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Determinants of continuance intention and word of mouth for hotel branded mobile app users.

Liza Cobos
University of Central Florida

DETERMINANTS OF CONTINUANCE INTENTION AND WORD OF MOUTH FOR HOTEL BRANDED MOBILE APP USERS

by

LIZA MARINA COBOS
B.B.A. Loyola University New Orleans, 2001
M.S. University of Central Florida, 2006

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Major Professors:
Kevin Murphy
Ahmet Bulent Ozturk

ABSTRACT

This study examined the cognitive and affective factors that influence users' post-adoption behavioral intention. Specifically, based on the Expectation Confirmation Model (ECM) (Bhattacherjee, 2001b) the impact of cognitive factors (i.e., perceived usefulness, confirmation of expectations, mobility, personalization and responsiveness) and affective factors (i.e., satisfaction, perceived enjoyment) on hotel branded mobile applications (apps) users' continuance intention and WOM were examined. Hospitality firms invest considerable resources on technology solutions that are aimed at improving the consumer experience. However, for investments to be profitable firms must ensure that technology solutions are continuously used and ensure post-adoptive behaviors such as continuance intention and WOM. Data for the study were collected from 550 hotel branded mobile app users. After data were collected and cleaned, Partial Least-Square Structural Equation Modeling (PLS-SEM) was used to analyze the data. The results of the structural model indicated that continuance intention and WOM were directly influenced by satisfaction and perceived enjoyment; with satisfaction exerting the most influence on continuance intention. Conversely, perceived enjoyment was most influential to WOM. All cognitive factors were found to influence satisfaction and enjoyment, except for responsiveness and perceived usefulness. The results show that contextual factors have a more significant impact than previously established constructs. The results of the study allow hoteliers and hospitality technology consultants to identify the influential factors impacting post-adoptive behaviors. The study extends the literature on post-adoptive behavior and the ECM by including context specific factors (i.e. perceived mobility, personalization and responsiveness). This study contributes to the scare literature in the lodging industry literature examining users' evaluations of mobile apps and post-adoptive behaviors in the hospitality industry. The study adds to the post-adoptive

behavior literature by adding WOM as a second outcome to continuance intention. The treatment of contextual factors in this study, allowed to show the impact technology characteristics have on technology post-adoption.

To my dad that told me that I needed to pursue bigger dreams and needed to exploit my talents. To my mom who has always encouraged me and believed that if you work hard you can accomplish anything. To my sisters, Ingrid and Natalia, thank you for your love and support. To my friends in Puerto Rico, Stackas, las quiero mucho. To Avery, thank you for all the encouraging talks, we finally got our PhDs. Every one of you is part of this accomplishment. Thank you all for listening to my concerns during my many times of need and doubt. I appreciate and love you all!

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CHAPTER ONE: INTRODUCTION

This chapter sets the stage for the study. First, background information related to the use of technology by the hospitality industry is discussed, including current research and gaps in the literature. Second, the proposed conceptual model is introduced and explained. The chapter concludes by outlining the study objectives, research questions, and significance of the study.

The beginning of the 21st century has experienced a surge in wireless and mobile technology that has led the way for new computing applications used by businesses (Nickerson, Muntermann, Varshney, & Isaac, 2009). Mobile technology such as mobile apps have assisted in the development of the "app economy," which features services designed explicitly for mobile devices that have generated annual revenue in the billions of dollars (Puschmann & Alt, 2016). That is, the surge in technology and mobile devices allows businesses to capitalize on user's continuous connectivity to assist in consumer decision-making.

Background

The increased acceptance, adoption, and use of mobile applications opens the market to new consumers and enhances service delivery by properly using the features of mobile technology (Middleton, Scheepers, & Tuunainen, 2014). These distinctive features such as portability, user identification, localization capability, and instant connectivity provide value to organizations and consumers (Picoto, Bélanger, & Palma-dos-Reis, 2014). Organizations that engage in and properly leverage mobile technologies in mobile business (m-business) are likely to gain an advantage and bring more value and revenue to their business. M-business provides firms with a unique value proposition by allowing easy, convenient, and real-time access to

information and personalization capabilities through client identification and localization services (Camponovo & Pigneur, 2003; Clarke, 2001; Picoto et al., 2014; Sharma & Gutiérrez, 2010; Watson, Pitt, Berthon, & Zinkhan, 2002).

To maximize the return on investment of m-business strategies, organizations must ensure that consumers continue to use the technologies to support such strategies. To add to the discussion of the value of continued use, it is first important to understand technology adoption and use. Technology adoption examines the factors that lead a user to initially accept or reject a new technology (Davis, 1989). Attitude theories of technology adoption look at factors influencing a user's intention to adopt, such as usefulness, ease of use, performance expectancy, social influence, facilitating condition, and effect expectancy (Davis, 1989; Venkatesh, Morris, Davis, & Davis, 2003). On the other hand, technology use refers to the stage after initial adoption, or the post-adoption stage. Attitude models comparing use (i.e., post-adoption) to intent to adopt suggest that the same variables exert a different impact in the pre-adoption and post-adoption stages (Jasperson, Carter, & Zmud, 2005; Karahanna, Straub, & Chervany, 1999; Nabavi, Taghavi-Fard, Hanafizadeh, & Taghva, 2016).

Problem Statement

The proliferation of information communication technology (ICT) has changed the way hospitality firms conduct business and interact and communicate with consumers (Wang & Wang, 2010). New communication technologies have led to increased productivity and efficiency in service delivery by allowing firms to provide services to consumers through more convenient channels (Meuter, Ostrom, Bitner, & Roundtree, 2003). Because of the benefits,

consumers are insisting that firms provide new and innovative ways to conduct business (Xiang, Magnini, & Fesenmaier, 2015).

Because of consumers' changing expectations, firms must become more consumer-focused, flexible, innovative, and adaptable (Bilgihan, Okumus, Nusair, & Kwun, 2011). Firms have responded to consumers' needs by dedicating resources to implementing new technologies. However, this does not guarantee consumer use or long-term use of those technologies (Bhattacherjee, 2001b; Shaikh & Karjaluoto, 2015), which is demonstrated by the underutilization of functions in organizational and consumer-focused information systems (IS) (Shaikh & Karjaluoto, 2015). Given this situation, firms must focus on the behavioral consequences of consumer satisfaction (Oliver, 1980; Bhattacherjee, 2001b), which include the factors that influence a user's post-adoptive behaviors of continued use and word of mouth (WOM) of the technology to ensure its profitability (Bhattacherjee, 2001b; Chen, Murphy, & Knecht, 2016; Choi, Han, & Choi, 2015; Gibbs, Gretzel, & Saltzman, 2016; Japerson, Carter, & Zmud, 2005; Li & Liu, 2014).

The hospitality industry and its consumers have embraced the use of mobile applications because it allows consumers to purchase products and services using smartphones (Mo Kwon, Bae, & Blum, 2013). However, research has demonstrated that most hospitality firms provide the same information in their mobile applications that is posted on their websites (Mo Kwon et al., 2013), and consumers want advanced functions in the mobile apps (Chen, Hsu, & Wu, 2012). This represents a missed opportunity for hospitality firms since searching for travel information and making travel-related decisions are increasingly done during travel and vacations rather than before travel (Wang, Xiang, & Fesenmaier, 2014). Because consumer information search

preferences have changed with the development of new technologies, hospitality firms must also evolve in their offerings (Verma, Stock, & McCarthy, 2012).

In the hotel industry, lodging firms are focusing efforts and resources to offer new technologies that improve and optimize the consumer's experience (Gibbs et al., 2016). Examples include hotels investing in in-room technologies, which include free wireless internet, docking stations for mobile devices, mobile apps, in-room entertainment systems, and guest control panels (Jung, Kim, & Farrish, 2014). Other hotels have put efforts toward mobile business strategies such as mobile hotel reservation systems (Wang & Wang, 2010), which are mobile apps that let consumers search for hotels and area information; make, cancel, and modify reservations; and provide immediate feedback and share experiences (Chen et al., 2016; Gibbs et al., 2016; Morosan & DeFranco, 2016).

Consumers have access to many sources of information before and during their trips to help with all aspects of travel (Wang, Park, & Fesenmaier, 2011). Two popular sources of information among travelers are travel-related mobile apps and hotel branded mobile apps. Travel-related mobile apps provide access to information and allow consumers to complete transactions, share experiences, and interact with other consumers (Kennedy-Eden & Gretzel, 2012; Young Im & Hancer, 2014). Hotel branded mobile apps provide access to the hotel's mobile commerce system, and they function as a marketing tool that allows personalized product recommendations, promotions, product distribution, and transaction facilitation (Morosan & DeFranco, 2016).

The lodging industry faces challenges with the implementation of mobile apps because most brand-specific hotel apps only offer basic options such as booking a room and tracking

reward points; very few offer more advanced options (Null, n.d.). Currently, mobile apps are being used as a marketing tool that supports marketing efforts through information sharing, social networking, and facilitating transactions (Gasimov, Tan, Phang, & Sutanto, 2010). However, consumers are often seeking more than just a source of information from their mobile apps; they want advanced functions that ease consumption. Consumers are demanding mobile applications that provide location-based information, access to hotel-specific services, and features that allow for personalization to enhance their experiences, such as personal concierge services, spa services, and property-specific technology tools (Chen at al., 2015; Gibbs et al., 2016; Verma et al., 2012).

Since most hotel branded apps offer limited functions, this provides an opportunity for travel-related apps to fill the gap. Mobile apps such as those provided by online travel agencies (OTAs) (e.g., hotels.com, booking.com, Expedia, and Priceline) may draw users away from hotel branded mobile apps. Because alternative mobile apps are being provided by travel-related firms, consumers may see branded mobile apps for specific lodging companies as unnecessary (Belopotosky, 2011). This is a challenge for branded hotels, especially if they have invested financial resources and efforts to develop mobile apps. Therefore, if branded hotels want to increase usage of hotel branded apps, they must develop effective methods that encourage consumers to use the service. To achieve this, hotels must understand the factors that influence consumers' continuance intention to use hotel branded mobile apps after the initial consumption. Because of the importance of continuance intention, the purpose of this dissertation is to investigate the cognitive and affective factors that influence consumers' decisions to continue using and recommend a hotel branded mobile app. Identifying these factors will guide the

development and implementation of strategies to increase consumers' continuance intention to use hotel branded mobile apps.

Justification of the Study

Research on ICT in hospitality and tourism seems extensive; however, scholars have voiced concerns and issued a call to action for researchers to focus on how information communication technologies can recognize and encourage consumers' needs in hospitality services (Law, Buhalis, & Cobanoglu, 2014). Research focused on mobile applications has been embraced by tourism and hospitality researchers because mobile apps have been found to impact consumers' information searches and travel behaviors (Wang et al., 2014). Research suggests that because of the increased use of mobile technologies, more travel-related decisions are being made during travel than before travel (Wang, Park, & Fesenmaier, 2012), which suggests that mobile technology has shifted information and travel-related consumption patterns. This is relevant to the proposed study because consumers can use hotel mobile apps before and during travel to ease their information search and decision-making and consequently impact their experiences.

In the context of hotels, research from the consumers' perspective (i.e., consumers' use of mobile applications) is scarce (Wang, Xiang, Law, & Ki, 2016). Researchers who have studied consumers' perspectives have focused on intent to download a hotel mobile app (Mo Kwon et al., 2013), adoption of mobile hotel reservations (Wang & Wang, 2010), and intent to adopt mobile technology (Kim, Park, & Morrison, 2008). The studies that have examined adoption intention have used the commonly accepted theories and models such as Davis' Technology

Acceptance Model (TAM), Roger's Diffusion of Innovation, Fishbein and Ajzen's Theory of Reasoned Action, and Ajzen's Theory of Planned Behavior. However, scholars are careful to point out that studies that use the above theories miss an integral component of the tourism and hospitality industry. Kim et al. (2008) explain that the commonly used theories such as TAM fail to provide meaningful information about users' opinions of specific contexts. In addition to the context deficiency related to these theories, researchers have highlighted that little is known about how consumers actually use and evaluate their experiences with smartphone apps (Wang et al., 2016). Based on this, there appears to be a gap in the literature on mobile technology use in the lodging industry. Since little is known about how consumers evaluate their mobile app experience, it is difficult to know if they are likely to reuse a mobile app. Because of the limited understanding of mobile technology use in the lodging industry, research must be conducted to examine and gain a deep understanding of consumers' mobile application use and the factors that influence consumers' post-adoption behavior of continuance use intentions and likelihood to recommend (i.e., WOM).

Theoretical Background

As mentioned earlier, research examining information communication technology (ICT) use has been dominated by theories focused on understanding the factors that drive consumers' initial acceptance, such as Innovation Diffusion theory (Rogers, 1995), Technology Acceptance Model (Davis, 1989), and Theory of Planned Behavior (Ajzen, 1991). This research has focused on the factors that influence users in the first stage of new ICT acceptance and first-time use rather than on the factors that influence users' continued use of the new ICT after the initial

adoption of the technology (Bhattacherjee, 2001b; Limayem, Hirt, & Cheung, 2007; Susanto, Chang, & Ha, 2016). Research on continuance intention shows that the factors that influence an individual to adopt a new technology change after the initial adoption, and different factors affect the use and post-use phase (Bhattacherjee, 2001b; Nabavi et al., 2016; Shaikh & Karjaluoto, 2015).

Post-usage encompasses the behaviors or behavioral intentions after a consumer uses or experiences an object or a service (Jasperson et al., 2005; Nabavi et al., 2016). To explore this, the author of the current study uses the Expectation Confirmation Model (ECM) as a guide to explore post-adoptive behavior in the lodging industry. The ECM stems from Oliver's (1980) Expectation Confirmation Theory (ECT) that posits that consumers' repurchase intentions are derived primarily from consumer satisfaction based on their pre- and post-purchase expectations (Oliver, 1980). Several differences distinguish the ECM from Oliver's ECT. The main difference involves the treatment of the construct of expectations. Specifically, the pre-consumption expectation was replaced with post-consumption expectation being measured by perceived usefulness (Bhattacherjee, 2001b; Hossain & Quaddus, 2012).

According to Bhattacherjee (2001b), the main proponent of IS continuance intention, it is important to create a model that examines continuance intention since previous models have examined continued use with the same variables as pre-acceptance to explain both acceptance and continued use decisions, which implies that acceptance and continued use share covariance. This leads to models that are unable to determine why some users discontinue use of an initially accepted technology (Davis, Bagozzi, & Warshaw, 1989). The importance of understanding continued use comes from the practical application of new technologies. That is, though the

initial use of an information system is an important indicator of system success, it does not necessarily lead to desired outcomes unless the use continues (Kim & Malhotra, 2005). Bhattacherjee (2001b) posits that the eventual success of a new technology is dependent on the user's continued use of the technology rather than on the initial acceptance. The author explains that irregular or inefficient use of the technology after initial acceptance can cause adverse results for businesses, such as loss of efforts and financial resources. To examine the importance of continued use of information technology, Bhattacherjee (2001b) developed a continuance intention model called the Expectation Confirmation Model (ECM), which examines cognitive beliefs and affects an individual's intention to continue using an information system (IS).

IS continuance is defined as a repeated decision to use an information system after initial acceptance (Kim, Chan, & Chan, 2007). Scholars specify that the importance of continued use is that it ensures the profitability of an information system and a return on the investment; therefore, organizations must focus on post-usage behavior, specifically continued use (Kim, 2012; Limayem & Cheung, 2008).

Taking this into consideration, the author of this study proposes a framework that extends Bhattacherjee's ECM by adding factors related to the context of the study. The aim is to explore the use of hotel branded mobile apps by consumers and understand the cognitive and affective factors that influence their decision to continue using and to recommend a mobile application. The next section explains the conceptual model for the proposed study.

Conceptual Model

The proposed model for this study is based on the ECM, which considers cognitive and affective factors that influence post-adoptive behavior of continuance intention and the likelihood to recommend (i.e., WOM). The ECM follows consumer behavior literature that describes human attitudes that influence consumers' decisions as having three components: cognitive, affective, and conative (Lavidge & Steiner, 1961; Rosenberg & Hovland, 1960). That is, the conative component of human attitude is influenced by cognitive and affective factors (Holbrook, 1978).

The cognitive factors examined in the study include perceived usefulness and confirmation, which are factors from the original ECM. In addition, the author posits that the contextual factors related to mobile technology exert an influence on the decision-making process; namely, that perceived mobility, personalization, and responsiveness are influencing factors of continuance intention and the likelihood to recommend (i.e., WOM). These contextual factors were selected because the author proposed a model that extended the original model by utilizing context-specific factors relevant to the characteristics of the technology, usage or use (Hong, Chan, Thong, Chasalow & Dhillon, 2014). In terms of the affective factors, the model includes satisfaction, a construct from the original model, and perceived enjoyment. Ultimately, the author examines the influence of the cognitive and affective factors on the conative phase of decision-making, measured through the constructs of continuance use intention and word of mouth. Figure 1 shows the conceptual model developed for this study, with the gray items denoting factors from the original ECM.

