer traffic promptly. 4. The queue for the self-service kiosk/ the front office employee was never too long to wait.	Yang & Fang, 2004
Tangibles	1. The self-service kiosk/ The front office was visually appealing. 2. The self-service kiosk/ The front office had modern looking equipment. 3. The self-service kiosk/ The front office area was clean, odorless, and pleasant. 4. The waiting area of the self-service kiosk/ the front office was spacious and visually appealing.	Pantouvakis, 2010
Competence	1. The self-service kiosk/ The front office employee was informative during the check-in process. 2. The self-service kiosk/ The front office employee provided adequate information about the hotel. 3. The self-service kiosk/ The front office employee handled my specific needs. 4. The self-service kiosk/ The front office employee was able to solve my problems.	Olorunniwo *et al*., 2006

Construct	Measurement Items	Author(s)
Efficiency	1. The check-in process was easy. 2. The check-in process was fast. 3. The check-in process required minimal effort to complete. 4. The check-in process was simple.	Parasuraman *et al*., 2005
Enjoyment	1. Receiving services from the self-service kiosk/ the front office employee was interesting. 2. Receiving services from the self-service kiosk/ the front office employee was entertaining. 3. Receiving services from the self-service kiosk/ the front office employee was enjoyable. 4. Receiving services from the self-service kiosk/ the front office employee was fun.	Dabholkar & Bagozzi, 2002
Customer Satisfaction	1. I was satisfied with the overall service quality of the self-service kiosk/ the front office employee. 2. I left in a good mood when I received service from the self-service kiosk/ the front office employee. 3. I was satisfied with the overall interaction with the self-service kiosk/ the front office employee. 4. In general, I was satisfied with the service offered by the self-service kiosk/ the front office employee.	Wu, 2011
Service Loyalty	1. I will say positive things about check-in through the self-service kiosk/ the front office employee to other people. 2. I will encourage friends and relatives to use self-service kiosks/ front office employees' service when they check in at hotels. 3. I intend to continue using self-service kiosks/ front office employees' service when I check-in at hotels. 4. I like to check-in at hotels through a self-service kiosk/ front office employee. 5. Self-service kiosks/ Front office employees are clearly the best option to check-in at hotels. 6. I consider a self-service kiosk/ a front office employee as my first choice to check-in at hotels.	Caruana, 2002

3.5. Data Analysis

First of all, descriptive statistics were conducted as a preliminary analysis to provide the general description of the research population to simplify the collected data. In addition, Exploratory Factor Analysis (EFA) was utilized in order to identify the underlying relationships of the measured variables and to reduce multiple measures into the common dimension. Furthermore, an independent sample T-test was applied to explore general mean differences among major service quality constructs between SST and HIS groups.

Finally, a series of multiple regression models were performed in order to test the proposed research framework. The procedure of the sequential regression analysis was adopted from Baron and Kenny (1986) in order to analyze the mediating role of satisfaction in the research framework (See Figure 1). The process of the regression equations is: 1) regress the mediator (customer satisfaction) on the independent variables (service quality dimensions), 2), regress the dependent variable (service loyalty) on the independent variables (service quality dimensions), and 3) regress the dependent variables (service loyalty) on both independent variables (service quality dimensions) and mediator (customer satisfaction). These sequential regression analyses were conducted separately for SST and HIS groups in order to examine the similarities and differences of customers' service evaluations between the two different types of service provision.

CHAPTER FOUR: RESULTS

4.1. Sample Description

Before distributing the survey on Qualtrics, several faculty members and graduate students at the Rosen College of Hospitality Management verified the online survey to enhance the overall quality and to clarify the wordings of survey questions. Based on the filtering question, this study was able to achieve a total of 320 respondents who were aged 18 years or older and had stayed in hotels in the U.S. for the past six months. However, 45 responses were eliminated due to the straight-line answers and to the deletion of outliers. As a result, a total of 275 useable responses were utilized for data analysis.

Table 4 explains detailed information about this study's sample demographics. Among the 275 survey participants, 33.1% were males, and 66.9% were females. The average age of the survey participants was approximately 43 years old, and the largest age group was between 26-35 years old (26.2%) followed by 36-45 years old of age (25%). On the other hand, the smallest age group was 76 years old or older (1.1%). Of all respondents, most survey participants had a "bachelor's degree" (28.7%), whereas 2.2% of the respondents held a "doctoral degree or other professional degree." Regarding the ethnicity of the participants, "white" (74.9%) was the largest group and "African American" was the second largest (12.4%). Meanwhile, only 0.4% of participants was a "pacific islander." Finally, income ranges of the respondents were also varied from "less than $40,000" (28.4%) to "more than $140,001" (9.5%).

Table 4: Descriptive Statistics for Demographics (n=275)

Demographic Variables	Frequency	Valid Percentage
Gender		
Male	91	33.1
Female	184	66.9
Age		
18-25	27	10.0
26-35	72	26.2
36-45	69	25.0
46-55	47	17.1
56-65	34	12.5
66-75	23	8.5
76 or older	3	1.1
Education		
High school or less	62	22.5
Some college but no degree	63	22.9
Associate degree in college (2-year)	35	12.7
Bachelor's degree in college (4-year)	79	28.7
Master's degree	30	10.9
Doctoral degree or other Professional degree	6	2.2
Ethnicity		
African American	34	12.4
Asian	15	5.5
Hispanic	19	6.9
Pacific Islander	1	0.4
White	206	74.9
Income		
Less than $40,000	78	28.4
$40,001 to $60,000	67	24.4
$60,001 to $80,000	49	17.8
$80,001 to $100,000	23	8.4
$100,001 to $120,000	22	8.0
$120,001 to $140,000	10	3.6
More than $140,001	26	9.5

4.2. Additional Background Information

In addition to the general demographic information, other pertinent background information was gathered in order to understand further the study participants (See Table 5). Of all survey respondents, most people had stayed at hotels in the U.S. between 1-2 times (56.4%) followed by 3-4 times (24.4%) during the last six months. The participants had visited "upper upscale hotel (e.g., Hilton, Marriott)" the most (28.4%) and followed by "upper midscale hotel (e.g., Holiday Inn, Hampton Inn)" (26.9%), while "budget/economy hotel (e.g., Days Inn, Super 8)" were visited the least (5.8%). The majority of the respondents visited hotels for leisure purpose (84.7%) whereas only 15.3% stayed at hotels for business purpose. Among all of the respondents, 54.5% of them checked-in through a front office employee, while 45.5% of them received a check-in service from a self-service kiosk (45.5%). Furthermore, 61.5% of survey respondents answered that hotels had offered both SST and HIS options for the check-in procedure. Finally, the largest percentage of participants (41.5%) had never used SSTs at hotels for check-in followed by 1-2 times (34.5%). Meanwhile, there were only 1.8% of all respondents had used SSTs for 7-8 times to check-in at hotels in the past.

Table 5: Descriptive Statistics for Additional Information (n=275)

Variables	Frequency	Valid Percentage
The Number of Hotel Stay during the Last Six Months		
1-2 times	155	56.4
3-4 times	67	24.4
5-6 times	36	13.1
7-8 times	4	1.5
9 times or more	13	4.7
Hotel Ratings (Hotel Class)		
Luxury hotel (e.g., Ritz-Carlton, Four Seasons)	20	7.3
Upper upscale hotel (e.g., Hilton, Marriott)	78	28.4
Upscale hotel (e.g., Courtyard, Double Tree)	45	16.4
Upper midscale hotel (e.g., Holiday Inn)	74	26.9
Midscale hotel (e.g., Best Western, Ramada)	42	15.3
Budget / Economy hotel (e.g., Super 8)	16	5.8
The Purpose of the Hotel Stay		
Leisure	233	84.7
Business	42	15.3
Hotel Check-in Method		
Self-service kiosk	125	45.5
Front office employee	150	54.5
Does Hotel have both SST and HIS Options?		
Yes	169	61.5
No	106	38.5
The Number of SST Usage in Hotels		
Never	114	41.5
1-2 times	95	34.5
3-4 times	36	13.1
5-6 times	11	4.0
7-8 times	5	1.8
9 times or more	14	5.1

4.3. Exploratory Factor Analysis (EFA)

Before examining the hypotheses, Exploratory Factor Analysis (EFA) with a varimax rotation was utilized to reduce measurement items into common dimensions. The initial EFA result indicated that three measurement items (i.e., responsiveness 1, responsiveness 2, and competence 2) were cross-loaded in two different factors. After eliminating three cross-loaded measures, the EFA result captured 72.96% of the total variance with three major factors. Those factors were the summation of four service quality dimensions (i.e., reliability, responsiveness, competence, and efficiency), tangibles, and enjoyment (See Table 6). The KMO measure of sampling adequacy was 0.949 and Bartlett's test of sphericity was 5154.54 (χ^2) and 0.000 (p). KMO reflects data suitability for the factor analysis, and if the value is over 0.9, it is exceptionally sufficient (Pett, Lackey, & Sullivan, 2003). Bartlett's test indicates the redundancy of each variable so that small values (i.e., less than 0.05) of the significance level are ideal (Pett *et al*., 2003).

The factor with the sum of four service quality dimensions has been labeled as 'interactive quality' following Lehtinen and Lehtinen (1991). Accordingly, interactive quality is the dimension of service quality which is originated from the interaction between customers and interactive elements such as service employees or physical equipment. This first factors (i.e., interactive quality) consisted of thirteen items derived from four different service dimensions: reliability, responsiveness, competence, and efficiency. Both the second factor (i.e., tangibles) and the third factor (i.e., enjoyment) included four items each. While 57.02% of the total variance was explained by interactive quality, 10.51% and 5.43% of the variance was explained by tangibles and enjoyment respectively. The Cronbach's alpha values of interactive quality

(α=0.96), tangibles (α=0.90), and enjoyment (α=0.92) showed sufficient internal consistency since each value was over 0.9 (Pett *et al*., 2003). In addition, both customer satisfaction (α=0.94) and service loyalty (α=0.93) had an adequate Cronbach's alpha value as well. Among the five major variables, customer satisfaction had the highest mean score (μ=6.22), followed by interactive quality (μ=6.20). On the other hand, enjoyment showed the lowest mean score (μ=5.51).

Table 6: Factor Analysis for Service Quality Result

Factors	Descriptive Statistics	Factor Loadings
Factor 1. Interactive Quality (Eigen value=11.98 / Variance Explained=57.02% / α= 0.96)		
Reliability 4	Mean = 6.20 SD = 0.75	0.827
Reliability 2		0.823
Reliability 3		0.819
Efficiency 2		0.776
Efficiency 3		0.764
Efficiency 4		0.761
Reliability 1		0.730
Efficiency 1		0.713
Competence 2		0.711
Responsiveness 3		0.665
Competence 3		0.658
Competence 1		0.632
Responsiveness 4		0.562
Factor 2. Tangibles (Eigen value=2.21 / Variance Explained=10.51% / α=0.90)		
Tangibles 2	Mean = 6.10 SD = 0.87	0.813
Tangibles 3		0.762
Tangibles 4		0.749
Tangibles 1		0.721
Factor 3. Enjoyment (Eigen value=1.14 / Variance Explained=5.43% / α=0.92)		
Enjoyment 2	Mean = 5.51 SD = 1.07	0.905
Enjoyment 4		0.898
Enjoyment 1		0.812
Enjoyment 3		0.801

Note: All items are measured with seven-points scale.
Extraction Method: Principal Component Analysis
Rotation Method: Varimax

Meanwhile, it was recognized that there were positive correlations between the three factors (i.e., interactive quality, tangibles, and enjoyment), customer satisfaction, and service loyalty. Interactive quality with customer satisfaction (r=0.86, p=0.001) and service loyalty (r=0.73, p=0.001) showed a relatively stronger relationship. On the other hand, tangibles presented a correlation with both customer satisfaction (r=0.70, p=0.001) and service loyalty (r=0.65, p=0.001). Similarly, enjoyment also had a moderate but relatively weaker correlation with customer satisfaction (r=0.51, p=0.001) and service loyalty (r=0.54, p=0.001).

Table 7: Construct Correlations

	Interactive Quality	**Tangibles**	**Enjoyment**	**Customer Satisfaction**	**Service Loyalty**
Interactive Quality					
Tangibles	0.75**				
Enjoyment	0.50**	0.51**			
Customer Satisfaction	0.86**	0.70**	0.51**		
Service Loyalty	0.73**	0.65**	0.54**	0.76**	

Note: ** $p < 0.01$

Entries on the diagonal are AVE and below the diagonal represent the correlations between each pair of constructs.

4.4. Independent Sample T-test

Prior to the multiple regression analyses, an independent sample T-test was used to compare the mean scores of those three factors (i.e., interactive quality, tangibles, enjoyment), customer satisfaction, and service loyalty between respondents who checked-in through SSTs or HISs (See Table 8). The result showed the disparity of customers' service perceptions between SSTs and HISs at the service encounter in hotels. Of overall sample (n=275), 125 respondents checked-in through SSTs whereas 150 checked-in through HISs. The T-test results indicated that there were statistically significant differences between SST and HIS groups regarding the level of interactive quality, enjoyment, and service loyalty. Interestingly, customers who checked-in through front office employees showed the higher mean score of interactive quality (μ=6.29) and service loyalty (μ=6.14). On the other hand, the level of enjoyment of the SST group (μ=5.70) was significantly higher than that of the HIS group (μ=5.35). Meanwhile, tangibles as well as customer satisfaction did not show a significant difference between SST and HIS customers.

Table 8 also includes independent T-test results for other additional variables in order to further analyze the characteristics between SST and HIS groups. Those variables include demographics (i.e., age) and respondents' SST background (i.e., the number of SST usage in hotels, technology readiness, and attitude towards SSTs). Technology readiness refers to the willingness of customers for using new technologies to accomplish their tasks (Parasuraman, 2000) while attitude towards SSTs reflects an individual's evaluative judgment regarding SSTs (Dabholkar, 1996). The measurement items for technology readiness and attitude towards SSTs can be found in the APPENDIX B: ONLINE SURVEY. It was noticeable that the average age of the SST group (μ=23.51) was much younger than that of the HIS group (μ=30.14). Furthermore,

SST customers had greater levels of technology readiness (μ=5.23) as well as attitude towards technologies (μ=5.38).

Table 8: Independent Sample T-test Result

Check-In Method (SSTs=125 / HISs=150)		Mean	SD	Sig.
Interactive Quality	SST HIS	6.09 6.29	0.77 0.73	**0.03***
Tangibles	SST HIS	6.07 6.12	0.88 0.87	0.67
Enjoyment	SST HIS	5.70 5.35	1.01 1.10	**0.01***
Customer Satisfaction	SST HIS	6.12 6.31	0.86 0.80	0.07
Service Loyalty	SST HIS	5.89 6.14	0.96 0.82	**0.02***
Age	SST HIS	23.51 30.14	12.89 15.25	**0.00****
Technology Readiness	SST HIS	5.23 4.61	0.90 0.76	**0.00****
Attitude Towards SSTs	SST HIS	5.38 4.33	1.48 1.59	**0.00****

Note: ** $p < 0.01$
* $p < 0.05$

4.5. Chi-Squared Test

Apart from independent sample T-tests, chi-square was applied for nominal variables such as demographics (i.e., gender, education, ethnicity, and income) and hotel information (i.e., the number of hotel stays, hotel ratings, and hotel visit purposes). The p-value of chi-square shows statistically significant relationship if it is smaller than 0.05 (Berkson, 1938). The result indicated that there were no major differences between SST and HIS customers on categorical demographics (i.e., gender, education, ethnicity, and income). However, it was noteworthy to observe that statistically there was a difference between SST and HIS groups regarding the ratings of hotels that they visited ($p=0.008$, $\chi 2=15.637$). In detail, more survey participants used much more SSTs in higher-rated hotels than in lower-rated hotels. In addition, there were significant differences of the number of previous SST usage between SST and HIS customers ($p=0.000$, $\chi 2=141.311$). SST group showed higher numbers of previous SST usage at hotels than that of HIS group. Table 9 describes chi-square result for additional variables (See Table 4 and Table 5 for frequency statistics).

Table 9: Chi-Square Result for Additional Variables

Two Variables		Chi-Square ($\chi 2$)	P-Value
Gender	Check-In Method (SSTs vs HISs)	0.009	1.000
Education	Check-In Method (SSTs vs HISs)	7.586	0.181
Ethnicity	Check-In Method (SSTs vs HISs)	6.425	0.170
Income	Check-In Method (SSTs vs HISs)	5.151	0.525
The Number of Hotel Stay	Check-In Method (SSTs vs HISs)	3.216	0.522
Hotel Ratings (Hotel Class)	Check-In Method (SSTs vs HISs)	15.637	**0.008****
Hotel Visit Purpose	Check-In Method (SSTs vs HISs)	2.731	0.129
The Number of SST Usage in Hotels	Check-In Method (SSTs vs HISs)	141.311	**0.000****

4.6. Multiple Regression Analyses

A series of multiple regression analyses were employed to reveal the effects of service quality perceptions on customer satisfaction and service loyalty. Following Baron and Kenny (1986)'s methods, each regression analysis was conducted in a sequence in order to analyze the mediating effect of customer satisfaction (See Tables 10, 11, and 12). Those regression tables are grouped separately for the whole sample, SST group, and HIS group so that this study can explore any disparity between SSTs and HISs on the above relationships. The Variance Inflation Factors (VIF) in all regression models were less than 4. Thus, they did not indicate any sign of multicollinearity as ten is considered as the maximum acceptable level (Hair, Black, Babin, & Anderson, 2010). On the other hand, standard coefficient beta (β) stands for the relative importance of each independent variable (i.e., interactive quality, tangibles, and enjoyment) in contributing to the variance in the dependent variable (i.e., customer satisfaction and service loyalty).