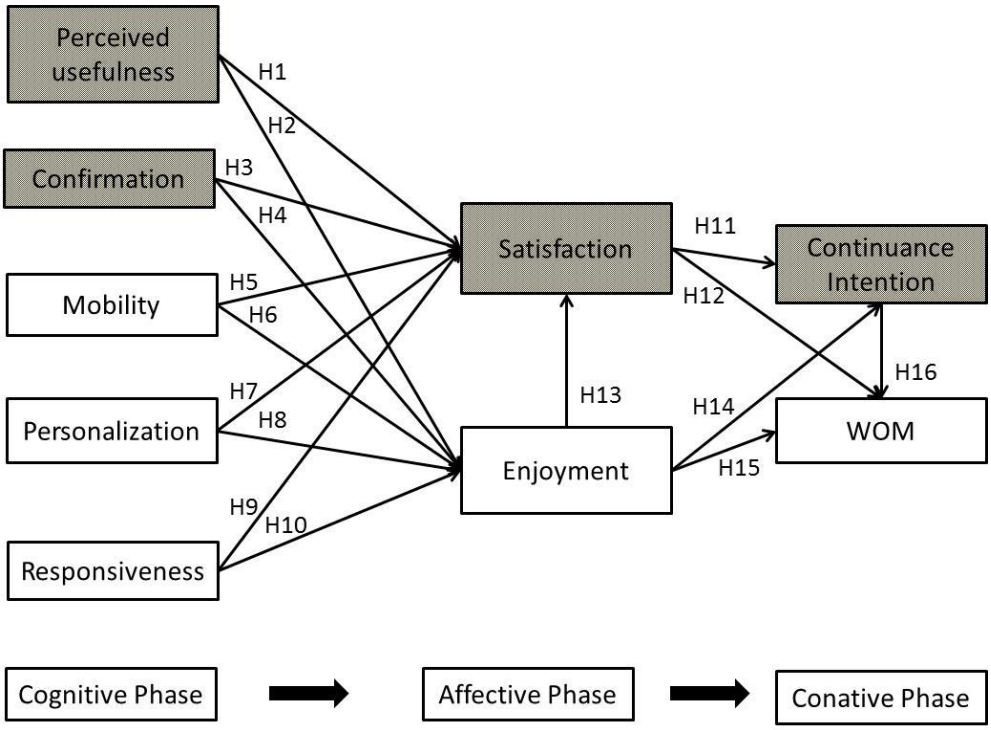

Figure 1: Proposed conceptual model

(Note: Gray items denote factors from the original ECM)

Study Objectives and Research Question

Hospitality research has been focused on initial adoption and intention to use technology with little focus on later stages of ICT use. Given the importance of understanding continuance behavior, the objective of the study is to examine consumers' continuance use intention and WOM of hotel branded mobile apps. The objectives of this dissertation include:

- Identify the factors that influence continuance use intention and WOM of mobile app users
- Develop a continuance intention model for hotel branded mobile app users

The main research question guiding this dissertation is: What are the primary antecedents of continued use intention and WOM for hotel branded mobile apps users? To explore this question, the relationship between cognitive and affective factors and their influence on post-adoptive behavioral intention (i.e., continuance intention and WOM) is examined. First, the relationship between five cognitive factors is explored regarding their influence on satisfaction and perceived enjoyment. Second, the influence of satisfaction and perceived enjoyment on continuance intention and WOM is explored to determine which factors exert the most influence on the behavioral intention factors. Finally, the influence of continuance intention on WOM is explored to determine the effects of continuance intention on other behavioral intention outcomes.

Significance of the Study

The importance of this study is twofold. First, because there is limited research in the hospitality field, specifically the lodging industry, on consumers' post-adoptive behavior, this dissertation seeks to gain a better understanding of the hotel branded mobile app users' perceptions of the apps and usage behavior. This information will assist in the design and implementation of mobile apps that will influence users' post-adoptive behavior (i.e., continuance intention and WOM). Second, understanding the factors that lead to post-adoptive behavior will allow app developers to harness those factors, which will ultimately impact an individual's likelihood to recommend the mobile application, thus ensuring the profitability of the investment.

With this study, the author aims to spark the interest of other hospitality researchers to not only gain a deeper understanding of post-adoptive behavior but also to extend the original framework by adding contextual factors to the original model. In addition, the results of the study will help industry professionals understand the elements needed to benefit from a mobile app and how to exploit those factors inherent in this technology to financially benefit from its implementation.

Summary

This chapter discussed the study background and justification for the study, and the objective and research questions were outlined. In addition, the conceptual framework that will be used to examine the research questions was introduced. The chapter closed by discussing the significance of the study and how it can impact the hospitality industry. The next chapter is an extensive review of the continuance intention literature and a review of the constructs included in the conceptual model.

CHAPTER TWO: LITERATURE REVIEW

This chapter discusses the context and theoretical background for the proposed study. First, an overview of mobile apps and their business use is discussed, focusing on the use of mobile apps in the hospitality industry. Second, the Expectation Confirmation Model and its extensions identifying the constructs used by Information Systems (IS) researchers is examined. The chapter concludes with the proposed model and a justification of the proposed constructs to extend the ECM.

Evolution of the Mobile Application

In the 1970's computer applications started as standalone applications that were in a single computer that could only be used off-line and required only basic user experience (Abolfazli, Sanaei, Gani, Xia, & Yang, 2013). Throughout the years, applications have evolved because of technology improvements and user needs. The first instance of what we know as an application is a web application, which is a browser-dependent application that can run through the internet or intranet.

Web applications have evolved to Rich Internet Applications and Rich Mobile Applications; both are an improvement to the web application as they offer a rich user experience. Rich Mobile Applications combine the functions of the web application (i.e., desktop application), which is aesthetically pleasing, interactive, and offers an easy-to-navigate interface, with the attributes of Rich Internet Application that include portability, ubiquitous data access, online and offline functionality, rich interaction, and crisp response. The smartphone's unique features and capabilities have been leveraged to evolve from Rich Internet Applications to Rich

Mobile Applications that utilize the characteristics of mobile technology: mobility, context awareness, context sensing, multimedia, and location-based services to improve the consumer experience (Kim, 2011).

The evolution of applications from desktop to mobile has created a need for Rich Mobile Applications, which are online mobile applications characterized by extensive functionality, a compelling user interface, high interactivity, quick responsiveness, code portability (the ability to transfer application code to different platforms/devices with minor or no modification), and synchronous communication (Abolfazli et al., 2013). The authors provide a technical definition of Rich Mobile Applications:

> Rich Mobile Applications are energy efficient, multi-tier, online mobile applications originated from the convergence of mobile cloud computing, future web, and imminent communication technologies envisioning to deliver rich user experience via high functionality, immersive interaction, and crisp response in a trustworthy wireless environment while enabling context-awareness, offline usability, portability, and data ubiquity (Abolfazli et al., 2013, p. 5).

Overview Mobile Apps and its Features

Now that we understand how a desktop app evolved into a mobile app, it is important to understand what makes a mobile app unique. That is, as researchers, we must understand the characteristics that distinguish a mobile app from other apps. The proliferation of mobile technology such as smartphones has led to increased development and the use of mobile apps by firms and consumers (Middleton et al., 2014). Mobile apps have been defined as the use of mobile technology by an end-user for a specific purpose such as buying a product/service, completing banking transactions, and making hotel and airline reservations (Nickerson et al., 2009). Studies have found that users engage with mobile apps for various reasons, including

entertainment, functionality, information, socialization, intellectual stimulation, following trends, and learning (Ho & Syu, 2010).

These applications allow users to access information, email, and complete transactions without being tied to their computers (Nickerson et al., 2009). For many smartphone users, it has become an extension of their desktop computers and part of their daily life (Google, 2011 from Zhao & Balague, 2015). Mobile applications allow for anytime, anywhere computing and location and user identity-based computing. For instance, a consumer can use a mobile app to pay bills, find a business, find a hotel and make a reservation, get driving directions, and find and browse restaurant menus.

This aspect of information communication technology has evolved rapidly in recent years, making it hard for scholars and practitioners to gain an understanding of all its features and identify the functions that provide the best experience for consumers. To address this difficulty, Nickerson et al. (2009) developed a taxonomy to outline the dimensions of a mobile application. They found seven dimensions that encompass the meta-characteristics of the interaction between the user and the application. The dimensions include: 1) temporal dimension, which refers to the user's ability to interact with the mobile application in real time because the application services the user's requests immediately; 2) communication dimension, which refers to the information flow between the user and the application; 3) transaction dimension, which refers to the application's capability to allow the user to complete a transaction like purchasing a good or service; 4) public dimension, which refers to the general public's ability to access the application; 5) multiplicity (or participation), which refers to the user's perception of the application to be for a single or multiple users; 6) location dimension, which refers to the ability

of the application to use location to modify the interaction between the user and the application; and 7) identity, which refers to the application's ability to identify the user to modify interaction between the user and the application.

These dimensions provide a better understanding of the features that are unique to mobile apps, and they allow people who implement apps to understand the features and how to effectively use them when developing apps.

Types of Mobile Applications

Mobile applications have been developed to satisfy the user's need of constant connectivity and immediate access to information. Trade publications have identified more than 20 *mobile app categories* available in the Apple App store; the top 10 categories of available mobile apps include games, business, education, lifestyle, entertainment, travel, and food/drink (PocketGamer.biz, 2017). In terms of the *number of apps downloaded*, in 2014, it was reported that the top five categories downloaded from the Apple App store were games, entertainment, photo and video, social networking, and lifestyle (Statistica, 2014). Industry experts assert that the multiple categories of available mobile apps can be classified into seven groups: utilities, entertainment, games, news, productivity, lifestyle, and social networking (Merrick, 2016).

Utility applications assist users with simple tasks and include communication apps, weather apps, and calculators. Entertainment and game apps seek to entertain the user. Entertainment apps may also include an educational component. News apps keep the user informed in the digital age. Productivity apps assist the user to be productive and include calendars and grocery list apps. Lifestyle apps aim to enhance the user's lifestyle and include

dating apps, travel apps, fitness apps, and music apps. Finally, social networking apps aim to connect people. Examples include Facebook, Google+, and Instagram. Table 1 illustrates the app classifications, uses, and examples.

Table 1: Classification of mobile applications

Class of app	Use	Examples of apps
Utility app	Help perform simple tasks	Calculators, weather, communication apps
Entertainment	Focus on entertaining the user, often has an educational component	Face Juggler, DubSmash
Games	Focus on entertaining the user	Angry Birds, Sudoku
News	Focus on providing relevant content to the user	Buzzfeed, Time, Wall Street Journal
Productivity	Increase user productivity	Dropbox, Translators, Calendars
Lifestyle	Focus on enhancing the user's lifestyle and make everyday living easier	Fitness Apps, dating apps, music apps, travel apps, food and drink apps
Social networking	Focus on connecting people	Facebook, Google+, Instagram, Twitter

Source: Adapted from Merrick, 2016

Regarding the technology aspect of mobile applications, there are three common ways to build an app for a mobile device: native app, mobile website, and hybrid app (Wilken, 2015). According to developers, there are major differences among these, mainly in the language used to develop the app and the access to information. For example, native apps are written in the default language of the mobile platform and developed individually for each platform (i.e., iOS and Android). On the other hand, mobile websites or web apps are accessed through a mobile browser. They are considered websites viewed through a mobile browser and designed to fit in the mobile browser. These do not require the user to download an app because they can be accessed through any mobile browser. Finally, the hybrid application contains a web view to run a web app through the native application.

Business Use of Mobile Apps

Mobile apps have become an important distribution channel to increase the efficiency and effectiveness of a firm and consequently impact the overall performance of an organization (Picoto et al., 2014). Mobile apps have been implemented by various industries such as education (Huang, Lin, & Chuang, 2007), government (Venkatesh, Thong, Chan, Hu, & Brown, 2011), banking (Shaikh & Karjaluoto, 2016; Susanto, Chang, & Ha, 2016), and hospitality and tourism organizations (Gibbs et al., 2016; Lin & Filieri, 2015; Rivera, Croes, & Zhong, 2016) with the focus of improving access to information and as a result, the consumer's experience.

The importance of mobile applications is highlighted by the increased consumption of travel-related products. It is estimated that by the end of 2017, around 25% of travel-related online gross bookings in the US and Europe will be done through a mobile device (Phocuswright, 2016). Industry experts estimate that this online booking trend will continue to grow steadily, with Americans booking accommodations and airfares digitally and consistently. It is forecasted that by 2019, about 70% of Americans will book travel-related services online (emarketer, 2015). Sales of travel-related products and services purchased through mobile devices will continue to grow, with the smartphone dominating the mobile space. Industry reports estimate that by 2019, 79% US of travel-related bookings will be done through a smartphone and more than 59% will be done through a tablet (emarketer, 2015).

However, given the strong trend of consumer preference to use mobile devices for transactions, industry experts predict that firms will face many challenges with mobile strategies when firms attempt to adopt mobile apps at an increasing pace to keep up with consumer demand (Hinchcliffe, 2013). Apps, specifically branded mobile apps, have become an integral part of

marketing strategies because they allow marketers to reach and build relationships with current and potential consumers (Kim, Lin, & Sung, 2013). Specifically, the branded mobile app has gained acceptance among marketers because it allows for higher user engagement, which allows for highly persuasive messages that may lead to higher consumer consumption (Calder, Malthouse, & Schaedel, 2009). Studies have found that using branded apps has a positive persuasive impact and assists in creating brand interest (Bellman, Potter, Treleaven-Hassard, Robinson, & Varan, 2011). However, industry experts warn that before a mobile app is adopted, the goals of the mobile app and the business must be properly defined.

Researchers explain that branded mobile apps should be implemented to complement the desired organizational business goals. Business goals include communication, customer relationship management, sales, product innovation, and marketing research (Zhao & Balague, 2015). Marketers must understand that a branded mobile app may have more than one objective, and individual brands may have more than one app to target different business goals. A branded app with a goal of communication focuses on communication brand values, information, and product to enhance the brand image and create awareness. The objective of the second goal, customer relationship management, is to manage customer interactions with potential and current customers. The third goal, increasing sales, focuses on creating a new purchasing experience for the customer that includes product customization and location awareness among other features. The fourth business goal, product innovation, allows customers to offer new ideas for products. The last business goal, marketing research, focuses on surveying customers in new ways. This allows marketers to gather valuable information to better understand customer needs.

Branded Mobile Apps

Branded mobile apps are popular among marketers largely because of the high level of engagement and the impact it has on attitudes toward brand sponsorship among consumers (Hutton & Roddick, 2009). Furthermore, users categorize branded apps as useful tools, implying that they are one of the most powerful methods of advertising (Bellman et al., 2011). Due to the usefulness and effectiveness of branded mobile apps, marketers should understand the components of an effective mobile app.

Industry experts suggest that a successful branded app must have three elements: mobile, social, and brand mentions (Zhao & Balague, 2015). In other words, companies must focus on mobile features that are current such as cameras to provide snap and scan options. Other common features used by branded apps include location awareness and mobile payments. The former provides users with information based on their location and interests, while the latter allows users to pay for products anytime and anywhere using the mobile device.

The social element of a branded app allows businesses to engage with current and potential users in new ways, with a focus on increasing intimacy and building relationships. In digital business, social media is about "harnessing collaborative and peer-to-peer approaches to create enhanced consumer experiences through the co-creation of value using collective intelligence" (Zhao & Balague, 2015, p. 312). Scholars highlight that collaboration is consumer driven and self-managed not centrally managed or imposed by a brand. The social aspect of branded apps has gained importance as it has shown to influence users' shopping behaviors (Olbrich & Holsing, 2011). Studies have found that social interactions have a positive impact on e-loyalty and e-satisfaction (Christodoulides & Michaelidou, 2010). Social features can be

classified as interactions among content such as user-generated content, content personalization, and content sharing. The final element of branded apps involves brand mentions, which is how companies market their brands within the app. Elements such as brand name, brand logo, matching brand colors, and brand mascot should be included in brand and product mentions.

There are different types of branded apps that can be classified into five categories: tool-centric, game-centric, social-centric, m-commerce-centric, and design-centric (Zhao & Balague, 2015). The differences of each type are discussed below:

1. Tool-centric apps focus on identifying the motivations of consumers using and buying the products and provide services to help consumers with these processes.
2. Game-centric apps focus on creating an immersive environment by making the consumer use different elements of the brand. The goal is to expose the consumer to the brand and its different elements, increasing brand awareness. Some game-centric apps are linked to e-commerce websites that allow direct sales.
3. Social-centric apps focus on socializing for fun. The goal is to create and increase a sense of intimacy with the consumer, foster brand engagement by building loyal consumers, and allow consumers to share positive brand images with their friends.
4. M-commerce-centric apps focus on selling a product. Consumer personalization and customization are essential to achieve this goal.
5. Design-centric apps focus on creatively designed apps that blend the values and image of the brand.

Marketers must understand the factors for a successful mobile app and the types of branded apps available to properly select and implement the app. Furthermore, Zhao and

Balague (2015) recommend that branded app designers consider the business objective to determine the best app type to meet the desired objective. Then, features of the branded app are selected based on the business objective. For example, if the business objective is communication, then a tool-centric app should be used. The app is then designed to inform users how to utilize the product, increase brand image and awareness, collect user data, and make product recommendations. In addition, mobile, social, and brand mention features must be selected to support the desired business goal. For a tool-centric app, mobile features include a camera, location awareness, voice sensor, and mobile video. Social features include sharing with external social networks, and brand mentions include brand name, brand mascot, and product packaging. Table 2 provides a matrix of the types of branded apps and features based on the business objective.

Table 2: Business objective driven mobile app type and feature recommendations

Business objective	Types of apps	Mobile features	Social feature	Brand mention
• Communicate brand values and products • Increase brand image and awareness • Make product recommendations • Collect user data	Tool-centric app	• Camera: snap and scan • Location awareness • Voice sensor • Mobile video	• Share with external social networks	• Brand name/logo • Product packaging • Brand mascot
• Brand engagement with loyal consumers • Increase brand image and awareness • Make product recommendations • Collect user data	Game-centric app	• Voice sensor • Multi-touch gesture • Augmented reality (AR)	• Personalized user avatar • Invite from external social networks • Share with external social networks	• Brand name/logo • Matching brand colors • Brand mascot
• Brand engagement with loyal consumers • Increase brand image and awareness • Product innovation • Make product recommendations • Collect user data	Social-centric app	• Camera: snap • Location awareness	• User-generated content • Social annotation • Online chat • Follow/Unfollow people • Share via e-mail • Share with external social networks	• Brand name/logo • Matching brand colors • Product packaging
• Sales • Increase brand image and awareness • Collect user data	M-commerce-centric app	• Camera: scan barcode/QR code • Location awareness • Augmented reality (AR) • Virtual mirror • Mobile payments	• Product personalization • Share with external social networks	• Brand name/logo • Matching brand colors • Product packaging
• Communicate brand values • Increase brand image • Collect user data	Design-centric app		• Share with external social networks	• Brand name/logo • Matching brand colors

Source: Adapted from Zhao and Balague, 2015, p. 313-314

Hospitality and Tourism Mobile Apps Research

Information communication technology (ICT) has had a major impact in the hospitality and tourism industry. The hospitality and tourism literature shows that technology has impacted both the supplier and consumer (Law et al., 2014). Studies from the consumer perspective focus on how ICT has impacted information search behavior, purchase decisions, post-purchase behavior (social network engagement and eWOM), and technology adoption and acceptance. From the suppliers' perspective, research has focused on the effect ICT has had on business activities and how to engage in e-marketing, e-strategic management, e-security, and guest services.

One aspect of ICT that has greatly impacted the hospitality industry is mobile applications, as they can ease the service process for the consumer by providing information and facilitating transactions (Wang et al., 2016). Hotel-related mobile apps, OTA or proprietary, are designed to be a more efficient and innovative online alternative to desktop-based websites (Adukaite, Reimann, Marchiori, & Cantoni, 2013; Wang & Xiang, 2012; Wang, Xiang, Law, & Ki, 2016). Early in the development and implementation of mobile apps, hotels started capitalizing on the use of the app to ease the search and consumption of lodging needs (Gibbs et al., 2016). Furthermore, with increased consumer use and acceptance of mobile apps, the implementation and features offered have changed.

The evolution of hotel mobile apps shows a constant progression to more sophisticated features that enhance the guest experience. In 2014, PhocusWright conducted a study that outlined the tourism and hospitality industry's evolution of mobile apps. The report shows that apps have evolved from providing basic information to facilitating transactions, to adding value

with context-awareness/personalization and ultimately behavioral support (Walsh, 2014). In terms of hotel mobile applications, the report shows that apps have evolved in four major stages: 1) basic hotel information and loyalty access; 2) hotel booking, location-based search, property/amenities information, and mobile check-in/checkout; 3) in-room services, on-property promotions/merchandising, mobile concierge, local promotions/merchandising, mobile room entry, and m-payments; and 4) near field communication (NFC). The evolution of hotel mobile apps is clearly exemplified in the implementation of mobile apps by hotels. In 2009, Choice Hotels International launched a mobile app for iPhone that allowed guests to make room reservations and access the guest loyalty program (Collins, 2010). The evolution of mobile technology has led to more advanced hotel apps with additional functions and features. More recent examples of innovative hotel branded apps include Hyatt, Ritz Carlton, and Hilton Starwood, which offers features like a concierge to arrange spa bookings and airport transport (Null, n.d.). An example of a more advanced app is the app for the Bellagio Las Vegas, which has integrated a broad range of functions that include concierge assistance, room service orders, and ticket reservations (Gibbs et al., 2016). Because of the constant evolution in mobile technology and apps, scholars have tried to gain a better understanding of the mobile app and features to execute its proper application. In the tourism hospitality industry, several attempts have been made to understand the features currently used in hotel mobile apps.

Hospitality research on mobile apps has focused on initial implementation and adoption aspects, including classification of mobile apps, features provided, and factors impacting intention to adopt and intention to use (e.g., Adukaite et al., 2014; Chen et al., 2015; Gibbs et al., 2016; Kennedy-Eden & Gretzel, 2012; Morosan & DeFranco, 2016; Rivera, Gregory, & Cobos,

2015; Verma et al., 2012; Wang & Wang, 2010). However, research on the post-adoption stage of a mobile app is scarce, with only a handful of studies focusing on the factors that influence users' continuance intention of mobile apps for hospitality-related services. Specifically, research has focused on mobile apps for travel booking and reservations (Mouakket, 2014; Zhong, Lou, & Zhang, 2015), mobile hotel reservation systems (Ozturk, Nusair, Okumus, & Hua, 2016; Wang & Wang, 2010), and airline apps (Lin & Filieri, 2015). The branded mobile app has received limited attention in hospitality industry research, leaving the industry with a dearth of knowledge and understanding on how to implement it as part of the firm's mobile commerce strategy (Kim & Law, 2015) and how the consumer is using and interacting with branded mobile apps (Peng, Chen, & Wen, 2014).

Mobile app taxonomies in hospitality and lodging industry

Hospitality scholars have made several attempts to understand mobile applications. Kennedy-Eden and Gretzel (2012) developed a taxonomy of mobile applications for tourism. Specifically, the taxonomy reviewed the services that tourism mobile apps provide. The authors found that travel-related apps can be classified in seven areas: navigation, social, mobile marketing, security/emergency, transactional, entertainment, and information. In the lodging industry, scholars have attempted to gain a better understanding of hotel mobile apps by classifying app features. Verma et al. (2012) investigated consumers' hotel mobile app preferences, which identified and classified preferences in three areas: location-based, communication, and service-based features. Location-based features provide information such as hotel directions, local attractions, and restaurants. Communication-based features focus on

voicemail, email, text messages, and wake ups calls. Service-based features allow for mobile check-in/checkout, concierge, and ability to request housekeeping and order room service.

Adukaite et al.'s (2014) study on app features present in hotel mobile apps of the European German speaking market categorized the apps' functionalities into three clusters: hotel/conversion app, conversion/destination app, and hotel/share/entertainment app. The hotel/conversion app refers to apps designed to provide information and assist with reservations. Conversion/destination apps are designed to provide extensive information about where the hotel is located and reservation options. The hotel/conversion/entertainment app is designed to offer property-specific features and access to social media to enhance the consumer's experience. The results of the study show a high concentration on features that represent two of the business direction clusters of the matrix: the hotel/conversion business apps (i.e., provide hotel information and booking) and conversion/destination apps (i.e., booking and destination information). Similarly, Chen et al.'s (2015) investigation of hotel chain mobile apps' common features and functions resulted in five categories: reservation/information, hotel information, hotel functions, social media links, and additional features, with no logical relation to the guest experience. The results show that hotels focus on features that support reservation and hotel information.

The latest assessment of hotel mobile apps was performed by Gibbs et al. (2016), who examined the features available in hotel branded mobile apps from United States-based hotel companies. Gibbs et al. (2016) review of hotel mobile app features uncovered 11 features: personal concierge services, information delivery (not real time, e.g., hotel information), information delivery (real time, e.g., notifications), lifestyle enhancement tools, social sharing

tools, loyalty and special offer redemptions, transactions (external, e.g., food delivery, special event tickets), transactions (internal, e.g., room and spa reservations), context aware navigation, non-context aware navigation (e.g., property maps), and property-specific technology tools (e.g., mobile check-in/checkout). The results of the study indicate that most hotel mobile apps have a set of basic features available for guests related to information delivery. In addition, the results show that few hotel apps provide guests with access to features that can personalize and enhance their experience.

These classifications by scholars and industry experts show that hotel mobile apps offer a variety of features that are implemented differently among hotels. Even though hotel mobile app features are implemented differently, the features focus on providing hotel information and hotel reservations (Adukaite et al., 2014; Chen et al., 2015; Gibbs et al., 2016; Verma et al., 2012; Wang, Xiang, Law, & Ki, 2016). One feature of mobile technology that is not being exploited in the mobile apps is personalization, demonstrated by the low adoption of personalization features (Gibbs et al., 2016). This is an important aspect to include in a mobile app since those features allow hoteliers to differentiate their apps from online travel agency apps (OTAs) such as Expedia and Priceline and other competitors in the market (Wang et al., 2016). Scholars explain that including advanced features such as mobile check-in/checkout allow hotels to use their mobile apps as a tool to entice consumers to continue using the hotel app instead of a competitors' apps (i.e., OTAs) as it provides advanced features that enhance the consumer experience (Gibbs et al., 2016; Wang et al., 2016).

Research on mobile app use in the hospitality industry

It is apparent that the hospitality industry has embraced mobile commerce as part of its marketing strategies by implementing technologies to support such strategies (Kim & Law, 2015; Ozturk et al., 2016; Wang & Wang, 2010; Young Im & Hancer. 2014). One example of these efforts in the lodging industry is mobile booking technologies and mobile apps; a brief discussion is presented in the following section.

Hospitality mobile commerce research has investigated mobile hotel booking (MHB) technology by examining the factors that influence the intention to use and continue to use those systems. MHB is a location-based distribution system designed to support hotel bookings made through mobile devices (i.e., mobile apps and mobile websites) (Wang & Wang, 2010). The authors examined the perceived benefits and sacrifices as influencing the perceived value of the system and the behavioral intention to adopt. The results of the study suggest that perceived value influences consumer adoption. From a benefits perspective, perceived information and system quality influence perceived value. On the other hand, sacrifice in terms of technological efforts and perceived fees exerted the most influence by negatively impacting the perceived value and adoption. Ozturk et al. (2016) examined MHB but looked at the factors influencing continued use. The authors examined the influence of hedonic and utilitarian values on continued use, specifically the influence of social, instrumental beliefs and personal differences on those values. The results of the study suggest that both hedonic and utilitarian values impact continuance intention to use mobile hotel booking technology. Furthermore, perceived risk negatively impacted both utilitarian and hedonic value. Personal innovation was found to have the biggest impact on both values.

Even though research on mobile apps is relatively recent in the hospitality industry, there are several distinct examples of research providing a glimpse into the role mobile apps play in hospitality m-commerce strategies (Kim & Law, 2015). Young Im and Hancer (2014) examined the impact of utilitarian and hedonic motivation, self-identity, ease of use, and usefulness on travelers' attitudes toward a travel mobile app. Utilitarian motivation was found to exert the most influence on user attitudes. Furthermore, hedonic motivation positively influenced utilitarian motivation. Finally, self-identity was found to have a direct and indirect effect on attitude through perceived enjoyment.

In terms of the lodging industry, studies have examined intention to adopt and intention to use. Rivera, Gregory, and Cobos (2015) examined timeshare owners and their intention to adopt a mobile app. The authors examined the impact of usefulness, technology experience, and attitude toward the mobile app on the intention to use a mobile app. The authors found that attitude and perceived usefulness exert the most influence on intention to use, with the former having the largest causal effect. In addition, technology experience positively impacted not only intention but also usefulness and attitude. The findings show that even though the timeshare industry has not embraced mobile apps, timeshare owners are likely to adopt said technology.

Morosan and DeFranco (2016) investigated the aspects that impact hotel guests' intention to use hotel branded mobile apps to access personalized information considering the privacy-personalization paradox. The authors proposed that privacy concerns (general and app-related), personalization, innovativeness, and involvement will influence the intention to use a mobile app. The authors found that the most influential predictor of intention to use was involvement with personalized services. This was followed by app-related privacy concerns and perceived

personalization. The results suggest that users' involvement with the app will influence their decision to use a mobile app for personalized hotel services.

Theoretical Background

Advancements in information technology (IT) have influenced people's lives and how businesses interact with consumers. IT provides benefits for consumers by providing access to information and the ability to complete transactions and allows businesses to communicate more effectively and rapidly with consumers. However, the benefits of an IT investment are only realized if sustained usage is achieved rather than just initial acceptance (Bhattacherjee, 2001b). Users' post-adoption behaviors have emerged as a key topic in IT research because it allows for a deeper understanding of the factors that influence this behavior (Bhattacherjee 2001a, 2001b; Bhattacherjee & Premkumar, 2004). Continuance intention is a term used to describe a user's decision to continue using a specific IT that an individual initially accepted and has been using (Nabavi et al., 2016). Continuance research focuses on long-term use of technology and on examining the factors that motivate continuance usage (Bhattacherjee & Barfar, 2011).

In IT research behavior, the post-adoption stage refers to an individual's decision to accept the IT beyond its first use and continue to exploit and extend the functionalities built into the IT system (Bhattacherjee, 2001b; Shaikh & Karjaluoto, 2015). Continuance research stems from consumer behavior literature that examines consumer satisfaction and post-purchase behavior (Bhattacherjee, 2001b). Specifically, continuance research stems from the Expectation Confirmation Theory (ECT). The ECT, developed by Oliver (1980), is a theory of consumer satisfaction and describes the process by which consumers reach repurchase intentions. The main

premise of the model relates to consumers' expectations and the comparison between pre-purchase expectations and post-purchase perceived performance as a way to gauge consumer satisfaction with a product or service. Satisfaction is thus an antecedent of repurchase intention. After some time using the product or service, consumers gain experience and understanding of the performance of the product or service, forming a new cognition. After consumption, consumers will compare this new cognition with their initial expectation to establish whether the assessment is identical, which is called confirmation. It is important to understand that when the expectation is lower than the actual performance of the product/service cognition, the result is a positive confirmation. However, if the expectation is higher than the actual performance of the product/service cognition, the result is negative confirmation. Furthermore, the confirmation level affects consumer satisfaction, and satisfaction levels affect consumers' repurchase intention. Figure 2 shows the ECT model and its relationships between constructs.

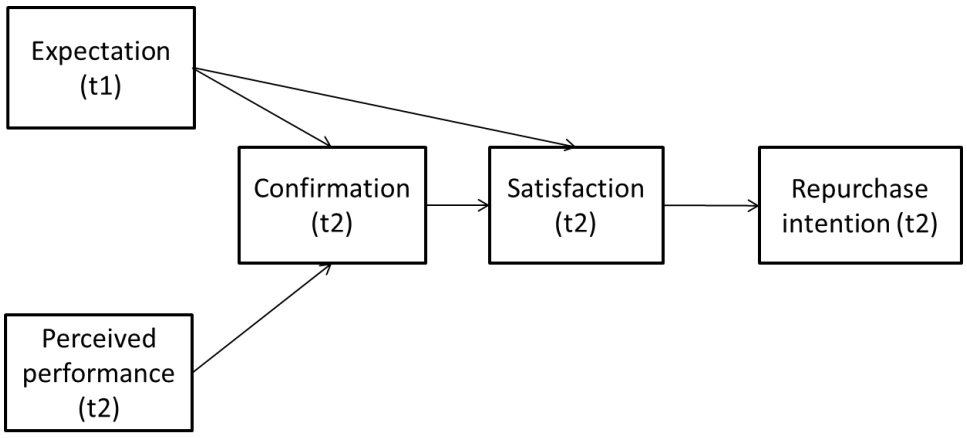

Figure 2: Expectation Confirmation Theory (Oliver, 1980).