First, the relationship between service quality and customer satisfaction was analyzed (See Table 10). In the case of the whole sample (R^2=0.75) and HIS group (R^2=0.80), it was notable that interactive quality and enjoyment had significant effects on customer satisfaction. However, in the case of SST group (R^2=0.69), even though there was an important relationship between interactive quality and customer satisfaction, tangibles, as well as enjoyment, did not have a significant effect on customer satisfaction. Also, it was interesting that HIS group showed more critical impacts of interactive factor (β=0.77) on customer satisfaction than that of SST group (β=0.68).

Table 10: Regression Analyses of Service Quality on Customer Satisfaction

Regression Models		Std. Coefficient	t-Value	Sig.	VIF
Customer Satisfaction (Overall)	$R^2 = 0.75$ Adj. $R^2 = 0.75$				
Interactive Quality		0.74	15.69	**0.00****	2.41
Tangibles		0.09	1.92	0.06	2.42
Enjoyment		0.09	2.56	**0.01***	1.41
Customer Satisfaction (SST)	$R^2 = 0.69$ Adj. $R^2 = 0.68$				
Interactive Quality		0.68	9.54	**0.00****	2.71
Tangibles		0.10	2.52	0.21	2.33
Enjoyment		0.10	1.35	0.12	1.73
Customer Satisfaction (HIS)	$R^2 = 0.80$ Adj. $R^2 = 0.80$				
Interactive Quality		0.77	13.45	**0.00****	2.44
Tangibles		0.09	1.48	0.14	2.54
Enjoyment		0.11	2.46	**0.02***	1.35

Note: ** $p < 0.01$
* $p < 0.05$

The next step was examining the relationship between each service quality construct and service loyalty (See Table 11). Interactive quality, tangibles, and enjoyment had a significant impact on service loyalty for the whole sample (R^2=0.59) as well as for HIS group (R^2=0.61). Tangibles did not have any significant effect on customer satisfaction (See Table 10), but it had a direct effect on service loyalty for the overall sample and HIS group. On the other hand, enjoyment did not have a significant impact on customer satisfaction, while it had a direct effect on service loyalty for SST group (R^2=0.58). Although there was a prominent influence on interactive quality and enjoyment, tangibles did not produce any meaningful effect on service loyalty among customers who checked-in via SSTs. However, it was noteworthy that interactive quality and enjoyment showed stronger effects on service loyalty in the SST group ($\beta_{\text{Interactive}}$

$_{Quality}$=0.48, $\beta_{Enjoyment}$=0.28) compared to HIS group ($\beta_{Interactive\ Quality}$=0.43, $\beta_{Enjoyment}$=0.20). Meanwhile, in every condition (i.e., whole sample, SST group, and HIS groups) interactive quality had the most crucial role on service loyalty in comparison to tangibles and enjoyment.

Table 11: Regression Analyses of Service Quality on Service Loyalty

Regression Models		Std. Coefficient	t-Value	Sig.	VIF
Service Loyalty (Overall)	R^2 = 0.59 Adj. R^2 = 0.58				
Interactive Quality		0.51	8.34	**0.00****	2.41
Tangibles		0.17	2.71	**0.01***	2.43
Enjoyment		0.20	4.34	**0.00****	1.41
Service Loyalty (SST)	R^2 = 0.58 Adj. R^2 = 0.57				
Interactive Quality		0.48	4.94	**0.00****	2.71
Tangibles		0.09	1.02	0.31	2.33
Enjoyment		0.28	3.56	**0.00****	1.73
Service Loyalty (HIS)	R^2 = 0.61 Adj. R^2 = 0.61				
Interactive Quality		0.43	5.34	**0.00****	2.44
Tangibles		0.27	3.33	**0.00****	2.54
Enjoyment		0.20	3.38	**0.00****	1.35

Note: ** $p < 0.01$
* $p < 0.05$

The last stage was to analyze the effect of service quality and customer satisfaction on service loyalty in order to reveal the mediating impact of customer satisfaction in the relationship between service quality and service loyalty (See Table 12). As the table indicates, in the case of the overall sample (R^2=0.63), customer satisfaction (β=0.42), interactive quality (β=0.19), tangibles (β=0.13), and enjoyment (β=0.16) all showed a meaningful impact on service loyalty. However, due to the beta score (β) changes comparing with the previous table (See Tables 11

and 12), customer satisfaction was partially mediated the relationship between two different service quality constructs (i.e., interactive factor and enjoyment) and service loyalty. In the case of SST (R^2=0.63) and HIS (R^2=0.65) groups, when interactive quality was analyzed with customer satisfaction as an independent variable, it did not have a significant role on service loyalty anymore. Considering that there was a noteworthy impact of the interactive quality on service loyalty in the previous table (i.e., Table 11), it was fully meditated in the relationship between interactive quality and service loyalty in both SST and HIS groups. On the other hand, customer satisfaction was partially mediated in the relationship between enjoyment and service loyalty in HIS group due to the beta score (β*)* changes from 0.20 (Table 11) to 0.16 (Table 12).

Table 12: Regression Analyses of Service Quality and Customer Satisfaction on Service Loyalty

Regression Models		Std. Coefficient	t-Value	Sig.	VIF
Service Loyalty (Overall)					
Customer Satisfaction	$R^2 = 0.63$	0.42	5.70	**0.00****	3.97
Interactive Quality	Adj.	0.19	2.44	**0.02***	4.60
Tangibles	$R^2 = 0.63$	0.13	2.18	**0.03***	2.46
Enjoyment		0.16	3.66	**0.00****	1.45
Service Loyalty (SST)					
Customer Satisfaction	$R^2 = 0.63$	0.40	4.03	**0.00****	3.22
Interactive Quality	Adj.	0.21	1.79	0.08	4.21
Tangibles	$R^2 = 0.62$	0.05	0.62	0.54	2.36
Enjoyment		0.24	3.18	**0.00****	1.76
Service Loyalty (HIS)					
Customer Satisfaction	$R^2 = 0.65$	0.43	3.89	**0.00****	5.05
Interactive Quality	Adj.	0.10	0.85	0.40	5.45
Tangibles	$R^2 = 0.64$	0.24	2.99	**0.00****	2.58
Enjoyment		0.16	2.70	**0.01***	1.41

Note: ** $p < 0.01$
* $p < 0.05$

Considering the aforementioned relationships, differences between SST and HIS groups were captured as well. For instance, interactive quality showed a much stronger impact on customer satisfaction when a customer received services from HISs than SSTs. However, the relationship between interactive quality and service loyalty was greater when a guest checked-in via SSTs (β=0.21) compared to HISs (β=0.10). Also, tangibles had a significant relationship with service loyalty for HIS group, while it did not have any notable role for SST group. Enjoyment had a meaningful impact on service loyalty among people who received service from SSTs, whereas it did not have any significant effect on HIS customers' service loyalty.

Also, for overall sample, interactive quality (β=19) was the most crucial determinant of service loyalty when there is a mediating role of customer satisfaction. On the other hand, SST group considered enjoyment (β=0.24), while HIS group chose tangibles (β=0.24) as the service quality factor which affected their service loyalty the most. Finally, in every regression analysis (See Table 10, 11, and 12), HIS groups had the highest R^2 values compared to the whole sample and SST group. This implies that HIS customers explain the relationship of service quality factors, customer satisfaction, and service loyalty the best.

CHAPTER FIVE: DISCUSSIONS AND IMPLICATIONS

5.1. Discussions

This study was designed to investigate the relationship of service quality dimensions on customer satisfaction and service loyalty in the hotel check-in process. Also, within the research framework, differences between SSTs and HISs were explored. The result of the EFA showed that service quality dimensions for SSTs and HISs could be analyzed with three main factors: interactive quality (i.e., reliability, responsiveness, competence, and efficiency), tangibles, and enjoyment. Although previous researchers (e.g., Berry *et al*., 1985; Yang & Fang, 2004; Parasuraman *et al*., 2005) found a significant impact of each element of interactive quality on customer service perceptions, such dimensions were merged into one unique interactive service quality construct for hotel guests who received service from both SSTs and HISs.