Understanding the reasons for users' continued use of an IT is critical for long-term viability and eventual success of the any new IT system (Bhattacherjee, 2001b). The importance of continued use is highlighted by the high costs of obtaining new users as it is more cost-

effective to retain current users than attract new ones. This is especially significant for services in which continuous participation of users is vital for an organization to reach its financial goals (Nabavi et al., 2016). In addition, investment in technology is a considerable expense for most organizations. In 2015, it was estimated that worldwide organizations have spent a total of 3.5 trillion USD on IT (Gartner, 2016). However, research suggests that most IT is being underutilized by users (i.e., consumers and employees) as demonstrated by the limited use of features and not exploiting the full benefits of IT (Jasperson et al., 2005; Venkatesh, Brown, Maruping, & Bala, 2008). Given the considerable expense and investment being made in IT, it is important for developers and organizations to focus on post-adoption behavior.

In the IS context, continuance has been labelled post-adoptive behavior, which is a term that encompasses continuance intention, continued usage, intention to recommend, satisfaction, and loyalty (Bhattacherjee & Barfar, 2011; Hossain & Quaddus, 2012). Researchers have proposed different definitions of post-adoptive behavior to include the different contexts and a spectrum of post-adoptive behaviors. Jasperson et al. (2005, p. 531) defined it as a "myriad of feature adoption decisions, features use behaviors, and feature extensions behaviors made by an individual user after an IT application has been installed, made accessible to the user, and applied by the user in accomplishing work-related activities." Similarly, Limayem et al. (2007) defined continuance as the result of a series of individual decisions to continue using a specific IS, thus reflecting its longitudinal nature. To address the consumer context, several definitions have been proposed. Chang (2013) defined it as the degree to which an individual is willing to use the system in the future and recommend it to friends. Lu (2014) defined continuance as a

mental state that reflects the user's decision to repeat current behavior, which can be compared to intention to repurchase in marketing.

To examine continuance intention, IS researchers have used different frameworks. Leading theories and models being used to examine continuance intention include the Theory of Reasoned Action (TRA) (Fishbein & Ajzen, 1975), Theory of Planned Behavior (TPB) (Ajzen, 1991), Flow Theory (Csikszentmihalyi, 1975, 2000), Technology Acceptance Model (TAM) (Davis, 1989), Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh, Morris, Davis, & Davis, 2003), IS Success Model (Nabavi et al., 2016), and Expectation Confirmation Model (ECM) (Bhattacherjee, 2001b).

The Theory of Reasoned Action (TRA), a social psychology theory developed by Fishbein and Ajzen (1975), proposes that an individual's intention to perform a behavior is the immediate cause of that behavior. This theory considers behavioral intention, attitude, and subjective norms. The Theory of Planned Behavior (TPB) developed by Ajzen (1991) aims to predict and explain behavior by extending the TRA theory to add perceived behavioral control. Flow Theory (Csikszentmihalyi, 1975, 2000) proposes the conditions for enjoyment. The author defines flow as "the holistic sensation that people feel when they act with total involvement" (Csikszentmihalyi, 1975, p. 36) and is manifested in psychological states such as feeling, senses, and experience. Conditions for enjoyment include perceived challenges or opportunities that match the individual's skills and clear goals and immediate feedback regarding progress. In the IS context, flow theory has been used as a construct to measure intrinsic motivation.

The most common theories used to examine information systems' continuance intention include the Technology Acceptance Model (TAM) and Unified Theory of Acceptance and Use

of Technology (UTAUT) (Venkatesh et al., 2003). The TAM, developed by Davis (1989), is a model used to adapt the TRA for the IS context. TAM has two main constructs to examine adoption: perceived ease of use and perceived usefulness. This model is considered the most influential and often-used theory in research examining the acceptance of information systems (Nabavi et al., 2016).

DeLone and McLean (1992) proposed the IS success model that examines six factors of IS success: information quality, system quality, use, user satisfaction, individual impact, and organizational impact. The authors proposed an updated model to examine key predictors of system success measured as net benefits: information quality, system quality, and service quality as influencing the intention to use and user satisfaction. UTAUT, developed by Venkatesh et al. (2003), is based on eight prominent models: Technology Acceptance Model, Theory of Planned Behavior, Theory of Reasoned Action, Innovation Diffusion Theory, the motivational model, a model combining TAM and TPB, the model of PC utilization, and the social cognitive theory. The proposed model includes four determinants of intention and usage (i.e., performance expectancy, effort expectancy, social influence, and facilitating conditions) and four moderators (gender, age, experience, and voluntariness of use). Finally, the ECM proposed by Bhattacherjee (2001b) utilizes the Expectation Confirmation Theory as a theoretical framework to explain IS continuance intention. The model proposes that satisfaction is influenced by perceived usefulness and confirmation of expectations. In turn, satisfaction is a predictor of post-adoptive behavior (i.e., IS continuance intention). The ECM model is the framework utilized in this study and will be discussed in depth in the following section.

Expectation Confirmation Model

Examining continuance intention using acceptance models and theories is problematic. The problem arises from the use of acceptance models, which consider continuance behavior as an extension of acceptance behavior by using the same pre-acceptance variables to examine acceptance and continuance behavior, thus implicitly assuming that continuance covaries with acceptance (Bhattacherjee, 2001b). Furthermore, research based on acceptance models and theories does not consider users' psychological motivations that may emerge after initial acceptance of the IS as these motivations may influence subsequent continuance decisions. To address these issues, Bhattacherjee proposed the Expectation Confirmation Model (ECM) to examine post-adoption behavior in IS. The objective of the ECM is to assess a user's continuance of and loyalty to IS use and contends that user satisfaction is the most important condition to determine users' intention for continued use (Laio, Palvia, & Chen, 2009). Therefore, ECM includes factors that influence retention and loyalty, as the long-term sustainability of an IS and its resulting success depends on continued use rather than on first-time use alone (Bhattacherjee, 2001b).

The ECM is based on ECT, a theory widely used in consumer behavior literature to study consumer satisfaction and post-purchase behavior such as repurchase and reuse (Oliver, 1980). According to the ECT, repurchase intentions are reached based on a process that involves evaluating expectations based on performance and confirmation/disconfirmation of expectations and satisfaction. The process is a sequential evaluative process. First, the consumer forms an initial expectation of a product or service. Second, after initial consumption, the consumer forms perceptions about the performance of the product or service. Third, the consumer evaluates the

perceived performance based on the original expectations to determine the extent to which the expectations were confirmed. Fourth, the consumer forms an affect, satisfaction, established by the confirmation level and expectation. Finally, a satisfied consumer forms a repurchase or reuse intention; however, a dissatisfied consumer will discontinue subsequent use. Oliver (1980) highlights the satisfaction with prior use as the primary driver to repurchase. Satisfaction is defined in the consumption context as "the summary psychological state resulting when the emotion surrounding disconfirmed expectations is coupled with the consumer's prior feelings about the consumption experience" (Oliver, 1981, p. 29). This definition emphasizes the affective state related to and resulting from a cognitive appraisal of the expectations-performance discrepancy (i.e., confirmation). That is, lower expectations and higher performance leads to greater confirmation, which positively influences users' satisfaction and continuance intention (Bhattacherjee, 2001b). On the other hand, the opposite situation (i.e., high expectations and low performance) causes disconfirmation, dissatisfaction, and discontinuance intention.

Scholars caution that one limitation of using ECT in IS studies is it fails to consider the impact of the formation and accumulation of users' experiences and the effect it may have on the cognitive process and outcome expectations (Hossain & Quaddus, 2012; Khalifa & Liu, 2004; Laio et al., 2009). Therefore, Bhattacherjee's model concentrates on post-acceptance variables by replacing pre-consumption expectations with post-consumption expectations and proposes that satisfaction is a function of confirmation and expectations. The model emphasizes the post-consumption expectation as an important aspect to consider because expectations change, evolve, or are modified as time passes and the product is used (Hossain & Quaddus, 2012). To address this, Bhattacherjee (2001b) explains that the expectation construct from ECT is replaced

by post-usage expectations measured by perceived usefulness. Other differences between ECT and ECM include the treatment of the repurchase intention and confirmation construct. The repurchase intention from ECT is replaced with continued usage intention. Bhattacherjee (2001b, p. 359) defined confirmation as "the congruence between expectation and actual performance." Since this definition already considers performance, the ECM removed the performance construct originally present in the ECT.

ECM Described

Bhattacherjee extended the ECT by using constructs to address the IS continuance context. The author explains that there are three main areas included in the new model to address the IS context. First, the model focuses on post-acceptance variables because pre-acceptance is already captured by the constructs of satisfaction and confirmation. Second, the model focuses on ex-post or post-consumption expectation. This aspect is especially important when examining products and services such as IS because expectations may change with time. Third, post-consumption expectation (ex-post) is represented by the construct of perceived usefulness, which is a cognitive belief salient in IS use research (Davis et al., 1989). Perceived usefulness was selected to measure expectations in the IS continuance model as it has been the only construct that has consistently been found to influence user intention across temporal stages of IS use (Davis et al., 1989; Karahanna et al., 1999).

The ECM theorizes that a user's continued use intention of an IS is dependent on three variables: user's level of satisfaction with the system, the extent of the user's confirmation of expectations, and post-usage perceived usefulness (Hossain & Quaddus, 2012). Bhattacherjee

(2001b) explains that the process through which IS users decide to continue use is a three-step process. First, after a period of time using a particular system, users form a notion of perceived usefulness, and this is expected to be the most significant ex-post factor influencing users' post acceptance (i.e. satisfaction) effect about that system (Hossain & Quaddus, 2012; Laio et al., 2009). Second, users compare performance of the IS to the users' perception of usefulness of the system to determine the extent to which their perceptions of usefulness of the IS were confirmed. That is, if the user found the product or service as useful as perceived, the user feels a sense of satisfaction. Finally, a satisfied user will continue to use the IS and a dissatisfied user will discontinue use. Furthermore, Bhattacherjee (2001b) outlines additional relationships among constructs in the model. The user's perception of usefulness may drive the user's intention to continue using the system because they find it useful for their needs. That is, in this instance, the user does not go through the confirmation process; rather, the user forms a direct intention to reuse the system. Furthermore, confirmation has an immediate effect on the user's satisfaction and a long-term effect on the post-usage usefulness perception (Bhattacherjee, Perols, & Sanford, 2008). Figure 3 illustrates the relationship outlined by Bhattacherjee in the ECM.

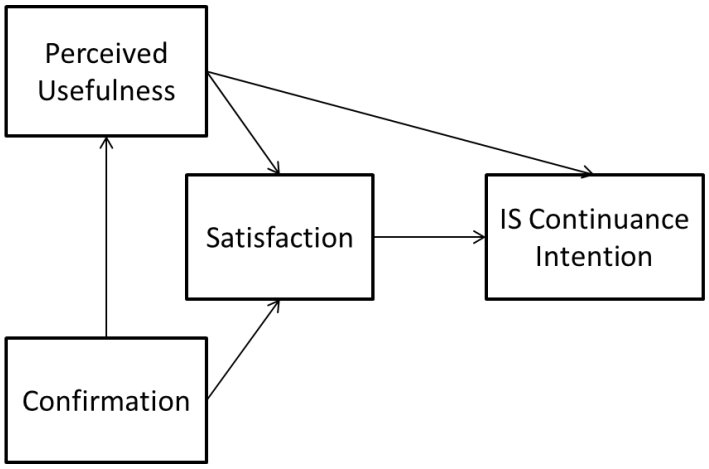

Figure 3: Expectations Confirmation Model (Bhattacherjee, 2001b).

ECM Extensions Based on Context

Research utilizing the ECM has evolved since the publication of Bhattacherjee's article in *MIS Quarterly* in 2001. Since then, authors have used this model to examine continuance intention in different contexts and added constructs, frameworks, and theories to the model. A review of continuance research reveals that scholars have used different models and theories to examine the concept, and many considered continuance use and continuance intention as interchangeable concepts. For this study, the author reviewed articles that used the ECM as the main model and utilized the outcome variable of continuance intention. An overview of this research is presented below.

More than one hundred articles (109) were identified and reviewed which spanned 17 years of continuance intention research. Seventy percent (70%) of articles were published between the years 2010-2017. The most productive years related to the number of publications examining continuance intention were 2011 to 2014, with a total of 61 publications, and 2014 was the most productive year with 26 publications. Bhattacherjee emerged as the most

productive author with six publications. All but two articles reviewed were empirical (99%), with one conceptual and one mixed-method article that included a qualitative component conducted to add to the body of knowledge. In terms of context, since the model was developed to examine continued use of organizational IS, it has been used in other technology contexts with a consumer use focus. The highest concentration is related to electronic technology and applications, social media, mobile, and internet.

Most of the studies utilizing ECM have examined continuance intention of electronic applications and technologies such as e-learning tools and online banking. These studies have attempted to extend the ECM by adding selected constructs and theories like the Theory of Planned Behavior, Technology Acceptance Model, and UTAUT to understand continuance intention. The second most examined technology context in continuance intention research is social media such as social networking sites and virtual worlds and communities. Studies examining this context have utilized the ECM with constructs extracted from social capital and TAM theories and frameworks. Constructs include perceived enjoyment, hedonic and utilitarian values, and the subjective norm. The third most examined context is mobile technology, which includes studies related to mobile internet services, mobile data services, mobile commerce, mobile banking, and travel-related services. ECM has been combined with TAM and other models to examine the continuance intention to use mobile technology. In this context, the most utilized constructs include quality and value. ECM has also been used to study online shopping such as online auction sites. Studies utilizing ECM have included constructs such as word of mouth and habit to examine continuance intention. Appendix A summarizes the progression of research utilizing articles the ECM in different contexts. In addition to extensions to the ECM by

different scholars, Bhattacherjee has contributed to the continued improvement of the original model. Because of the importance of his contribution, the next section discusses Bhattacherjee's modifications of ECM over the years.

Bhattacherjee's Modifications to Original Model

The publication of Bhattacherjee's seminal article in 2001 proposing the Expectation Confirmation Model (ECM) has attracted increased attention from the research community, leading the author to continuously examine and improve the original model. Modifications have allowed the author to include additional factors and theories that may have an impact on continuance intention, allowing him to reexamine the model to increase understanding of the factors that help explain continuance intention.

Bhattacherjee and Premkumar (2004) conducted a study to examine users' changes in beliefs and attitudes over time and the underlying drivers of those changes. The results of the study suggest that confirmation and satisfaction are the main drivers of IT users' changes in beliefs and attitudes. In addition, the authors found that users' usefulness and attitude perceptions tend to vary with time across technological and usage contexts, with changes being more dominant during the initial stages of use than in later stages. The significance of this study lies in the importance of identifying the factors (i.e., confirmation and satisfaction) that influence later stage user cognitions and long-term usage. Monitoring users' satisfaction and confirmation of expectations in the early stages of use will help management identify areas that need attention and intervene before dissatisfaction is reached, which leads to eventual IT discontinuance.

Bhattacherjee et al. (2008) extended the ECM of IT continuance by linking intention to behavior and including additional contingent factors that shape intention and behavior. Based on cognitive psychology theory, the authors included two dimensions of behavioral control, self-efficacy and facilitating conditions, as influencing continuance intention and behavior. In addition, the authors removed the direct relationship postulated by the initial ECM between post-usage perceived usefulness and satisfaction. The new model proposes that these constructs have separate effects on continuance intention. The authors show that self-efficacy and facilitating conditions have an impact on continuance intention and continuance behavior, respectively. That is, users who perceive having less control over external conditions that assist or impede their use of IT are less likely to continue to use the system, even if they intend to do so.

Premkumar and Bhattacherje (2008) sought to extend the research on continuance intention by proposing an integrative model that includes the constructs for TAM and Expectation Disconfirmation Theory (EDT) because they expected the integrative model to provide a better explanation for intention to continue to use. First, the authors empirically compared the TAM and EDT and found that TAM provided a stronger explanation of usage intention than EDT. However, the integrative model provided greater explanatory power than either model alone. When comparing the effects of satisfaction and perceived usefulness on intention, the integrative model found that perceived usefulness has more influence on intention than satisfaction does. These results are interesting because satisfaction is proposed by EDT as the dominant factor in predicting intention.

Bhattacherjee and Lin (2015) present the most recent attempt to expand the theory of IT continuance intention by proposing a unified model of IT continuance by integrating alternative

influences that are known to impact continuance behavior by considering reasoned action, experiential response, and habitual response. In addition to integrating competing models and alternative influences to expand the continuance research, the authors included continuance behavior in the model. The authors found that the "three alternative pathways to continuance behavior are interdependent and complementary, in that they are influenced by crossover effects" (p. 372). Specifically, they found that satisfaction has a direct effect on continuance behavior and an indirect effect mediated by continuance intention. The authors explain that the direct effect of satisfaction explains the role that emotions play in IT usage and thus is an important factor to consider. As previously mentioned, habit was added to the model because it has been found to influence continuance behavior (Limayem et al., 2007). Habit was found to have a direct effect on continuance behavior and to suppress the effect of intentional cognitive processes on behavior. Overall, the authors found that the three theoretical paths to examine continuance behavior are not independent but complementary. They explain that crossover effects between experiential response and reasoned action constructs, as seen between disconfirmation and perceived usefulness, help expand the theoretical boundaries as they suggest that experiential response may not influence continuance behavior but also "bias the reasoned action component of behavior" (p. 371). For example, a dissatisfied user will reduce continuance behavior and form negative continuance intentions despite having strong positive cognitions (i.e., perceived usefulness and subjective norms) toward continued use.