Since reliability, responsiveness, competence, and efficiency were combined into one factor (i.e., interactive quality), some hypotheses (i.e., H1, H2, H4, H5) were not confirmed through further analyses, although the interactive quality had positive relationships with both customer satisfaction and service loyalty. Four factors of interactive quality (i.e., reliability, responsiveness, competence, and efficiency) have one thing in common which is directly related to the service that customers receive from service provisions which are SSTs and HISs. On the other hand, tangibles are more related to physical environment, and enjoyment is the hedonic influence at the service encounter in hotels. Therefore, this finding suggests that hotel customers' service quality factors consist of service component (i.e., interactive quality), physical component (i.e., tangibles), and emotional component (i.e., enjoyment).

According to multiple regression analyses, interactive quality had a significant relationship with customer satisfaction as well as with service loyalty. Also, both SST and HIS customers considered interactive quality as the most significant factor that had a positive effect on their satisfaction and service loyalty. This revealed that the service component had the most significant impact on customer service perceptions. Similarly, enjoyment had a significant positive role on customer satisfaction as well as on service loyalty. As a result, hypothesis 6 was supported. On the other hand, tangibles did not have a notable impact on customer satisfaction although it had a direct relationship with service loyalty.

As hypothesis 7 suggested, customer satisfaction was highly related to service loyalty. Considering the fact that interactive quality is directly related to service that hotel guests receive from service providers, this finding supports previous studies which insisted that service quality acts on service loyalty via customer satisfaction (e.g., Caruana, 2002). In other words, service quality, customer satisfaction, and service loyalty have an important connection to each other.

Overall, the differences between SST and HIS customers were easily noticeable. Also, customer satisfaction had a mediator role on the relationship between multiple factors of service quality and service loyalty somewhat, which support hypotheses 8. Considering the mediator role of customer satisfaction, enjoyment had the most critical effect on service loyalty for people who used SSTs, while tangibles had the strongest impact on service loyalty for people who received HISs. These results indicated that enjoyment is a more primary factor compared to other service factors for SST customers, but HIS customers consider tangible aspects are more important than the rest of service construct.

Interactive quality was fully mediated by customer satisfaction for the SST and HIS groups. In addition, enjoyment was partially mediated by customer satisfaction in overall and HIS group. Furthermore, the strength of the relationship between service quality and customer satisfaction as well as service loyalty was varied depends on service providers (i.e., SSTs and HISs). However, HIS customers explained better relationships of service quality and both customer satisfaction (R^2=0.80) and service loyalty (R^2=0.61) comparing with that of SSTs.

The results of the independent T-test reflected that HIS customers tended to have a higher level of interactive quality than SST customers. On the other hand, SST customers showed a higher level of enjoyment compared with that of HIS customers. Meanwhile, both SST and HIS customers had similar figures for the tangibles factor. Lastly, when hotel guests received a check-in service via HISs, they were more likely to show a greater level of service loyalty than guests who checked-in via SSTs. Furthermore, people who used SSTs tended to be younger compared to HIS customers. This relationship supports that age is the most reliable demographic predictor of customers' SST usage (Meuter *et al*., 2003). Nevertheless, in contrast to Meuter *et al*. (2003)'s finding, which showed that males had greater usage of SSTs compared to females, and gender did not have any significant impact in the current study. Similarly, other demographic elements such as ethnicity, income, and education did not have any significant differences between SST and HIS groups.

Meanwhile, this study discovered that people are more likely to use SSTs at higher rated hotels compared to lower rated hotels. Even though previous researchers (e.g., Chathoth, 2007) believed that customers at full-service hotels might prefer to receive service from employees rather than SSTs, the result of this research indicated that the majority of customers (28.4%) who

used SSTs tended to visit upper upscale hotels (e.g., Marriott, Hilton). Finally, SST group had higher figures for previous SST usage experience, technology readiness, and attitude towards SSTs. This means that if customers used SSTs in hotels before, they were more willing to use SSTs in hotels once again compared to customers who never used SSTs. It also supports the technology readiness index pertains to use SSTs among people (Parasuraman, 2000), as well as attitude towards SSTs can be the strong influential individual predictor of SST usage (Meuter *et al*., 2003).

5.2. Theoretical Implications

The result of this study contributes to several theoretical implications to service research. First, this study suggested multi-dimensions of service quality (i.e., interactive quality, tangibles, and enjoyment) that are applicable for both SST and HIS delivery options. Even though there are several studies demonstrated service quality measures on either SSTs or HISs, no study examined service quality constructs that can be employed for both SST and HIS settings. Based on the related literature, this study initially classified the service quality construct with six factors (i.e., reliability, responsiveness, tangibles, competence, efficiency, and enjoyment), and attempted to apply for both SSTs and HISs. However, the result showed that service quality for SST and HIS could be divided into three different factors: interactive quality (i.e., reliability, responsiveness, competence, and efficiency), tangibles, and enjoyment.

Second, this study examined the mediating effect of customer satisfaction through illustrating the relationships between the multiple dimensions of service quality, customer satisfaction, and further, service loyalty in the hotel industry. Although the close relationship of

service quality and customer satisfaction as well as service loyalty have been taken for granted among researchers (e.g., Zeithaml *et al*., 1996; Caruana, 2002), there was a lack of research on hotel customers who used SSTs. Through the multiple sets of regression analyses, this study insists that customer satisfaction has a mediating impact on the relationship between service quality and service loyalty among hotel customers who received not only HISs but also SSTs.

Third, this research examined the moderating role of different service delivery options which are SSTs and HISs. There are few scholars suggesting differences between SSTs and HISs. However, this study proved that SSTs or HISs at the service encounter affect customer service perceptions, satisfaction, and service loyalty. Once more, depending on the service provider, SSTs or HISs, the level of customer satisfaction and service loyalty, as well as the strength of the relationship between service quality and customer satisfaction, was varied. This finding will encourage research about related studies regarding customer diverse service perceptions as per different service providers.

5.3. Managerial Implications

As a result of this research, two major implications are expected for the hotel industry. Most of all, comprehensive understanding and knowledge of customers' perception towards SSTs compared to HISs are extremely crucial in the hotel field. Implementing SSTs has been an inevitable trend in not only hotels but also in general hospitality sectors including airports and restaurants due to saving labor cost as organizations do not need to hire as many employees as compared to operating service through HISs. However, it is important to understand this trend from customers' perspective. Similarly, many hospitality managers, especially in hotels, used to

have a doubtful view that SSTs might have negative effects on customer service perceptions. The result of this study showed a positive effect of SSTs on customers' service perceptions. For instance, interactive quality and enjoyment of the service are especially critical for SST customers' customer satisfaction and service loyalty respectively. Therefore, hotel managers need to consider customers' insight when they decide to adopt SSTs for their service operation.

Moreover, this study demonstrated the importance of proper combination between SSTs and HISs at the service encounter. Depending on customers' characteristics or perceptions toward technologies (e.g., age, the number of previous SST usage, technology readiness, and attitude towards SSTs), their preference between SSTs and HISs might be varied. However, this research found that customers who received service from HISs show higher levels of overall interactive quality and service loyalty levels. This suggests in contrast to the current service trend which is the service migration from HISs to SSTs, that hotel organizations should not ignore the importance of HISs on their customers' service perceptions.

5.4. Limitations and Future Research

Although this study contains several theoretical implications and managerial implications, it is not free from limitations. First, the demographic proportion of the sample was not even. For instance, most participants were females (66.9%), while only 33.1% were males. In addition, most of the survey respondents were whites (74.9 %). Although the result indicated that there were no any significant differences relying on genders and ethnicities, it will be better to represent the overall population if the study had a balanced ratio of demographics. Similarly, the majority of respondents visited hotels for the leisure purpose (84.7%), whereas only 15.3 % for

the business purpose. Therefore, future studies should collect the data from leisure and business guests more equally to achieve a better representation of the whole population and compare those two different customer segments. Also, this study only examined U.S. customer service perceptions based on their experience on hotels which are located in the U.S. Although SSTs have been popular in a number of countries other than the U.S., there are still some countries that are not familiar with SSTs. Therefore, it will be interesting if future studies can include different countries to investigate any differences regarding customer service perceptions based on different cultures.

In addition, this study limits the service scope with the inclusion of only the hotel check-in process. This limitation could be a reason that four dimensions of service quality (i.e., reliability, responsiveness, competence, and efficiency) had been merged into one factor (i.e., interactive quality). This study adopted these factors and attempted to implement them strictly to the hotel check-in procedure allowing uncertainty about the general factors of service quality is having a significant role in the check-in procedure. Therefore, future studies are recommended to consider a broader range of service encounters. For instance, future studies can include check-out procedures. On a similar note, this study considered only self-check-in kiosks as SSTs. However, there are several types of SST that hotel customers can use for check-in including a mobile application. Therefore, the future study can be developed by considering different types of SSTs more than a self-service kiosk.

Finally, this study researched specifically hotel customer service perceptions regarding SSTs in contrast to HISs. However, the result might be different depending on the service provider context. Moreover, SSTs have been implemented in the several hospitality industries

not limited to the hotel industry. There could be different outcomes if the future study examines the perspective of employees and managers in contrast to customers' perspectives, or different industries including airport and restaurant industries. In conclusion, researchers are encouraged to research SSTs in different industries or perspectives to extend the current literature regarding SSTs and HISs.

APPENDIX A: UCF IRB APPROVAL LETTER

University of Central Florida Institutional Review Board
Office of Research & Commercialization
12201 Research Parkway, Suite 501
Orlando, Florida 32826-3246
Telephone: 407-823-2901 or 407-882-2276
www.research.ucf.edu/compliance/irb.html

Determination of Exempt Human Research

From: **UCF Institutional Review Board #1**
FWA00000351, IRB00001138

To: **Soona Park**, **David Joon Wuk Kwun**

Date: **February 13, 2018**

Dear Researcher:

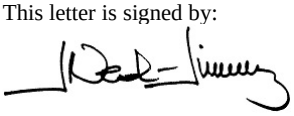
On 02/13/2018, the IRB reviewed the following activity as human participant research that is exempt from regulation:

Type of Review:	Exempt Determination – Category 2 – Adult Participants n=300
Project Title:	Comparing Self-Service Technologies and Human Interaction Services in the Hotel Industry
Investigator:	Soona Park
IRB Number:	SBE-18-13750
Funding Agency:	
Grant Title:	
Research ID:	N/A

This determination applies only to the activities described in the IRB submission and does not apply should any changes be made. If changes are made and there are questions about whether these changes affect the exempt status of the human research, please contact the IRB. When you have completed your research, please submit a Study Closure request in iRIS so that IRB records will be accurate.

In the conduct of this research, you are responsible to follow the requirements of the Investigator Manual.

This letter is signed by:



Signature applied by Jennifer Neal-Jimenez on 02/13/2018 10:21:32 AM EST

Designated Reviewer

APPENDIX B: ONLINE SURVEY

Rosen College of Hospitality Management
UNIVERSITY OF CENTRAL FLORIDA

Title of Project: **Comparing Self-Service Technologies and Human Interaction Services in the Hotel Industry.**

You are being invited to take part in a research study. This study aims to reveal differences between hotel customers who checked-in through self-service kiosks and front office employees. In particular, the difference of customers' service evaluations and its impacts on satisfaction, and subsequently, service loyalty levels. The result of the study will encourage hotel practitioners as well as scholars' comprehensive knowledge of two different service options: self-service technologies and human interaction services at the service encounter.

To take part in this research, every participant needs to be **18 years or older** and **should have visited hotels in the U.S. during the last 6 months.** The survey will take approximately 10-15 minutes to complete. All respondents of the survey are voluntary and anonymous. Your responses will be kept as confidential, and no identifying information will be revealed. Lastly, **each response is extremely important for the success of this research and highly appreciated**.
Please feel free to ask any questions about the survey.

Sincerely,

Soona Park

Rosen College of Hospitality Management
University of Central Florida
Email: como2303@knights.ucf.edu
Phone: (407) 802-6583

Dr. David Kwun

Rosen College of Hospitality Management
University of Central Florida
Email: David.Kwun@ucf.edu
Phone: (407) 903-8190

Study contact for questions about the study or to report a problem: If you have questions, concerns, or complaints, please contact to Ms. Soona Park, Graduate Student, Rosen College of Hospitality Management, (407) 802-6583 or by email at como2303@knights.ucf.edu or Dr. David Kwun, Faculty Supervisor, Department of Hospitality Management at (407) 903-8190 or by email at David.Kwun@ucf.edu

IRB contact about your rights in the study or to report a complaint: Research at the University of Central Florida involving human participants is carried out under the oversight of the Institutional Review Board (UCF IRB). This research has been reviewed and approved by the IRB. For information about the rights of people who take part in research, please contact: Institutional Review Board, University of Central Florida, Office of Research & Commercialization, 12201 Research Parkway, Suite 501, Orlando, FL 32826-3246 or by telephone at (407) 823-2901.

I have read the above information and agree to participate in this research

☐ Agree **☐ Disagree**

Q1. In the last 6 months, how many times have you stayed at hotels in the U.S.?

- ○ Never
- ○ 1-2 times
- ○ 3-4 times
- ○ 5-6 times
- ○ 7-8 times
- ○ 9 times or more

Q2. What was the name of the hotel that you most recently visited?

_____

Q3. Based on your experience as a guest at the (answer of Q2) hotel, please respond to following questions.

	Strongly disagree (1)						Strongly agree (7)
The (answer of Q2) hotel is reliable	○	○	○	○	○	○	○
I trust the (answer of Q2) hotel	○	○	○	○	○	○	○
The (answer of Q2) hotel acts with good intentions	○	○	○	○	○	○	○
I can rely on the (answer ofQ2) hotel	○	○	○	○	○	○	○
I will recommend the (answer ofQ2) hotel to others	○	○	○	○	○	○	○
I will stay in the (answer ofQ2) hotel next time	○	○	○	○	○	○	○
I will switch to other hotels if I experience a problem with the (answer ofQ2) hotels	○	○	○	○	○	○	○
I would say good things about the (answer ofQ2) hotel	○	○	○	○	○	○	○

Q4. How would you rate the class of the (answer of Q2) hotel?

- ○ Luxury hotel (e.g., Ritz-Carlton, Four Season)
- ○ Upper upscale hotel (e.g., Hilton, Marriott)
- ○ Upscale hotel (e.g., Courtyard, Double Tree)
- ○ Upper midscale hotel (e.g., Holiday Inn, Hampton Inn)
- ○ Midscale hotel (e.g., Best Western, Ramada)
- ○ Budget / Economy hotel (e.g., Days Inn, Super 8)

Q5. What was the primary purpose of your last hotel visit?

- ○ Leisure
- ○ Business

Q6. How did you checked-in to the (answer of Q2) hotel?

- ○ Through a self-service kiosk
- ○ Through a front office employee

Q7. Did the (answer of Q2) hotel have both self-service kiosks and front office employees for the check-in process?

- ○ Yes
- ○ No
- ○ I do not remember

HIS Survey (i.e., customers who checked-in through service employees)

Q8. Please evaluate the reliability of the check-in service provided by the front office employee.

	Strongly disagree (1)						Strongly agree (7)
The front office employee accurately verified my reservation requests	○	○	○	○	○	○	○
The check-in process was error-free	○	○	○	○	○	○	○
The front office employee performed the right service the first time	○	○	○	○	○	○	○
The check-in process was consistent	○	○	○	○	○	○	○

Q9. Please indicate the responsiveness of the check-in service given by the front office employee.

	Strongly disagree (1)						Strongly agree (7)
I received a prompt response to my requests from the front office employee	○	○	○	○	○	○	○
The front office employee quickly resolved problems that I encountered	○	○	○	○	○	○	○
The front office employee handled the customer traffic promptly	○	○	○	○	○	○	○
The queue for the front office employee was never too long to wait	○	○	○	○	○	○	○

Q10. Please evaluate tangible aspects of the service provided by the front office employee during the check-in process.

	Strongly disagree (1)						Strongly agree (7)
The front office was visually appealing	○	○	○	○	○	○	○
The front office had modern looking equipment	○	○	○	○	○	○	○
The front office area was clean, odorless, and pleasant	○	○	○	○	○	○	○
The waiting area of the front office was spacious and visually appealing	○	○	○	○	○	○	○

Q11. Please indicate the competence of the front office employee during the check-in process.

	Strongly disagree (1)						Strongly agree (7)
The front office employee was informative during the check-in process	○	○	○	○	○	○	○
The front office employee provided adequate information about the hotel	○	○	○	○	○	○	○
The front office employee handled my specific needs	○	○	○	○	○	○	○
The front office employee was able to solve my problems	○	○	○	○	○	○	○

Q12. Please evaluate the service efficiency given by the front office employee during the check-in.