It is evident from the literature review discussed thus far that the study of continuance behavior is important given the rampant spread of IS in different contexts. The tourism and hospitality industry has not been immune to the adoption of IS to facilitate service delivery.

Therefore, it is important to review studies that have examined continuance intention in the hospitality industry; this will be discussed in the following section.

Travel-Related Services Studies

Studies in the tourism and hospitality context have examined a variety of factors that impact the continuance intention of online reservation systems, social media, online flight check-in services, mobile travel booking services, and mobile hotel booking technology. This section provides a summary of the studies that examine systems of travel-related services.

Mouakket (2014) sought to examine the factors that impact the continuance intention of online reservations systems by integrating the e-service quality model into the ECM. In addition, the proposed model included hedonic value and subjective norm and considered perceived usefulness as a utilitarian value. In terms of e-service quality dimensions, the model considered efficiency, reliability, contact, privacy, and responsiveness as influencing the utilitarian value. The authors found that all e-service quality dimensions significantly impact the utilitarian value except for responsiveness. Furthermore, the utilitarian value was found to have a positive influence on hedonic value. The results show that when users find the system useful, it will increase their level of enjoyment and, as such, the utilitarian and hedonic values can be expected to influence each other. In turn, utilitarian and hedonic values were found to influence satisfaction, which influences continuance intention. Furthermore, the subjective norm (i.e. influence of others) was found to influence continuance intention. This study is important because it considered each dimension of service quality individually, providing a better understanding of the impact of e-service quality on continuance intention (Mouakket, 2014).

Jung et al. (2015) conducted a study on the influence of mobile technology characteristics of ubiquity and interaction on hotel guests' continued use of social media. The authors investigated the impact of interaction and ubiquity on trust, perceived benefit, and perceived enjoyment, which the authors hypothesized to have an impact on social media continuance use. The authors found that interaction and ubiquity influence the continued use of social media by luxury hotel guests in the UK through the mediating effects of trust, benefits, and perceived enjoyment. The study provides a new research direction of including social media characteristics as antecedents to continued usage intention.

Lin and Filieri (2015) examined continuance intention of online flight check-in services by adding two psychological constructs, personal innovativeness and subjective knowledge, to the TAM. The authors found that innovativeness and subjective knowledge have a direct effect on continuance intention and an indirect effect through partial mediation of perceived ease of use and perceived usefulness on continuance intention toward online check-in services. Furthermore, the results show that perceived usefulness is a greater predictor of continuance intention. This study shows that psychological constructs like personality traits (i.e., innovativeness) and self-concept (i.e., subjective knowledge) can directly and indirectly exert an influence on continuance intention.

Zhong et al. (2015) proposed an integrated model based on the Theory of Planned Behavior and ECM to examine users' continuance intention toward mobile travel booking services. The authors found that perceived usefulness, satisfaction, subjective norm, and perceived behavioral control have a direct positive impact on continuance intention. Moreover, the study found that satisfaction has a greater impact on continuance intention than perceived

usefulness. In turn, satisfaction is positively impacted by the confirmation of expectations and perceived usefulness. This study sheds light on the functions that should be improved when implementing mobile travel booking services. Special attention must be paid to users' expectations and meeting those expectations because they lead to satisfaction and perceived usefulness, which impact continuance intention.

Ozturk et al. (2016) developed a model to examine continuance intention of mobile hotel booking technology by integrating factors related to instrumental beliefs (i.e., ease of use), personal differences (i.e., innovativeness), and social beliefs (i.e., subjective norm, perceived risk). The results of the study suggest that utilitarian and hedonic values are positively impacted by ease of use, subjective norm, and innovativeness. However, perceived risk negatively impacts both hedonic and utilitarian values. In turn, both hedonic and utilitarian values impact the continuance intention to use mobile hotel booking technology. By examining the antecedents to the continued use intention, the authors could highlight the importance of both utilitarian and hedonic values of the system to entice continued use, with increased attention paid to hedonic value. Regarding the antecedents to hedonic and utilitarian values, the negative impact of perceived risk must be addressed, as the results show a high negative impact on both utilitarian and hedonic values. In addition, personal innovativeness must be capitalized upon because it was found to have the biggest impact on both values.

Theory Development and Proposed study

It is clear from the above discussion that many theories, frameworks, and constructs have been used to improve the understanding of continuance intention. However, scholars warn that

there is a widespread misapplication of theories and, in turn, a generation of spurious correlations (Bhattacherjee & Barfar, 2011). To that end, scholars recommend that to properly extend the theory in the IS field, constructs must be added in a meaningful manner (Nabavi et al., 2016). To extend the ECM, this dissertation added variables related to the context of the study.

IS scholars have called on the research community to approach theory development based on context-specific factors (Hong et al., 2014). Scholars propose that one way to develop richer theories that allow for actionable advice is to consider the contextual factors that generate insights about the phenomenon associated with the IS, individuals, and organizations (Weber, 2003). Context is important for the study of IS because it is the "situational opportunities and constraints that affect the occurrence and opportunities and meaning of behavior as well as functional relationships between variables" (Johns, 2006, p. 386). The IS research context has been described as the characteristics and usage contexts of the technology (Benbasat & Zmud, 2003; Orlikowski & Iacono, 2001). Many IS frameworks and models have incorporated context in their models (e.g., TAM, UTAUT); however, scholars explain that attempts to extend these models have been approached inconsistently by adding context-specific variables as antecedents, direct or indirect predictors, or moderators of relationships. This practice yields disjointed results that lead to a lack of understanding the influence of context (Hong et al., 2014).

IS researchers recommend various strategies for context-specific theory development. Hong et al. (2014) explain that one way to extend IS theory is to contextualize IS theories by incorporating context-specific factors relevant to the characteristics of the technology, usage, or use. Following these guidelines, this study utilized the single context theory contextualization, focusing on incorporating contextual factors as antecedents of core constructs. This approach

was selected because it allows for the effects of context-specific variables to be explained by the core theoretical frameworks of general models (Bagozzi, 2007; Burton-Jones & Hubona, 2006) and directly accounts for the unique context effects related to the phenomenon being studied (Whetten, 2009).

As an interdisciplinary researcher, the author of this study followed the advice of IS researchers by incorporating contextual factors to study hotel branded mobile app post-usage behavior. To that end, this study incorporated the contextual variables related to mobile technology that will impact users' attitudes to continue to use and recommend a hotel mobile application. The purpose is to extend the Expectation Confirmation Model, originally formulated to investigate continuance intention, by examining cognitive and affective factors that impact decision-making related to mobile technology. Specifically, the study sought to identify the factors that exert the most influence on users' decisions to continue using and to recommend a hotel branded mobile app, as it will help marketers and mobile strategy managers capitalize on those factors and implement mobile apps with features that exploit the influencing determinants of continuance intention and WOM.

Consumer behavior literature has suggested that human attitude has three components that influence consumers' decisions: cognitive, affective, and conative (Rosenberg & Hovland, 1960; Lavidge & Steiner, 1961). The cognitive phase refers to the mental, rational, and intellectual states. It relates to the consumers' perceptions, attitudes, and judgements from the process of evaluating relevant information (Chen et al., 2016). The affective phase relates to the consumers' emotions or feelings. Affective factors relate to the positive or negative feelings that emerge from evaluating the good or service, and it was found to be a significant factor in

predicting consumers' behavior (Morris, Woo, Geason, & Kim, 2002). Finally, conative refers to motivational states. It represents the consumer's behavioral intention or likelihood of a consumer to respond or act (Hawkins, Mothersbaugh, & Best, 2010). Attitude models from consumer behavior literature represent the conative component, such as behavioral intention, as the function of affective components (i.e., general liking), which in turn depends on a set of cognitive elements (i.e., beliefs about the extent that an object has various attributes differing in perceived importance and/or desirability) (Holbrook, 1978, p. 545). That is, consumers' behavioral intention to use or purchase a good/service originates from their cognitive knowledge, which influences the affective feelings toward the quality or performance of an object.

Cognitive Phase Factors

This study expands on the original ECM that utilized two cognitive factors to predict continued IS use (i.e., perceived usefulness and confirmation), which reflects the belief-affect-intention causality (Bhattacherjee, 2001b). Cognitive factors related to mobile technology are important to examine because they influence the users' feelings about a technology (Holbrook, 1978). Following the footsteps of the original model, the proposed study uses cognitive factors to represent the individual's perceptions of the object. The cognitive phase represents the conscious decisions regarding the behavioral purpose of serving the users' needs. The cognitive factors considered in this study include perceived usefulness of the mobile app, confirmation of expectations, and contextual factors/characteristics of the system (i.e., perceived mobility, personalization, and responsiveness).

Perceived usefulness is defined as a user's perception of the expected benefits of a hotel mobile application (Davis et al., 1989). Since the goal of ECM is to examine post-adoption usage, perceived usefulness represents the post-usage expectation. Perceived usefulness is a commonly used construct in continuance research and has been found to significantly influence continuance intention (Nabavi et al., 2016). In addition, it is the only belief construct that has been found to consistently influence a user's intention across the temporal stage of IS use (Bhattacherjee, 2001b; Davis et al., 1989; Karahanna et al., 1999). Perceived usefulness has been examined as having various relationships in continuance intention research, such as a direct impact on continuance intention and an indirect impact through satisfaction (e.g., Bhattacherjee & Lin, 2015; Kim, Hwang, Zo, & Lee, 2014; Oghuma, Libaque-Saenz, Wong, & Chang, 2016; Zhong et al., 2015). Perceived usefulness has been found to impact satisfaction among augmented reality application users (Kim, Hwang, Zo, & Lee, 2014), mobile instant messaging (Oghuma et al., 2016), and online reservation system users (Mouakket, 2014). In addition, perceived usefulness has been found to exert a direct impact on continuance intention among users of mobile instant messaging, mobile travel booking services, workplace IT continuance behavior, and augmented reality applications (Bhattacherjee & Lin, 2015; K. Kim et al., 2014; Oghuma et al., 2016). In the hospitality context, Lin and Filieri (2015) found that perceived usefulness is a greater predictor of continuance intention in the online flight check-in services than other factors examined in their study. Similarly, in the mobile travel booking service context, perceived usefulness was found to directly and indirectly impact continuance intention through satisfaction (Zhong et al., 2015). From this discussion, it is apparent that the impact of

usefulness on continuance intention is important in continuance research. The following relationships were examined:

Hypothesis 1: Perceived usefulness of a hotel branded mobile app positively impacts users' satisfaction with the mobile app.

Hypothesis 2: Perceived usefulness of a hotel branded mobile app positively impacts users' perceived enjoyment of the mobile app.

The second cognitive belief included in this study is confirmation. Confirmation is defined as the users' perceptions of the congruence between the expectation of a hotel mobile app and its actual performance (Bhattacherjee, 2001b). As mentioned earlier, this is a measure of the confirmation of expectations after actual use. Confirmation has been found to positively influence satisfaction in continuance research because it has been found to influence the long-term use of a system (Bhattacherjee & Premkumar; 2004; Nabavi et al., 2016). That is, satisfaction has been found to exert an indirect influence on continuance intention through satisfaction (e.g., Bhattacherjee & Premkumar, 2004; Halilovic & Cicic, 2013; Hsu & Lin, 2015; K. Kim et al., 2014; Oghuma et al., 2016). However, the impact of satisfaction is not as strong as has been posited. Halilovic and Cicic (2013) found that confirmation indirectly impacts the organizational IS software continuance intention through satisfaction; however, among the variables tested, it exerted the least influence with conditions of support exerting the most influence. The results of this study show that the influence of the confirmation of expectations is not as significant as previously posited by Bhattacherjee (2001b). Recent research on continuance intention has examined additional relationships related to confirmation by including other factors. For example, in a study of mobile instant messaging, confirmation impacted

perceived security, usefulness, enjoyment, and user interface (Oghuma et al., 2016). Furthermore, security was the only factor not found to directly or indirectly (through satisfaction) influence continuance intention.

The relationship between confirmation and enjoyment has been previously examined with perceived enjoyment being examined as an antecedent or a consequence of satisfaction (K. Kim et al., 2014; Jung et al., 2015). K. Kim et al.'s (2014) study on continuance intention among augmented reality smartphone app users found that perceived enjoyment was not a significant antecedent to continuance intention. However, it was found to influence continuance intention through satisfaction. On the other hand, hotel social media users' perceived enjoyment was found to directly influence continuance intention (Jung et al., 2015). However, in their study it was found to be the third most influential factor after trust and perceived benefits. Given the conflicting results found in the review of the literature, the following relationships were examined as outlined by the following hypotheses.

Hypothesis 3: Confirmation of expectations of a hotel branded mobile app positively impacts users' satisfaction with the mobile app.

Hypothesis 4: Confirmation of expectations of a hotel branded mobile app positively impacts users' perceived enjoyment of the mobile app.

In terms of context-specific cognitive factors, this study examines the influence of perceived mobility, perceived personalization, and perceived responsiveness of a hotel mobile app. Mobility refers to the users' awareness of the mobility value of mobile apps (Huang et al., 2007). The literature suggests that mobility has three elements: expediency, convenience, and immediacy (Seppälä & Alamäki, 2003). The mobility function of mobile devices allows users to

access information, communication, and services anytime and anywhere (Mallat, Rossi, Tuunainen, & Öörni, 2009). Perceived mobility has been described as an essential factor for mobile service users (Yen & Wu, 2016). Because of this characteristic, it can be expected that mobility is an essential factor of mobile app adoption and use (Yen & Wu, 2016). Mobility has been found to be an important antecedent to the adoption of mobile learning services (Huang et al., 2007) and continued usage intention of mobile financial services (Yen & Wu, 2016). In addition, mobility has been found to indirectly influence continued use intention through other factors like perceived usefulness and ease of use in the context of mobile financial services. It would be interesting to examine perceived mobility in the hotel mobile app setting to see if the impact of mobility is the same in a hedonic service/good context.

Hypothesis 5: Perceived mobility of the hotel branded mobile app positively impacts users' satisfaction with a mobile app.

Hypothesis 6: Perceived mobility of the hotel branded mobile app positively impacts users' perceived enjoyment of a mobile app.

Personalization in the information systems context can be defined as modification of the information, interface, or functions with the goal of increasing the personal relevance to an individual user (Blom, 2000). Personalization has been described as system-initiated and system-driven and requires adaptive components (Treilblmaier, Madlberger, Knotzer, & Pollach, 2004). In electronic commerce, personalization is defined as a way to gather consumer data to make product recommendations to consumers. Detailed information from users is needed to make appropriate modifications for the users' needs. In addition, it requires the system to continuously monitor user behavior, which enables the system to adjust based on the behavior. Personalized

systems utilize user profiles, which are dynamically managed by the system. A common example of personalization is demonstrated by Amazon, which monitors purchases and clicking behavior to suggest products that may interest the consumer (Trielblamaier et al., 2004). The hospitality industry utilizes personalization to perform mobile commerce marketing activities like hotel email blasts based on the consumers' previous stays or push notifications during a hotel stay for concierge and other hotel services. Research on mobile commerce suggests that personalization increases consumption by improving the fit between the consumers' needs and product attributes (Wattal, Telang, & Mukhopadhyay, 2009). Scholars explain that even though personalization is viewed as an important factor of the contemporary service experience, theory has not been able to converge toward unified findings that clearly establish personalization as an influencing force of m-commerce behaviors (Lee & Cranage, 2011; Sutanto, Palme, Tan, & Phang, 2013). Results from studies examining mobile services and technologies have found that personalization has an influence on the intention to adopt and use (Morosan & DeFranco, 2016; Sheng, Nah, & Siau, 2008; Zarmpou, Saprikis, Markos, & Vlachopoulou, 2012). In terms of continuance intention research, Chen, Meservy, and Gillenson (2012), in their study of mobile app users, found that personalization was part of the process quality construct that positively influences the confirmation of users' expectations as an antecedent to user satisfaction. Because of the importance of personalization to effectively implement mobile commerce and as a way for an organization to better service and influence consumer behavior, this aspect was added as part of the cognitive phase of the model. Based on this discussion, the following hypotheses were developed.

Hypothesis 7: Perceived personalization of the hotel branded mobile app positively impacts users' satisfaction with the mobile app.

Hypothesis 8: Perceived personalization of the hotel branded mobile app positively impacts users' perceived enjoyment of the mobile app.