	Strongly disagree (1)						Strongly agree (7)
The check-in process was easy	○	○	○	○	○	○	○
The check-in process was fast	○	○	○	○	○	○	○
The check-in process required minimal effort to complete	○	○	○	○	○	○	○
The check-in process was simple	○	○	○	○	○	○	○

Q13. Receiving the check-in service through the front office employee was

	Strongly disagree (1)						Strongly agree (7)
interesting	○	○	○	○	○	○	○
entertaining	○	○	○	○	○	○	○
enjoyable	○	○	○	○	○	○	○
fun	○	○	○	○	○	○	○

Q14. How do you evaluate the overall service given by the front office employee during the check-in process?

	Strongly disagree (1)						Strongly agree (7)
I was satisfied with the overall check-in process	○	○	○	○	○	○	○
I am left in a good mood when I received service from the front office employee	○	○	○	○	○	○	○
I was satisfied with the overall interaction with the front office employee	○	○	○	○	○	○	○
In general, I was satisfied with the service offered by the front office employee	○	○	○	○	○	○	○

Q15. Please indicate how much you agree or disagree with the following statements.

	Strongly disagree (1)						Strongly agree (7)
I consider a front office employee as my first choice to check-in at hotels	○	○	○	○	○	○	○
I will encourage friends and relatives to use front office employees' services when they check-in at hotels	○	○	○	○	○	○	○
I intend to continue using front office employees' services when I check-in at hotels	○	○	○	○	○	○	○
I like to check-in at hotels through front office employees	○	○	○	○	○	○	○
Front office employees are clearly the best option to check-in at hotels	○	○	○	○	○	○	○
I will say positive things about checking-in through a front office employee to other people	○	○	○	○	○	○	○

SST Survey (i.e., customers who checked-in through self-service kiosks)

Q8. Please evaluate the reliability of the check-in service provided by the self-service kiosk.

	Strongly disagree (1)						Strongly agree (7)
The self-service kiosk accurately verified my reservation requests	○	○	○	○	○	○	○
The check-in process was error-free	○	○	○	○	○	○	○
The self-service kiosk performed the right service the first time	○	○	○	○	○	○	○
The check-in process was consistent	○	○	○	○	○	○	○

Q9. Please indicate the responsiveness of the check-in service given by the self-service kiosk.

	Strongly disagree (1)						Strongly agree (7)
I received a prompt response to my requests from the self-service kiosk	○	○	○	○	○	○	○
The self-service kiosk quickly resolved problems that I encountered	○	○	○	○	○	○	○
The self-service kiosk handled the customer traffic promptly	○	○	○	○	○	○	○
The queue for the self-service kiosk was never too long to wait	○	○	○	○	○	○	○

Q10. Please evaluate tangible aspects of the service provided by the self-service kiosk during the check-in process.

	Strongly disagree (1)						Strongly agree (7)
The self-service kiosk was visually appealing	○	○	○	○	○	○	○
The self-service kiosk had modern looking equipment	○	○	○	○	○	○	○
The self-service kiosk area was clean, odorless, and pleasant	○	○	○	○	○	○	○
The waiting area of the self-service kiosk was spacious and visually appealing	○	○	○	○	○	○	○

Q11. Please indicate the competence of the check-in service provided by the self-service kiosk.

	Strongly disagree (1)						Strongly agree (7)
The self-service kiosk was informative during the check-in process	○	○	○	○	○	○	○
The self-service kiosk provided adequate information about the hotel	○	○	○	○	○	○	○
The self-service kiosk handled my specific needs	○	○	○	○	○	○	○
The self-service kiosk was able to solve my problems	○	○	○	○	○	○	○

Q12. Please evaluate the service efficiency of using the self-service kiosk during the check-in.

	Strongly disagree (1)						Strongly agree (7)
The check-in process was easy	○	○	○	○	○	○	○
The check-in process was fast	○	○	○	○	○	○	○
The check-in process required minimal effort to complete	○	○	○	○	○	○	○
The check-in process was simple	○	○	○	○	○	○	○

Q13. Receiving the check-in service through the self-service kiosk was

	Strongly disagree (1)						Strongly agree (7)
interesting	○	○	○	○	○	○	○
entertaining	○	○	○	○	○	○	○
enjoyable	○	○	○	○	○	○	○
fun	○	○	○	○	○	○	○

Q14. How do you evaluate the overall service given by the self-service kiosk during the check-in process?

	Strongly disagree (1)						Strongly agree (7)
I was satisfied with the overall check-in process	○	○	○	○	○	○	○
I am left in a good mood when I receive service from the self-service kiosk	○	○	○	○	○	○	○
I was satisfied with the interaction with the self-service kiosk	○	○	○	○	○	○	○
In general, I was satisfied with the service offered by the self-service kiosk	○	○	○	○	○	○	○

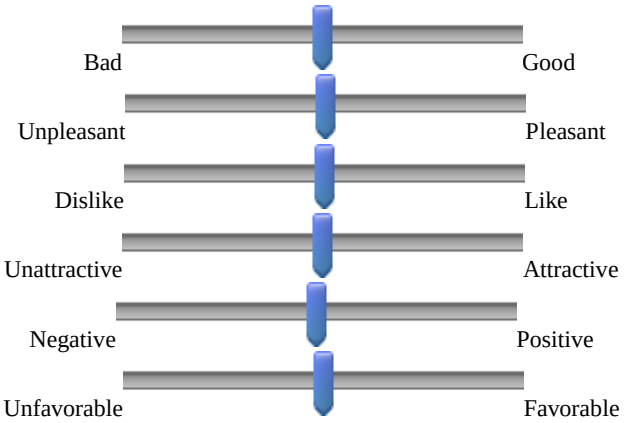
Q15. Please indicate how much you agree or disagree with the following statements.

	Strongly disagree (1)						Strongly agree (7)
I consider a self-service kiosk as my first choice to check-in at hotels	○	○	○	○	○	○	○
I will encourage friends and relatives to use self-service kiosks when they check-in at hotels	○	○	○	○	○	○	○
I intend to continue using self-service kiosks when I check-in at hotels	○	○	○	○	○	○	○
I like to check-in at hotels through self-service kiosks	○	○	○	○	○	○	○
Self-service kiosks are clearly the best option to check-in at hotels	○	○	○	○	○	○	○
I will say positive things about checking-in through a self-service kiosk to other people	○	○	○	○	○	○	○

Q16. Please indicate how much you agree or disagree with the following statements.

	Strongly disagree (1)						Strongly agree (7)
Technology gives people more control over their daily lives	○	○	○	○	○	○	○
Products and services that use the newest technologies are much more convenient to use	○	○	○	○	○	○	○
Technology gives me more freedom of mobility	○	○	○	○	○	○	○
Other people come to me for advice on new technologies	○	○	○	○	○	○	○
I can usually figure out new high-tech products and services without help from others	○	○	○	○	○	○	○
In general, I am among the first of my circle of friends to acquire new technology when it appears	○	○	○	○	○	○	○
Technological support lines are not helpful because they don't explain things in terms I understand	○	○	○	○	○	○	○
When I get technical support from a provider of a high-tech product or service, I sometimes feel if I am being taken advantage of by someone who knows more than I do	○	○	○	○	○	○	○
It is embarrassing when I have a trouble with a high-tech gadget while people are watching	○	○	○	○	○	○	○
Any business transaction that I do electronically should be confirmed later with something in writing	○	○	○	○	○	○	○
I do not feel confident doing business with a place that can only be reached online	○	○	○	○	○	○	○
I do not consider it safe giving out a credit card number over a computer	○	○	○	○	○	○	○

Q17. Your feelings or perceptions toward the self-service technology are:



Q18. How many times have you used a self-service kiosk to check-in at hotels?

- ○ Never
- ○ 1-2 times
- ○ 3-4 times
- ○ 5-6 times
- ○ 7-8 times
- ○ 9 times or more

Q19. Please indicate you age.

_____

Q20. What is your gender?

- ○ Male
- ○ Female
- ○ Other

Q21. What is the highest level of school you have completed or the highest degree you have received?

- ○ High school or less
- ○ Some college but no degree
- ○ Associate degree in college (2-year)
- ○ Bachelor's degree in college (4-year)
- ○ Master's degree
- ○ Doctoral degree or other Professional degree (JD, MD)

Q22. Please specify your ethnicity.

- ○ African American
- ○ Asian
- ○ Caucasian
- ○ Hispanic
- ○ Pacific Islander
- ○ Other

Q23. Please indicate the answer that includes your entire household income in (previous year) before taxes.

- ○ Less than $40,000
- ○ $40,001 to $60,000
- ○ $60,001 to $80,000
- ○ $80,001 to $100,000
- ○ $100,001 to $120,000
- ○ $120,001 to $140,000
- ○ More than $140,001

REFERENCES

Akan, P. (1995). Dimensions of service quality: A study in Istanbul. *Managing Service Quality: An International Journal*, *5*(6), 39-43.