Responsiveness refers to the extent to which users can obtain information relevant to their request (Burgoon, Bonito, Bengtsson, Ramirez, Dunbar, & Miczo, 2000). The author of this study utilized responsiveness as an antecedent to continuance intention since responsiveness is one of the main characteristics of mobile technologies and a driving factor for its adoption and use (Choi et al., 2015; Yoo, Kim, & Sanders, 2015). Previous studies have examined responsiveness as one of the components involved in the interactivity of e-WOM systems leading to satisfaction (Yoo et al., 2015). The results show that among the interactivity components, responsiveness is the most influential in the interactivity of e-WOM systems. Benlian, Koufaris, and Hess (2011) conducted a study on continuance intention of organizational software and examined system responsiveness as a component of system quality. The authors found responsiveness to be the most influential element of system quality, which in turn was found to be an antecedent to perceived usefulness and satisfaction. Furthermore, responsiveness, as part of system quality, was found to indirectly influence continuance intention through both perceived usefulness and satisfaction. Chen et al. (2012), in their study of mobile app users, found that responsiveness, as one of the characteristics of system quality, positively influences confirmation of users' expectations as an antecedent to user satisfaction. Mouakket (2014) examined responsiveness as one of the dimensions of e-service quality impacting the utilitarian value of the user. However, it was not found to be an influential dimension of the utilitarian

value among the users of online reservation systems. As discussed, previous studies have examined responsiveness as one of the components of system quality or service quality with mixed results. This study seeks to examine the influence of mobile technology characteristics as an individual factor to explore its impact on satisfaction and enjoyment. Based on this discussion, the following hypotheses were drafted:

Hypothesis 9: Perceived responsiveness of the hotel branded mobile app positively impacts users' satisfaction with a mobile app.

Hypothesis 10: Perceived responsiveness of the hotel branded mobile app positively impacts users' perceived enjoyment of a mobile app.

Affective Phase Factors

The affective phase represents behaviors that capture the personal feelings users have about an object that affects their behavior (Pappas, Kouraouthanassiss, Giannakos, & Chrissikopoulos, 2016). Affect can exhibit positive or negative feelings about an object and provide an evaluation of the product and is considered an essential part of users' attitude (Wilkie, 1994). Affect has a strong impact on decision-making behavior and consumer shopping behavior, with results suggesting that affect helps explain significant variance in one's cognition and behavior (Zhang, 2013). Affect factors like satisfaction have been of great interest to IS scholars, and it has been the most frequently used factor in continuance intention research because it has been found to be the most influencing factor in IT continuance intention (Nabavi et al., 2016). The inclusion of affective constructs allows for a deeper understanding of those factors in the use of new IS in different settings, especially since the proliferation of information

technology among individuals for personal use. For example, when a person selects a mobile phone, the user considers not only the usability, functionality, and reliability but also cognitive factors like price, service, features, and usability and affective factors like uniqueness, or how it makes the user feel, as influential and sometimes determinant factors (Zhang, 2013). A better understanding of affect will lead to practical implications for design, acceptance, and management of ICTs (Zhang, 2013). This study includes the construct of satisfaction from the original ECM and added perceived enjoyment. The following hypotheses are proposed to explore the influence of satisfaction:

Hypothesis 11: Satisfaction with a hotel branded mobile application positively impacts users' continuance intention.

Hypothesis 12: Satisfaction with a hotel branded mobile application positively impacts WOM.

Consumer behavior literature states that individuals engage in specific activities because they lead to enjoyment and pleasure (Teo & Lim, 1997). Perceived enjoyment has been defined as the extent to which using the technology is perceived as enjoyable regardless of anticipated performance (Davis, Bagozzi, & Warshaw, 1992). Another definition specifies that perceived enjoyment is an intrinsic motivation that shows the amount of entertainment that can be derived from using the system (Van der Heijden, 2004). Previous research shows that perceived enjoyment increases satisfaction in technology use and acceptance (Davis et al., 1992). Similarly, perceived enjoyment has been found to positively influence attitude and helps predict user acceptance and intention toward mobile learning systems (Huang et al., 2007). In terms of the influence of enjoyment on continuance intention, recent studies show that perceived enjoyment is not significantly associated with continued use intention of mobile financial services (Yen &

Wu, 2016). However, Oghuma et al. (2016) found that perceived enjoyment positively influences user satisfaction and continuance intention of mobile instant messaging systems. Due to the conflicting results on the effects of perceived enjoyment and the importance of enjoyment when studying IS systems, this study includes perceived enjoyment as a factor in the affective phase of the model.

Hypothesis 13: Perceived enjoyment of a hotel branded mobile application positively impacts users' satisfaction with a mobile app.

Hypothesis 14: Perceived enjoyment of a hotel branded mobile application positively impacts users' continuance intention.

Hypothesis 15: Perceived enjoyment of a hotel branded mobile application positively impacts WOM.

Conative Phase Factors

As mentioned, conative behavior is related to the likelihood or tendency of an individual to act or exhibit an action or behavior (Wilkie, 1994). That is, conative behavior is an expression of a user's intention that represents the likelihood to act a certain way (Kim et al., 2013). In this study, conative phase factors include continuance intention and WOM. Continuance intention, a construct in the original ECM, is retained for this study. The continuance intention construct is derived from behavioral intention and is defined as a user's intention to continue using a system (Bhattacherjee, 2001b). Bhattacherjee (2001b) explains that an IS continuance decision follows a sequence of events: the user makes an initial acceptance followed by the initial use experience of the product. After the initial use, the user makes an ex-post decision of continued use or a

reversal of the initial decision. In addition to continued use, this study includes the construct of WOM.

WOM is defined as a willingness to recommend to other users (Harrison-Walker, 2001). Scholars explain the importance of WOM, because of its influence on consumer behavior and attitudes, as being more effective than company recommendations delivered through traditional media (Keller, 2007; Lee, Park, Kim, & Lee, 2012). WOM serves as an information source for other consumers and is often considered more trustworthy and has a greater impact on the reputation of a business (Kim & Kim, 2010).

Studies have examined the relationship between continuance intention and WOM in different settings including mobile banking, transportation self-service terminals, and Web 2.0 (i.e., social media sites) (Chen, Yen, & Hwang, 2012; Choi et al., 2015; Shaikh & Karjaluoto, 2016). Chen et al. (2012) examined e-WOM as an influencing factor on continuance intention among Web 2.0 users and found that word of mouth influences continuance intention. Word of mouth is influenced by satisfaction and social factors (subjective norm, image, and critical mass). Shaikh and Karjaluoto (2016) examined antecedents to WOM in the mobile banking setting. They found that continuance intention exerts a critical influence on WOM. The authors explain that it is an expected finding as perceived value and user satisfaction with the system influence continuance intention, which ultimately influences users' willingness to recommend to others. Choi et al. (2015) added to the discussion of the influence of continuance intention on WOM. Similar to other studies, they found that continuance intention exerts a significant influence on users' likelihood to recommend. In addition, the authors found that product attributes (i.e., product information, aesthetics, and wireless) have a direct impact on WOM. Clearly, WOM is

important because users' recommendations increasingly exert an influence on the attitudes and behaviors of others (De Matos & Rossi, 2008). However, there is still a discussion among scholars about the influence of WOM on continuance research. That is, does WOM influence continuance intention or does continuance intention influence WOM? (Chen et al., 2012; Choi et al., 2015; Li & Liu, 2016). Considering the continued interest among scholars and the conflicting results, the following hypothesis is formulated:

Hypothesis 16: Hotel branded mobile applications continuous usage intentions exert a positive effect on word of mouth (WOM).

Based on the above discussion, on the literature review related to continuance research, and the factors included in the study, a conceptual framework is proposed to extend continuance research. The conceptual framework for this study incorporates users' cognitive factors to utilize hotel mobile apps as influencing affection toward the app, which in turn influences behavioral intentions (i.e., conation) to continue using and recommend the hotel mobile app. The proposed model outlines a relationship between the mobile technology users' cognitive factors of perceived usefulness, confirmation of expectations, and context factors (i.e., mobility, personalization, and responsiveness) as influencing satisfaction and perceived enjoyment. It is proposed that two affective phase factors, satisfaction and enjoyment, directly influence continuance intention and WOM. In addition, perceived enjoyment is expected to influence users' satisfaction. Finally, the conative factor of continuance intention is expected to influence the willingness to recommend (i.e., WOM). Figure 4 outlines the proposed hypotheses examined in the study.

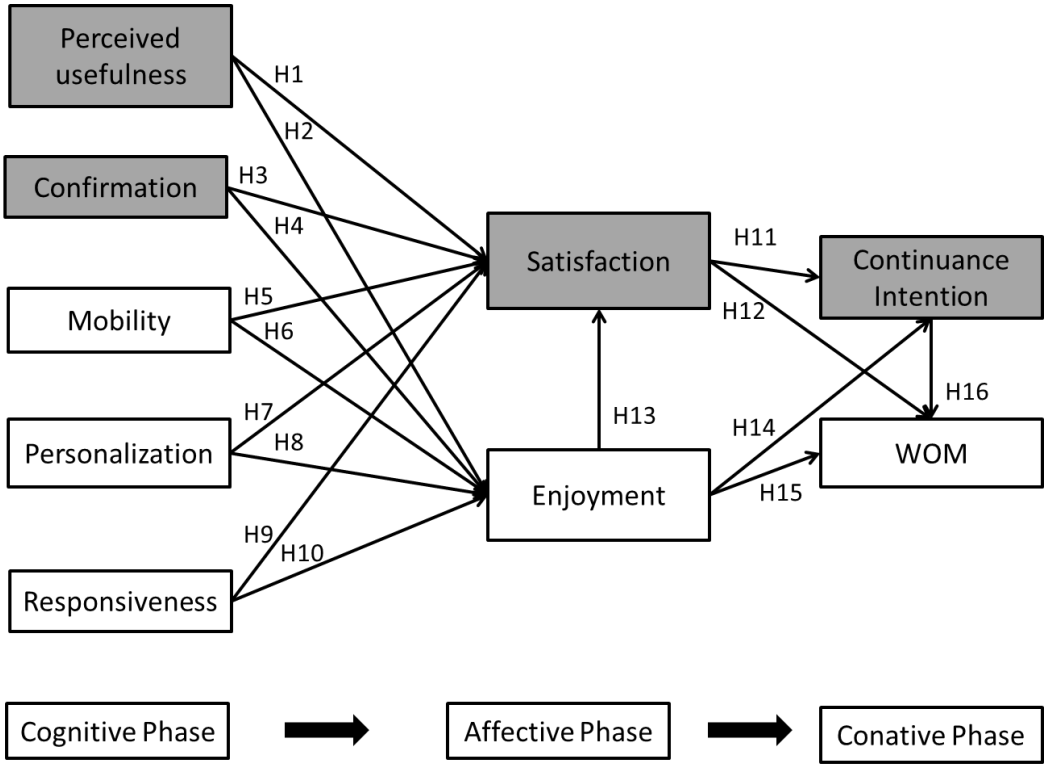

Figure 4: Conceptual Framework

Summary

This chapter discussed the evolution of the mobile app and the use of mobile applications in the hospitality industry. Research on hotel branded mobile apps is scarce and focused on the features being provided in the mobile app and not on the users' evaluation of their experience. An extensive review of the ECM and its many modifications were discussed. The review showed that satisfaction is the most influential factor to continuance intention. The approach to extend the ECM was focused on the characteristics of the technology being examined. That is, context specific factors were included as individual factors influencing post-adoptive behaviors. Furthermore, an additional outcome variable was introduced in the proposed model to examine

the influence of continuance intention on other post-adoptive behaviors. After the literature was discussed the proposed model was extended and hypotheses were introduced.

CHAPTER THREE: METHODOLOGY

This chapter begins with a discussion of the target population and sample of the study. A discussion of the survey instrument development and explanation of each measurement scale follows. Pretest, pilot test, and the data collection procedure is discussed in the final section covering the proposed data analysis.

To test the hypotheses outlined in the theoretical model, this study's survey design used cross-sectional data. Participants were asked to complete a web-based questionnaire about the factors that influence their continuance intention and intention to recommend a hotel branded mobile app.

Sampling Frame

Data for this study were gathered using convenience sampling, a non-probability sampling technique. It is categorized as a non-probability sampling technique because it does not involve a random selection of participants. Convenience sampling was used to recruit a sample population comprised of users of hotel branded mobile apps instead of users of other apps such as OTA mobile apps (e.g., Expedia, Booking.com) since the study seeks to examine the factors that influence post-adoptive behaviors of continued use and likelihood to recommended apps for users of hotel branded mobile apps. Data were collected with a self-administered online survey distributed through Amazon Mechanical Turk online panels. Participants were recruited through online panels and screened for minimum age requirements (only adults 18 and older could participate). Participants were also screened to determine if they were part of the target sample by asking about their previous use of hotel branded mobile apps. Before starting the

questionnaire, participants were asked if they have ever used a hotel branded mobile app. This question served as a screening question; if a participant answered "No," the survey ended because he or she was not the desired target population.

The survey was administered online, which is a suitable way to collect data for this type of research because it is investigating an online service. This method has been widely adopted by other scholars researching online user behavior including those investigating hospitality and tourism services (Ayeh, Au, & Law, 2013; Lin & Filieri, 2015; Hung & Law, 2011). In addition, online data collection has several advantages like reducing social desirability bias, promoting honest responses from participants, allowing access to a larger population, and reaching hard-to-find sample groups (Hung & Law, 2011; De Leeuw, 2008).

Rules related to sample size for PLS-SEM allow small sample sizes with no identification issues and achieve high levels of statistical power (Hair, Hult, Ringle, & Sarstedt, 2014). However, larger sample sizes increase the precision of PLS-SEM estimations. The general rule of thumb suggests that the minimum sample size should be 10 times the largest number of structural paths directed toward a construct in a structural model (10:5). In the proposed model, the highest number of paths directed toward a construct is 5, so using this rule, the minimum sample size requirement to perform PLS-SEM would be 50. The minimum sample size requirements were met.

IRB review and approval for the questionnaire was submitted before data collection began. The questionnaire was pre-tested with a sample of college students from a major university in central Florida, which allowed the researcher to identify and revise errors in the instructions and clarify the wording of items. Next, a pilot test was conducted with seven

industry experts and PhD students and forty-eight (48) undergraduate college students from a university in central Florida. Feedback from the pilot test helped the researcher revise the questionnaire flow, clarify the wording of items such as construct questions and demographic questions. Modifications included adding definition of terms (i.e., mobility, personalization, responsiveness) to avoid participant confusion on terminology used in the instrument, asking participants to provide information of mobile app used and frequency of use in a year, condensing income breakdown, asking participants the number of people who contribute to household income. The pilot test allows the researcher to ensure that the questions are clear, accurate, and easy for the participants to understand.

Questionnaire Development

The questionnaire contains three sections and was constructed from previously used scales and constructs. The three sections included a screening question and previous use of hotel branded mobile app, questions related to the constructs of interest and demographic questions. A list of all items in the questionnaire is provided in Appendix C.

For those participant that were screened and deemed to be included in the sampling frame, the first section of the questionnaire asked participants about their mobile device use and previous and current use of a hotel branded mobile app. These questions were used to determine a technology use profile of the study participants and provide an understanding of the sample population. Questions were developed by the author to determine a technology profile of the participants which allowed the researcher to determine participant overview of mobile technology and mobile app familiarity and actual use, and hotel mobile app specific use.

Technology use questions included: “How many times a year do you use hotel branded mobile apps?” (answer options: 1-2, 3-6, 7-12, more than 12); “Please provide the name of a hotel branded mobile app you use most often”; “What are some of the features you use on a hotel branded mobile app (e.g., reservations, check-in, room key, etc.)?”; “What type of mobile device do you use to make travel arrangements?”; “How many years have you been using mobile apps?”

The second section included items related to the constructs involved in the theoretical model. Constructs and items used in the questionnaire were adapted from the literature and established instruments. Items were reworded to reflect the context of the current study. Table 3 lists the study construct questions and the source. This part of the questionnaire included items related to the constructs for the cognitive phase, affective phase, and conative phase. All items in the second section were measured using a seven-point Likert Scale ranging from 1 = strongly disagree to 7 = strongly agree, as is consistent with previous literature.

Cognitive belief represents the rational state and an individual’s perceptions about an object (Bhattacherjee, 2001b). For the cognitive phase, this study included perceived usefulness, confirmation of expectations, perceived mobility, perceived personalization, and perceived responsiveness. Perceived usefulness is the user’s perception of the expected benefits of a hotel mobile app (Davis et al., 1989). This construct was measured with four items. Items included “Using hotel branded mobile apps improves my performance in managing hotel related services”, “Using hotel branded mobile apps increases my productivity in managing hotel related services”, “Using hotel branded mobile apps enhances my effectiveness in managing hotel related services”, and “Overall, hotel branded mobile apps are useful in managing hotel related

services." Confirmation of expectations is the user's perception of the congruence between the expectation of using a hotel mobile app and the actual performance (Bhattacherjee, 2001b). Confirmation was measured by three measurement items; "My experience with using hotel branded mobile apps was better than what I expected", "The service level provided by hotel branded mobile apps was better than what I expected" and "Overall, most of my expectations from using hotel mobile apps were confirmed."

Under the cognitive phase of the model, contextual factors of perceived mobility, personalization, and responsiveness were hypothesized to impact continuance intention and WOM. Perceived mobility is defined as the user's awareness of the mobility value of mobile apps (Huang et al., 2007). This construct was measured with four items. Examples include: "I know that hotel branded mobile apps are an instrument for hotel information and booking", "It is convenient to access hotel branded mobile apps anywhere at anytime", "Mobility makes it possible to get the real-time data", and "Mobility is an outstanding advantage of hotel branded mobile apps". Perceived personalization refers to system-initiated modifications of the information interface and functions to increase personal relevance to the user (Blom, 2000; Treilblmaier et al., 2004). Three items were used to measure personalization, including: "Hotel branded mobile apps can provide me with personalized services, products, or information tailored to my specific hotel stay", "Hotel branded mobile apps can provide me with more relevant services, products, or information tailored to my preferences or personal interests", and "Hotel branded mobile apps can provide me with the kind of personalized services, products, or information that I might like." Perceived responsiveness refers to the extent users can obtain relevant information to their requests (Burgoon et al., 1999). Four items were used to measure

responsiveness including: “Hotel branded mobile apps provide appropriate information to fulfill my needs”, “Hotel branded mobile apps provide the information that I need to fulfill my needs”, “Hotel branded mobile apps provide relevant information,” and “The information provided in the hotel branded mobile apps is useful.”

Affective behaviors represent an individual’s personal feelings about an object (Pappas et al., 2016). Affective phase items for this study included satisfaction and perceived enjoyment. Satisfaction is defined as the user’s feelings about (affect) prior technology use (Bhattacherjee, 2001b; Oliver, 1980) and was measured by three items including: “I am satisfied with my overall experience with the hotel branded mobile app”, “I am pleased with my overall experience with the hotel branded mobile app”, “I am content with my overall experience with the hotel branded mobile app”, and “I am delighted with my overall experience with the hotel branded mobile app.” Perceived enjoyment is defined as the extent that using the technology is perceived as enjoyable regardless of anticipated performance (Davis et al., 1992). Three items were used to measure perceived enjoyment, with statements including: “Using hotel branded mobile apps is enjoyable”, “Using hotel branded mobile apps is pleasurable” and “I have fun using hotel branded mobile apps.”

Conative behavior is an individual’s tendency to exhibit a behavior or an expression of a user’s intention (Wilkie, 1994; Kim et al., 2013). Conative phase constructs included in this study are continuance intention and word of mouth (WOM). Continuance intention refers to the user’s intention to continue using a system (Bhattacherjee, 2001b). Four items were used to measure this construct. Sample items include: “I intend to continue using hotel branded mobile apps rather than discontinue using them”, “My intentions are to continue using hotel branded

mobile apps rather than use any other alternative means (e.g., call hotel, use hotel website, etc.)", "If I could, I would like to discontinue my use of hotel branded apps", and "I plan to continue using the hotel branded mobile apps in the future". WOM is defined as the willingness to recommend to others (Harrison-Walker, 2001). This construct was measured by three items, for example, "I will say positive things about hotel branded mobile apps to other people", "I will refer my acquaintances to hotel branded mobile apps" and "I will refer my acquaintances to hotel branded mobile apps."

The third section of the questionnaire consisted of demographic questions such as age, gender, income, marital status, occupation and education level. These questions allow the researcher to better understand the profile of hotel branded mobile app users and to determine generalizability of the results and to segment respondents, where applicable.

Table 3: Study construct items

Construct	Scale Items	Scale Source
Cognitive Constructs		
Perceived usefulness	Using hotel branded mobile apps improves my performance in managing hotel related services. Using hotel branded mobile apps increases my productivity in managing hotel related services. Using hotel branded mobile apps enhances my effectiveness in managing hotel related services. Overall, hotel branded mobile apps are useful in managing hotel related services.	Bhattacherjee (2001b)
Confirmation	My experience with using hotel branded mobile apps was better than what I expected. The service level provided by hotel branded mobile apps was better than what I expected. Overall, most of my expectations from using hotel mobile apps were confirmed.	Bhattacherjee (2001b)
Perceived mobility	I know that hotel branded mobile apps are an instrument for hotel information and booking. It is convenient to access hotel branded mobile apps anywhere at anytime. Mobility makes it possible to get the real-time data. Mobility is an outstanding advantage of hotel branded mobile apps.	Huang, Lin, Chuang (2007) Yen & Wu (2016)
Perceived personalization	Hotel branded mobile apps can provide me with personalized services, products, or information tailored to my specific hotel stay. Hotel branded mobile apps can provide me with more relevant services, products, or information tailored to my preferences or personal interests. Hotel branded mobile apps can provide me with the kind of personalized services, products, or information that I might like.	Li, Sarathy, & Xu (2011)
Perceived responsiveness	Hotel branded mobile apps provide appropriate information to fulfill my needs.	Yoo, Kim, & Sanders (2015)

Construct	Scale Items	Scale Source
	Hotel branded mobile apps provide the information that I need to fulfill my needs. Hotel branded mobile apps provide relevant information. The information provided in the hotel branded mobile apps is useful.	
Affective Constructs		
Satisfaction	I am satisfied with my overall experience with the hotel branded mobile app. I am pleased with my overall experience with the hotel branded mobile app. I am content with my overall experience with the hotel branded mobile app. I am delighted with my overall experience with the hotel branded mobile app.	Bhattacherjee (2001b)
Perceived enjoyment	Using hotel branded mobile apps is enjoyable. Using hotel branded mobile apps is pleasurable. I have fun using hotel branded mobile apps.	Davis, Bagozzi, & Warshaw (1989)
Conative Constructs		
Continuance intention	I intend to continue using hotel branded mobile apps rather than discontinue using them. My intentions are to continue using hotel branded mobile apps rather than use any other alternative means (ex. call hotel, use hotel website, etc.). If I could, I would like to discontinue my use of hotel branded apps. I plan to continue using the hotel branded mobile apps in the future.	Bhattacherjee (2001b) Bhattacherjee & Lin (2015) Mouakket (2014)
WOM	I will say positive things about hotel branded mobile apps to other people. I will recommend hotel branded mobile apps to anyone who seeks my advice. I will refer my acquaintances to hotel branded mobile apps.	Kim & Son (2009)

Statistical Test

Once data were collected, they were cleaned and assessed for missing data in SPSS v.22.0. Demographic information was examined to determine that the appropriate sample population was reached. PLS-SEM does not adhere to strict assumptions about data distributions, and it is able to provide robust model estimations with normal and non-normal data. Even though PLS-SEM does not require normal data, skewness and kurtosis were verified and data were found to be normally distributed.

To test the hypothesized relationships, a variance-based structural equation model (PLS-SEM) was used. PLS-SEM is a tool to analyze multivariate data that has been used in social sciences and is considered appropriate for theory testing (Bagozzi, 1980). PLS-SEM allows the researcher to examine complex relationship models with many indicators and multiple relationships estimated (Hair et al., 2014). In addition, PLS-SEM accommodates multiple independent and dependent variables as well as latent variables.

Hair et al. (2014) explain that PLS-SEM is useful in social science research when theory is less developed and the primary objective of the study is to apply structural modeling as a predictor and explanation of target constructs. PLS-SEM is a multivariate procedure that tests both construct validity and theoretical relationships among a set of concepts represented by variables. PLS-SEM provides the measurement model, which specifies the rules of correspondence between measured and latent variables. The measurement model allows the researcher to use any number of variables for a single independent or dependent construct once the construct is defined. Then the model can be used to assess the extent of measurement error (reliability). A model is a representation of a theory (i.e., a set of relationships). The

measurement model represents how measured variables come together to represent constructs and the structural model shows how constructs are related.

Variance-based SEM (PLS-SEM) was performed following a two-step process in which measurement and structural models are estimated separately, as it has gained wide acceptance among researchers and scholars (Hair et al., 2014). The statistical analysis related to the measurement and structural models was performed using the SmartPLS 3 statistical program. First, the measurement model was examined using the path model estimation. In this study, reflective measurement models for each construct were used, and each item/indicator used to measure the construct is a representative sample of all possible items available in the conceptual field of the construct (Hair et al., 2014). Since items/indicators are caused by the same construct, indicators are expected to be highly correlated and items are interchangeable without changing the construct's meaning. Reflective measurement models are evaluated for perceived usefulness, confirmation, mobility, personalization, responsiveness, satisfaction, perceived enjoyment, continuance intention, and WOM. Testing the measurement model provides empirical measures of the relationship between indicators and the constructs they represent. In this procedure, construct validation (convergent and discriminant) can be verified by assessing the extent to which the observed measures adequately represent each latent construct. Evaluation of reflective measurement models includes internal consistency through composite reliability, individual indicator reliability, convergent validity by examining average variance extracted, and discriminant validity by reviewing the Fornell-Larcker criterion and cross-loadings (Hair et al., 2014).

First, composite reliability was evaluated to determine internal consistency. Values must be between 0 and 1, and higher values indicate higher levels of reliability. Composite reliability values of .60 to .70 are considered acceptable for exploratory research; for advanced research, values between .70 and .90 are satisfactory (Bagozzi & Yi, 1988; Nunally & Bernstein, 1994). On the other hand, values below .60 show a lack of internal consistency reliability, and values above .95 are not desirable because they suggest that all the indicator variables are measuring the same phenomenon and are unlikely to be a valid measure of the construct (Hair et al., 2014). Second, measurement model evaluation entails indicator reliability and convergent validity, which was assessed through the outer loading of the indicators and the average variance extracted (AVE). Indicator reliability is assessed through outer loading; higher outer loadings suggest that the indicators have a lot in common. All indicators must be statistically significant and should be .708 or higher (Hair et al., 2014). To establish convergent validity of the construct, AVE is assessed. It is recommended that an AVE value of .50 or higher indicates that the construct explains more than half of the variance (Bagozzi & Yi, 1988). The last step in evaluating the measurement model includes assessing the discriminant validity, which can be done by evaluating the cross-loadings of the indicators or the Fornell-Larcker criterion. The outer loadings of an indicator should be greater than all its loadings on other constructs or cross-loadings (Chin, 1998; Grégoire & Fisher, 2006). A more conservative evaluation involves the Fornell-Larcker criterion, which compares the square root of the AVE values with the latent correlations, and to determine convergent validity the "AVE should exceed the squared correlations with any other construct" (Fornell & Larcker, 1981; Hair et al., 2014, p. 105). The evaluation of the reflective measurement model allows the researcher to establish the reliability

and validity of the construct measures. Once reliability and validity are established, the next step is an evaluation of the structural model.

The second phase of PLS-SEM is evaluating the structural model, which is a hypothetical model that proposes relationships among constructs (Hair et al., 2014). The structural model relates some variables to other variables in the model by providing path coefficients for each hypothesized relationship. This provides insight into the predictive validity of the latent constructs. The latent constructs included in the structural model for this study include perceived usefulness, confirmation of expectations, perceived mobility, personalization, responsiveness, satisfaction, perceived enjoyment, continuance intention, and word of mouth. The hypothesized structural model is evaluated and assessed in five steps: 1) collinearity assessment, 2) structural model path coefficients, 3) coefficient of determination, 4) effect size, and 5) blindfolding and predictive relevance (Hair et al., 2014).

In step 1, the structural model must be examined for collinearity issues by evaluating the tolerance levels in the predictor constructs. To show no collinearity issues, tolerance levels should be below .20 or VIF below 5.00 (Bagozzi & Yi, 1988). If no collinearity issues are found, an assessment of the model can be performed. In step 2, an assessment of structural path coefficients represents the hypothesized relationships among constructs. Standardized values for path coefficients are obtained using the bootstrapping method, which allows the researcher to evaluate the standard error and significance. The researcher must evaluate the p and t values and confidence intervals before examining the significance of the relationships. After significance is established, relevance of the significant relationships must be assessed. This allows the researcher to determine the importance of each relationship, which is established by examining

the path coefficients. This step is important because the goal of PLS-SEM is to identify significant path coefficients in the structural model and to identify significant and relevant effects. That is, the goal of the structural model assessment is to identify the paths that are significant and the paths that exert the most impact. This assists the researcher in the interpretation of the results, so the researcher can draw meaningful conclusions.

In step 3, the coefficient of determination or R^2 value provides an evaluation of the structural model. The coefficient provides the model's predictive accuracy; R^2 values range from 0 to 1, and higher values indicate a higher level of predictive accuracy. Scholars state that values of 0.75, 0.50, and 0.25 for endogenous latent variables can be considered substantial, moderate, and weak, respectively (Hair, Ringle, & Sarstedt, 2011; Henseler, Ringle, & Sinkovics, 2009). Step 4 includes an evaluation of the effect size (f^2), which allows the researcher to evaluate the impact of an omitted exogenous construct and evaluate if the construct has an impact on the endogenous construct. The final step involves an evaluation of the predictive relevance or Q^2 obtained through a blindfolding procedure. When the model exhibits predictive relevance, it can accurately predict data points of indicators in reflective measurement models (Hair et al., 2014). Q^2 values greater than 0 suggest that the model has predictive relevance, and values of 0 and below shows a lack of predictive relevance (Chin, 1998; Henseler et al., 2009). Next, the q^2 effect size is manually calculated and provides a relative measure of predictive relevance for the endogenous construct being evaluated (Chin, 1998; Henseler et al., 2009). Guidelines for assessing the f^2 and q^2 values state that 0.02, 0.15, and 0.35 represent small, medium, and large effects of the exogenous latent variable on an endogenous construct (Cohen, 1988).

Summary

This chapter discussed the research methodology used in the study. A detailed discussion about the sample, questionnaire development, data collection process, and analysis techniques was presented. Screening questions were included at the beginning of the survey to ensure the correct sample was surveyed (i.e., hotel branded mobile apps users). The questionnaire was developed using established constructs adapted to reflect the context of the study. Demographic questions and technology use questions were included to allow the researcher to develop a sample profile. The questionnaire was built on Qualtrics and data was collected through online panels. PLS-SEM was used to analyze the data to examine the measurement and structural model.

CHAPTER FOUR: FINDINGS

The purpose of this chapter is to present the results of the analysis of the data collected from users of hotel branded mobile applications in July 2017. The discussion starts with the process of data collection and data screening. The characteristics of the study sample are then presented with descriptive statistics. Third, the results of the hypotheses testing are discussed.

Data collection

Data collection for the study was done online. The online questionnaire was built in Qualtrics and distributed by Amazon Mechanical Turk (AMT). Data were collected during the second week of July 2017. The target population of the study was users of hotel branded mobile applications. For respondents to take the survey, they first had to agree to participate in the study. In addition, participants had to meet the minimum requirements to participate in the study. These requirements were assessed by asking participants if they had ever used a hotel branded mobile application. If the response was "no," they were directed to the end of the survey because they did not meet the minimum requirements of the target population. Respondents who met the minimum requirements were compensated $1 for completing the survey. The researcher specified in the request to AMT that 550 questionnaires needed to be collected to conduct the statistical analysis required for the study. Qualtrics showed that a total of 791 questionnaires were completed; however, this number reflects all surveys. Some surveys were started but not completed or started but the participants did not meet the requirements (did not agree to participate in the study or have never used a hotel branded mobile application) these were

removed from the data set. A total of 550 were received from AMT which fulfilled the number of questionnaires requested from AMT and these were screened further.

Data screening

After the data were collected, the data were cleaned to remove any incomplete questionnaires and ineligible participants. Missing data were verified; however, no missing data were found because the instrument was created with "forced responses" for all questions, which means participants cannot continue with the survey until they select a response to the question.

Next, participant engagement was examined by determining if they were disengaged while reading and responding the survey questions; a disengaged participant affects the quality of the data. Disengaged participants were assessed using two methods: attention check questions and response variance. Two attention check questions were included in the survey, and if participants failed to provide the correct answer to either of the questions, the responses for those participants were removed from the data set. Response variance was assessed with the standard deviation of responses for scale items, and respondents who had a standard deviation of less than .5 were removed from the data set because this indicated that they were selecting the same response to all scale item questions (e.g., answering Likert Scale items with the same response for all questions). One item for the construct of continuance intention was reverse coded ("If I could, I would like to discontinue my use of hotel branded mobile apps"), and before data analysis, the item was transformed. After data were cleaned, a total of 478 completed surveys were retained for data analysis. Even though PLS-SEM does not require normal distribution of

the data, they were screened for skewness and kurtosis and no non-normality issues were identified.