Akbaba, A. (2006). Measuring service quality in the hotel industry: A study in a business hotel in Turkey. *International Journal of Hospitality Management*, *25*(2), 170-192.

Al-Rousan, M. R., & Mohamed, B. (2010). Customer loyalty and the impacts of service quality: The case of five star hotels in Jordan. *International Journal of Human and Social Sciences*, *5*(13), 886-892.

Bauer, H. H., Falk, T., & Hammerschmidt, M. (2006). eTransQual: A transaction process-based approach for capturing service quality in online shopping. *Journal of Business Research*, *59*(7), 866-875.

Beatson, A., Coote, L. V., & Rudd J. M. (2006). Determining consumer satisfaction and commitment through self-service technology and personal service usage. *Journal of Marketing Management*, *22*(7-8), 853-882.

Berkson, J. (1938). Some difficulties of interpretation encountered in the application of the chi-square test. *Journal of the American Statistical Association*, *33*(203), 526-536.

Berry, L. L., Zeithaml, V. A., & Parasuraman, A. (1985). Quality counts in services, too. *Business Horizons*, *28*(3), 44-52.

Bitner, M. J., Booms, B. H., & Tetreault, M. S. (1990). The service encounter: Diagnosing favorable and unfavorable incidents. *Journal of Marketing*, *54*(1), 71-84.

Bitner, M. J., Ostrom, A. L., & Meuter, M. L. (2002). Implementing successful self-service technologies. *The Academy of Management Executive*, *16*(4), 96-108.

Bloemer, J., De Ruyter, K. O., & Wetzels, M. (1999). Linking perceived service quality and service loyalty: A multi-dimensional perspective. *European Journal of Marketing*, *33*(11/12), 1082-1106.

Bobbitt, L. M., & Dabholkar, P. A. (2001). Integrating attitudinal theories to understand and predict use of technology-based self-service: The internet as an illustration. *International Journal of Service Industry Management*, *12*(5), 423-450.

Boslo, E., & Lewis, B. (2008). Customer-to-customer interactions: Examining consumer behavior in hotels in Cyprus. *International Journal of Management Cases*, *10*(3), 345-354.

Briggs, S., Sutherland, J., & Drummond, S. (2007). Are hotels serving quality? An exploratory study of service quality in the Scottish hotel sector. *Tourism Management*, *28*(4), 1006-1019.

Caruana, A. (2002). Service loyalty: The effects of service quality and the mediating role of customer satisfaction. *European Journal of Marketing*, *36*(7/8), 811-828.

Chathoth, P. K. (2007). The impact of information technology on hotel operations, service management and transaction costs: A conceptual framework for full-service hotel firms. *International Journal of Hospitality Management*, *26*(2), 395-408.

Chen, S. C., Chen, H. H., & Chen, M. F. (2009). Determinants of satisfaction and continuance intention towards self-service technologies. *Industrial Management & Data Systems*, *109*(9), 1248-1263.

Chen, W.C. (2011). *Technology base self service in hospitality industry*. (Unpublished master's thesis). University of Nevada, Las Vegas, Las Vegas, NV. Retrieved from http://digitalscholarship.unlv.edu/thesesdissertations/1094/

Collier, J. E., & Barnes, D. C. (2015). Self-service delight: Exploring the hedonic aspects of self-service. *Journal of Business Research, 68*(5), 986-993.

Cristobal, E., Flavián, C., & Guinaliu, M. (2007). Perceived e-service quality (PeSQ) measurement validation and effects on consumer satisfaction and web site loyalty. *Managing Service Quality: An International Journal*, *17*(3), 317-340.

Cunningham, L. F., Young, C. E., & Gerlach, J. H. (2008). Consumer views of self-service technologies. *The Service Industries Journal*, *28*(6), 719-732.

Dabholkar, P. A. (1996). Consumer evaluations of new technology-based self-service options: An investigation of alternative models of service quality. *International Journal of Research in Marketing*, *13*(1), 29-51.

Dabholkar, P. A., & Bagozzi, R. P. (2002). An attitudinal model of technology-based self-service: Moderating effects of consumer traits and situational factors. *Journal of the Academy of Marketing Science*, *30*(3), 184-201.

Dabholkar, P. A., Shepherd, C. D., & Thorpe, D. I. (2000). A comprehensive framework for service quality: An investigation of critical conceptual and measurement issues through a longitudinal study. *Journal of Retailing*, *76*(2), 139-173.

Dabholkar, P. A., & Spaid, B. I. (2012). Service failure and recovery in using technology-based self-service: Effects on user attributions and satisfaction. *The Service Industries Journal*, *32*(9), 1415-1432.

Deel, G. L. (2010). *Exploring the association of the attributes of self-service kiosks, customer check-in satisfaction, and customer commitment in convention hotels: The case of the Rosen centre hotel, a convention hotel*. (Unpublished master's thesis). University of Central Florida, Orlando, FL. Retrieved from http://etd.fcla.edu/CF/CFE0003358/Deel_Gary_L_201008_MS.pdf

Dick, A. S., & Basu, K. (1994). Customer loyalty: Toward an integrated conceptual framework. *Journal of the Academy of Marketing Science, 22*(2), 99-113.

Ding, D. X., Hu, P. J. H., & Sheng, O. R. L. (2011). e-SELFQUAL: A scale for measuring online self-service quality. *Journal of Business Research, 64*(5), 508-515.

Duncan, E., & Elliott, G. (2004). Efficiency, customer service and financial performance among Australian financial institutions. *International Journal of Bank Marketing*, *22*(5), 319-342.

Evans, J. R., & Mathur, A. (2005). The value of online surveys. *Internet Research*, *15*(2), 195-219.

Fisher, G., & Beatson, A. (2002). The impact of culture on self-service on technology adoption in the hotel industry. *International Journal of Hospitality & Tourism Administration, 3*(3), 59-77.

Fornell, C., & Larcker, D. F. (1981). Structural equation models with unobservable variables and measurement error: Algebra and statistics. *Journal of Marketing Research, 18*(3), 382-388.

Ganesh, J., Arnold, M. J., & Reynolds, K. E. (2000). Understanding the customer base of service providers: An examination of the differences between switchers and stayers. *Journal of Marketing*, *64*(3), 65-87.

Getty, J. M., & Getty, R. L. (2003). Lodging quality index (LQI): Assessing customers' perceptions of quality delivery. *International Journal of Contemporary Hospitality Management*, *15*(2), 94-104.

Gremler, D. D., & Brown, S. W. (1996). Service loyalty: Its nature, importance, and implications. In B. Edvardsson, S.W. Brown, R. Johnston, & E.E. Scheuing (Eds.), *QUIS V: Advancing Service Quality: A Global Perspective* (pp.171-181). New York, NY: ISQA.

Guenzi, P., & Pelloni, O. (2004). The impact of interpersonal relationships on customer satisfaction and loyalty to the service provider. *International Journal of Service Industry Management*, *15*(4), 365-384.

Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2010). *Multivariate data analysis* (7th ed.). Upper Saddle River, NJ: Prentice Hall.

Hartline, M. D., Maxham III, J. G., & McKee, D. O. (2000). Corridors of influence in the dissemination of customer-oriented strategy to customer contact service employees. *Journal of Marketing*, *64*(2), 35-50.

Johnston, R. (1995). The determinants of service quality: Satisfiers and dissatisfiers. *International Journal of Service Industry Management*, *6*(5), 53-71.

Jones, M. A., Reynolds, K. E., & Arnold, M. J. (2006). Hedonic and utilitarian shopping value: Investigating differential effects on retail outcomes. *Journal of Business Research, 59*(9), 974-981.

Kandampully, J. (1998). Service quality to service loyalty: A relationship which goes beyond customer services. *Total Quality Management, 9*(6), 431-443.

Kattara, H. S., & El-Said O. A. (2014). Customers' preferences for new technology-based self-services versus human interaction services in hotels. *Tourism and Hospitality Research, 13*(2), 67-82.

Keng, C. J., Huang, T. L., Zheng, L. J., & Hsu, M. K. (2007). Modeling service encounters and customer experiential value in retailing: An empirical investigation of shopping mall customers in Taiwan. *International Journal of Service Industry Management, 18*(4), 349-367.

Kim, J., Christodoulidou, N., & Brewer, P. (2012). Impact of individual differences and consumers' readiness on likelihood of using self-service technologies at hospitality settings. *Journal of Hospitality & Tourism Research, 36*(1), 85-114.

Klier, J., Klier, M., Müller, A. L., & Rauch, C. (2016). The impact of self-service technologies–towards an economic decision model and its application at the German Federal Employment Agency. *Journal of Decision Systems, 25*(2), 151-172.

Klinger, E. (1971). *Structure and functions of fantasy*. Oxford, England: Wiley-Interscience.

Ko, C.H. (2017). Exploring how hotel guests choose self-service technologies over service staff. *International Journal of Organizational Innovation, 9*(3), 16-27.

Knutson, B., Stevens, P., Wullaert, C., Patton, M., & Yokoyama, F. (1990). LODGSERV: A service quality index for the lodging industry. *Hospitality Research Journal*, *14*(2), 277-284.

Law, R., Leung, R., & Buhalis, D. (2009). Information technology applications in hospitality and tourism: A review of publications from 2005 to 2007. *Journal of Travel & Tourism Marketing*, *26*(5-6), 599-623.

Lee, H. J., Fairhurst, A. E., & Lee, M. Y. (2009). The importance of self-service kiosks in developing consumers' retail patronage intentions. *Managing Service Quality: An International Journal*, *19*(6), 687-701.

Lehtinen, U., & Lehtinen, J. R. (1991). Two approaches to service quality dimensions. *Service Industries Journal*, *11*(3), 287-303.

Lin, J. S. C., & Hsieh, P. L. (2006). The role of technology readiness in customers' perception and adoption of self-service technologies. *International Journal of Service Industry Management*, *17*(5), 497-517.

Lin, J. S. C., & Hsieh, P. L. (2011). Assessing the self-service technology encounters: Development and validation of SSTQUAL scale. *Journal of Retailing*, *87*(2), 194-206.

López-Bonilla, J. M., & López-Bonilla, L. M. (2013). Self-service technology versus traditional service: Examining cognitive factors in the purchase of the airline ticket. *Journal of Travel & Tourism Marketing*, *30*(5), 497-508.

Macintosh, G., & Lockshin, L. S. (1997). Retail relationships and store loyalty: A multi-level perspective. *International Journal of Research in Marketing*, *14*(5), 487-497.

Makarem, S. C., Mudambi, S. M., & Podoshen, J. S. (2009). Satisfaction in technology-enabled service encounters. *Journal of Services Marketing*, *23*(3), 134-144.

Mei, W. O. A., Dean, A. M., & White, C. J. (1999). Analyzing service quality in the hospitality industry. *Managing Service Quality: An International Journal*, *9*(2), 136-143.

Meuter, M. L., Bitner, M. J., Ostrom, A. L., & Brown, S. W. (2005). Choosing among alternative service delivery modes: An investigation of customer trial of self-service technologies. *Journal of Marketing*, *69*(2), 61-83.

Meuter, M. L., Ostrom, A. L., Roundtree, R. I., & Bitner, M. J. (2000). Self-service technologies: Understanding customer satisfaction with technology-based service encounters. *Journal of Marketing*, *64*(3), 50-64.

Min, H., Min, H., & Chung, K. (2002). Dynamic benchmarking of hotel service quality. *Journal of Services Marketing*, *16*(4), 302-321.

Oh, H., Jeong, M., Baloglu, S. (2013). Tourists' adoption of self-service technologies at resort hotels. *Journal of Business Research, 66*(6), 692-699.

Olorunniwo, F., Hsu, M. K., & Udo, G. J. (2006). Service quality, customer satisfaction, and behavioral intentions in the service factory. *Journal of Services Marketing*, *20*(1), 59-72.

Ong, L. I. (2010). *Can self service technologies work in the hotel industry in Singapore? A conceptual framework for adopting self service technology.* (Unpublished master's thesis). University of Nevada, Las Vegas, Las Vegas, NV. Retrieved from http://digitalscholarship.unlv.edu/cgi/viewcontent.cgi?article=1695&context=thesesdissertations

Orel, F. D., & Kara, A. (2014). Supermarket self-checkout service quality, customer satisfaction, and loyalty: Empirical evidence from an emerging market. *Journal of Retailing and Consumer Services*, *21*(2), 118-129.

Pantouvakis, A. (2010). The relative importance of service features in explaining customer satisfaction: A comparison of measurement models. *Managing Service Quality: An International Journal*, *20*(4), 366-387.

Parasuraman, A., Zeithaml, V. A., & Berry, L. L. (1985). A conceptual model of service quality and its implications for future research. *The Journal of Marketing*, *49*(4), 41-50.

Parasuraman, A., Zeithaml, V. A., & Berry, L. L. (1988). Servqual: A multiple-item scale for measuring consumer perc. *Journal of Retailing*, *64*(1), 12-40.

Parasuraman, A., Zeithaml, V. A., & Malhotra, A. (2005). ES-QUAL: A multiple-item scale for assessing electronic service quality. *Journal of Service Research*, *7*(3), 213-233.

Pett, M. A., Lackey, N. R., & Sullivan, J. J. (2003). *Making sense of factor analysis: The use of factor analysis for instrument development in health care research*. Thousand Oaks, CA: Sage Publication.

Poldrugovac, K., Tekavcic, M., & Jankovic, S. (2016). Efficiency in the hotel industry: An empirical examination of the most influential factors. *Economic Research-Ekonomska Istraživanja*, *29*(1), 583-597.

Prasad, K., Wirtz, P. W., & Yu, L. (2014). Measuring hotel guest satisfaction by using an online quality management system. *Journal of Hospitality Marketing & Management*, *23*(4), 445-463.

Robinson, S. (1999). Measuring service quality: Current thinking and future requirements. *Marketing Intelligence & Planning*, *17*(1), 21-32.

Santos, J. (2003). E-service quality: a model of virtual service quality dimensions. *Managing Service Quality: An International Journal*, *13*(3), 233-246.

Schneider, B., White, S. S., & Paul, M. C. (1998). Linking service climate and customer perceptions of service quality: Tests of a causal model. *Journal of Applied Psychology*, *83*(2), 150-163.

Selnes, F., & Hansen, H. (2001). The potential hazard of self-service in developing customer loyalty. *Journal of Service Research*, *4*(2), 79-90.

Shahin, A., & Dabestani, R. (2010). Correlation analysis of service quality gaps in a four-star hotel in Iran. *International Business Research*, *3*(3), 40-46.

Shankar, V., Smith, A. K., & Rangaswamy, A. (2003). Customer satisfaction and loyalty in online and offline environments. *International Journal of Research in Marketing*, *20*(2), 153-175.

Sur, S. (2008). Technology-based remote service encounters: understanding customer satisfaction and sustainability. *Journal of Foodservice Business Research*, *11*(3), 315-332.

Sureshchandar, G. S., Rajendran, C., & Anantharaman, R. N. (2002). Determinants of customer-perceived service quality: A confirmatory factor analysis approach. *Journal of Services Marketing*, *16*(1), 9-34.

Surprenant, C. F., & Solomon, M. R. (1987). Predictability and personalization in the service encounter. *The Journal of Marketing*, *51*(2), 86-96.

Talluri, S., Kim, M. K., & Schoenherr, T. (2013). The relationship between operating efficiency and service quality: Are they compatible? *International Journal of Production Research*, *51*(8), 2548-2567.

Tam, J. L. (2004). Customer satisfaction, service quality and perceived value: An integrative model. *Journal of Marketing Management*, *20*(7-8), 897-917.

Taylor, S. A., & Baker, T. L. (1994). An assessment of the relationship between service quality and customer satisfaction in the formation of consumers' purchase intentions. *Journal of Retailing*, *70*(2), 163-178.

Wakefield, K. L., & Blodgett, J. G. (1999). Customer response to intangible and tangible service factors. *Psychology & Marketing*, *16*(1), 51-68.

Wu, C. H. J., & Liang, R. D. (2009). Effect of experiential value on customer satisfaction with service encounters in luxury-hotel restaurants. *International Journal of Hospitality Management*, *28*(4), 586-593.

Wu, L.W. (2011). Satisfaction, inertia, and customer loyalty in the varying levels of the zone of tolerance and alternative attractiveness. *Journal of Service Marketing*, *25*(5), 310-322.

Yang, Z., & Fang, X. (2004). Online service quality dimensions and their relationships with satisfaction: A content analysis of customer reviews of securities brokerage services. *International Journal of Service Industry Management*, *15*(3), 302-326.

Yen, H. R. (2005). An attribute-based model of quality satisfaction for internet self-service technology. *The Service Industries Journal*, *25*(5), 641-659.

Zeithaml, V. A., Berry, L. L., & Parasuraman, A. (1996). The behavioral consequences of service quality. *The Journal of Marketing*, *60*(2), 31-46.