The survey included 32 items related to the constructs included in the proposed model. In addition to screening the data for missing information and normality, the researcher examined the content validity. The factor analysis in SMARTPLS 3 revealed that the outer loading for indicator ContInt_3 was in the range for further item examination (0.460). Hair et al. (2011) recommend that outer loading values > 0.40 but < 0.70 require an analysis of the impact of the indicator deletion on the AVE and composite reliability (CR) to determine how removal affects the content validity. After deletion, a review of both AVE and CR showed an increase above recommended thresholds. Table 4 provides AVE and CR comparisons. Therefore, 31 items were retained for data analysis and model testing. The next section discusses the demographic profile of the sample.

Table 4: Item screening (content validity)

Construct	Number of items	Outer Loadings	AVE	CR
Continuance Intention	4	0.460 ContInt3	0.633	0.867
Modification	3	Removed ContInt3	0.782	0.915

Demographic profile

The demographic profile of respondents includes gender, age, marital status, education level, job status, and income. The demographic profile of the respondents was evenly represented for both genders with female respondents representing a little more than half of the participants (54.2%) and males representing 45.8% of the sample. Various age groups were represented in

the sample, with almost 90% between the ages of 25 and 54. The category of 25-34 years of age represented 41.6% of the sample, the 35-45 age group captured almost 30% (28.7%), and the 45-54 age group represented 14.2%. The age groups with the least representation were 18-24, 55-64, and 65-74, with 8.2%, 5%, and 2.3%, respectively.

More than half of the respondents reported their marital status as married (56.1%), and never married was the second most frequent response with 34.1%. The remaining 10% included respondents who reported their marital status as divorced (6.5%), separated (1.9%), or widowed (1.5%). The sample represented a high level of education, with almost 70% of the sample having a college education or higher. More than half of the respondents reported having a college education or professional degree, with 41.4% having a 4-year college degree, 12.6 % having a 2-year degree, and 12.3% having a professional degree. Almost all participants were employed in some capacity. Full-time employment was the most frequently reported status (83.5%) with part-time employment following (9%). Only 2.3% of the participants reported their status as a student. Almost half of the respondents reported a household income of $49,999 or lower (44.3%). The remaining 55.7% of participants reported a household income at the higher end of the annual income spectrum. Table 5 outlines the full demographic profiles of participants.

Table 5: Demographic profile

Variables	Category	Frequency	Percent (%)
Gender	Female	259	54.2
	Male	219	45.8
Age	18 – 24	39	8.2
	25 – 34	199	41.6
	35 – 44	137	28.7
	45 – 54	68	14.2
	55 – 64	24	5
	65 – 74	11	2.3
Marital status	Married or domestic partner	268	56.1
	Never married	163	34.1
	Divorced	31	6.5
	Separated	9	1.9
	Widowed	7	1.5
Education	Some high school	2	.4
	High school graduate or GED equivalent	46	9.6
	Some college	105	22
	2 year college degree	60	12.6
	4 year college degree	198	41.4
	Professional degree	59	12.3
	Doctorate	8	1.7
Job status	Employed full time	399	83.5
	Employed part time	43	9
	Student	11	2.3
	Retired	9	1.9
	Unemployed looking for work	8	1.7
	Unemployed not looking for work	7	1.5
	Disabled	1	.2
Income	Less than $20,000	36	7.5
	$20,000 - $29,999	56	11.7
	$30,000 - $39,999	61	12.8
	$40,000 - $49,999	59	12.3
	$50,000 - $69,999	97	20.3
	$70,000 - $89,999	60	12.6
	$90,000 - $109,999	43	9
	$110,000 - $129,999	26	5.4
	$130,000 - $149,999	17	3.6
	More than $150,000	23	4.8

N= 478

In addition to demographic questions, respondents were asked about their use of mobile technology and mobile applications. A large percentage of the respondents (71%) reported that they have been using mobile devices between 1 and 10 years. In terms of years using mobile applications, more than 80% reported that they have been using mobile applications between 1 and 8 years. Ninety percent (90%) of the respondents reported using a hotel branded mobile application between 1 and 6 times a year, with an even split between 1-2 (44.6%) and 3-6 (45.2%) times a year. Respondents reported that the most commonly used mobile device to make travel arrangements was the smartphone (75.9%). This finding mirrors the current trend identified by industry reports of individuals switching to mobile devices to make their travel arrangements instead of using other traditional means (Peltier, 2016; emarketer, 2016). In addition, almost 95% of the participants use hotel branded mobile applications for leisure travel (48.5%) or leisure and business travel (45.4%).

Statistical Analysis

Path Model Estimation and Measurement Model Assessment

PLS-SEM was used to test the measurement and structural models in a two-stage process in which the measurement model is assessed first to determine the measure's quality. Once the quality of the measurement model has been established, the structural model is evaluated. PLS is a structural equation modeling technique that uses correlation and a principle component method to estimate relationships among constructs (Hair et al., 2014). This study utilized only reflective measurement models; the author seeks to estimate the relationships between the reflective latent

variables and the indicators. Reflective models are evaluated by examining the internal consistency, indicator reliability, and convergent and discriminant validity (Hair et al., 2014).

Factor analysis was used to test the reliability and validity of the reflective measurement models. Hair et al. (2014) outline that measurement models are used to verify internal consistency, indicator reliability, convergent validity, and discriminant validity. First, indicator reliability is assessed by verifying the indicator's outer loadings which should be higher than .708 of the reflective construct items to ensure they are above the recommended threshold values; outer loadings between .40 and .70 should be considered for removal if it improves the CR and AVE (Hair et al., 2014; Hulland, 1999). A review of the outer loadings shows all indicators reached the recommended threshold value. The indicator for mobility (Mob_1) had the smallest value at .776, while the second indicator for word of mouth (WOM_2) had the highest value at .930. Therefore, all indicators for the reflective constructs are above the recommended minimum levels for outer loadings.

Internal consistency is traditionally assessed by Cronbach's alpha; however, it is sensitive to the number of items in the scale, underestimates internal reliability, and prioritizes indicators according to internal reliability (Hair et al., 2014). Because of these limitations, composite reliability (CR) was used to assess internal consistency of the reflective measurement models since it accounts for the outer loadings of the indicator variables. Composite reliability values of .60 to .70 are acceptable for exploratory research; for advanced research, values between .70 and .90 are satisfactory (Bagozzi & Yi, 1988; Nunally & Bernstein, 1994). On the other hand, values below .60 indicate a lack of internal consistency reliability, and values above .95 are not desirable because they indicate that all the indicator variables are measuring the same

phenomenon and are unlikely to be a valid measure of the construct (Hair et al., 2014). A review of composite reliability for each construct shows that all composite reliabilities are within the recommended thresholds, with the lowest CR value reported for confirmation of expectations at .893 and the highest value at .943 for perceived enjoyment, demonstrating that internal consistency was reached.

Convergent validity is the extent to which a measure correlates to other measures of the same construct. To evaluate convergent validity, the researcher must examine the average variance extracted (AVE) at the construct level. It is recommended that AVE be .50 or higher, which indicates that the construct explains more than half of the variance (Bagozzi & Yi, 1988). A review of the AVE values shows that all constructs met the recommended threshold, with the lowest AVE values reported for the perceived responsiveness construct at .728, which is well above the recommended threshold. Table 6 provides the indicator reliability, internal consistency reliability, and convergent validity measures.

Table 6: Reliability and validity values for Reflective Measurement Models

Latent variable	Indicators	Loadings	Indicator Reliability	Internal Consistency Reliability	Convergent validity
		Outer loadings	Outer loadings^2	Composite reliability (CR)	AVE
Usefulness	Useful_1	0.864	0.746	0.928	0.763
	Useful_2	0.881	0.776		
	Useful_3	0.893	0.797		
	Useful_4	0.855	0.731		
Confirmation	Conf_1	0.864	0.746	0.893	0.942
	Conf_2	0.908	0.824		
	Conf_3	0.799	0.638		
Mobility	Mob_1	0.776	0.602	0.922	0.747
	Mob_2	0.880	0.774		
	Mob_3	0.890	0.792		
	Mob_4	0.904	0.817		
Personalization	Personal_1	0.875	0.766	0.914	0.780
	Personal_2	0.873	0.762		
	Personal_3	0.902	0.814		
Responsiveness	Responsv_1	0.858	0.736	0.914	0.728
	Responsv_2	0.865	0.748		
	Responsv_3	0.857	0.734		
	Responsv_4	0.832	0.692		
Satisfaction	Satisf_1	0.874	0.764	0.932	0.773
	Satisf_2	0.895	0.801		
	Satisf_3	0.886	0.785		
	Satisf_4	0.861	0.741		
Enjoyment	Enjoy_1	0.920	0.846	0.943	0.847
	Enjoy_2	0.925	0.856		
	Enjoy_3	0.916	0.839		
Continuance Intention	ContInt_1	0.885	0.783	0.915	0.782
	ContInt_2	0.861	0.741		
	ContInt_4	0.907	0.823		
WOM	WOM_1	0.913	0.834	0.942	0.843
	WOM_2	0.930	0.865		
	WOM_3	0.912	0.832		

The last step in assessing the measurement model is to verify discriminant validity, which is evaluated using the Fornell-Larcker criterion and the cross-loadings. The Fornell-Larcker criterion states that the square root of the AVE of each construct should be higher than the construct's highest correlation with any other construct in the model (Hair et al., 2014). A review of the Fornell-Larcker criterion shows that all square roots of AVEs for the reflective constructs are higher than the correlations of the constructs with other latent variables in the path model. In terms of cross-loadings, all the indicators for a construct should load higher for their respective construct than other constructs. A review of the cross-loadings shows that the highest value for each indicator corresponds to its construct, with cross-loadings with other constructs being lower. Table 7 shows the Fornell-Larcker criterion and Table 8 shows cross-loadings.

Table 7: Fornell-Larcker criterion discriminant validity assessment

	Conf	**ContInt**	**Enjoy**	**Mob**	**Personal**	**Responv**	**Satisf**	**Useful**	**WOM**
Conf	**0.858**								
ContInt	0.703	**0.884**							
Enjoy	0.673	0.599	**0.920**						
Mob	0.677	0.776	0.470	**0.864**					
Personal	0.704	0.719	0.608	0.749	**0.883**				
Responsv	0.669	0.744	0.497	0.814	0.766	**0.853**			
Satisf	0.726	0.801	0.661	0.734	0.742	0.753	**0.879**		
Useful	0.699	0.750	0.557	0.743	0.722	0.756	0.714	**0.873**	
WOM	0.720	0.733	0.745	0.630	0.691	0.635	0.783	0.665	**0.918**

Table 8: Cross-loadings

	Conf	ContInt	Enjoy	Mob	Personal	Responv	Satisf	Useful	WOM
Conf_1	0.864	0.587	0.596	0.529	0.546	0.520	0.620	0.595	0.632
Conf_2	0.908	0.600	0.610	0.566	0.603	0.549	0.621	0.582	0.636
Conf_3	0.799	0.624	0.522	0.652	0.667	0.659	0.629	0.624	0.585
ContInt_1	0.650	0.885	0.556	0.728	0.661	0.695	0.738	0.703	0.663
ContInt_2	0.614	0.861	0.510	0.627	0.602	0.594	0.643	0.631	0.603
ContInt_4	0.601	0.907	0.523	0.698	0.642	0.680	0.739	0.655	0.674
Enjoy_1	0.614	0.589	0.920	0.456	0.555	0.476	0.637	0.543	0.696
Enjoy_2	0.629	0.564	0.925	0.443	0.598	0.472	0.610	0.510	0.696
Enjoy_3	0.614	0.498	0.916	0.394	0.525	0.422	0.577	0.482	0.661
Mob_1	0.464	0.579	0.268	0.776	0.560	0.632	0.505	0.576	0.400
Mob_2	0.638	0.718	0.442	0.880	0.715	0.754	0.675	0.677	0.597
Mob_3	0.594	0.659	0.433	0.890	0.661	0.688	0.647	0.639	0.562
Mob_4	0.622	0.712	0.450	0.904	0.642	0.732	0.686	0.670	0.587
Personal_1	0.583	0.621	0.511	0.643	0.875	0.658	0.635	0.623	0.604
Personal_2	0.612	0.608	0.532	0.637	0.873	0.670	0.646	0.605	0.612
Personal_3	0.667	0.674	0.568	0.702	0.902	0.701	0.683	0.683	0.613
Respons_1	0.574	0.646	0.453	0.662	0.646	0.858	0.647	0.686	0.575
Respons_2	0.613	0.642	0.467	0.694	0.678	0.865	0.686	0.657	0.584
Respons_3	0.541	0.612	0.378	0.716	0.633	0.857	0.603	0.618	0.479
Respons_4	0.550	0.637	0.391	0.709	0.656	0.832	0.626	0.615	0.519
Sat_1	0.615	0.731	0.522	0.656	0.670	0.693	0.874	0.657	0.691
Sat_2	0.650	0.708	0.569	0.670	0.659	0.667	0.895	0.634	0.707
Sat_3	0.608	0.708	0.539	0.670	0.630	0.667	0.886	0.618	0.638
Sat_4	0.679	0.669	0.694	0.586	0.649	0.620	0.861	0.602	0.716
Useful_1	0.566	0.635	0.479	0.610	0.591	0.651	0.596	0.864	0.569
Useful_2	0.616	0.660	0.522	0.636	0.651	0.647	0.613	0.881	0.585
Useful_3	0.635	0.660	0.517	0.659	0.642	0.664	0.645	0.893	0.596
Useful_4	0.623	0.667	0.426	0.692	0.637	0.682	0.640	0.855	0.573
WOM_1	0.683	0.684	0.698	0.591	0.635	0.597	0.744	0.620	0.913
WOM_2	0.660	0.687	0.683	0.595	0.648	0.602	0.714	0.624	0.930
WOM_3	0.640	0.647	0.670	0.547	0.619	0.549	0.699	0.587	0.912

Structural Model

The structural model represents the underlying theoretical path model, and its assessment allows the researcher to determine how well the data support the theory and decide if the theory has been empirically confirmed. After the measurement model is examined for reliability and validity, the structural model can be assessed. There are five steps to assess the structural model: 1) collinearity issues, 2) significance and relevance of the structural relationships, 3) level of R^2 values, 4) the f^2 effect size, and 5) predictive relevance Q^2 and the q^2 effect size (Hair et al., 2014).

First, collinearity must be assessed since the estimation of the path coefficients in the structural model is based on ordinary least square regressions of each endogenous latent variable on its corresponding predecessor constructs (Hair et al., 2014). The assessment of the structural model for collinearity issues shows that there are no collinearity issues as all VIF values are below the recommended threshold of 5 (Hair et al., 2014). Since there are no collinearity issues, the researcher can proceed to assess the structural model. First, R^2 is evaluated; this coefficient is a measure of the model's predictive accuracy. Scholars state that values of 0.75, 0.50, and 0.25 for endogenous latent variables can be considered substantial, moderate, and weak, respectively (Hair et al., 2011; Henseler et al., 2009). A review of the R^2 value shows that coefficients for the model are moderate: continuance intention (.651), enjoyment (.509), satisfaction (.727), and WOM (.724). Bootstrapping was performed with 300 iterations and 5,000 subsamples to evaluate the path coefficients of the hypothesized relationships among constructs. The results show that all, but two path coefficients were significant at the 5% significance level ($\alpha = .05$).

The relationship between responsiveness and enjoyment (t= .717; α > .05) and usefulness and satisfaction (t= 1.483; α > .05) were not found to be significant.

Next, effect size f^2 allows the researcher to assess an exogenous construct's (i.e., perceived usefulness, confirmation of expectations, mobility, personalization, and responsiveness) contribution to an endogenous latent variable's R^2 value (i.e., satisfaction and enjoyment, continuance intention, and WOM). That is, f^2 effect size measures the change in the R^2 value when an exogenous variable is excluded from the model. Therefore, the f^2 effect size is used to determine if the excluded construct has a substantial impact of R^2 values on the endogenous constructs. Recommended guidelines to assess f^2 values are 0.02, 0.15, and 0.35 to indicate small, medium, and large effects, respectively (Cohen, 1988; Hair et al., 2014). A review of the f^2 effect size values shows that satisfaction has a large effect in producing the R^2 for continuance intention (0.845). On the other hand, a medium effect size was found for confirmation of expectation on producing R^2 for perceived enjoyment (0.207). The same medium effect was found for perceived enjoyment on WOM (0.285) and satisfaction on WOM (0.146). The remaining f^2 effect size values provide evidence that most of the predecessors (exogenous latent variables) only exert a small effect on the endogenous variables as shown in the R^2 values in Table 10.

Next, a blindfolding procedure was performed to assess the predictive relevance of the structural model. It was performed with omission distance (D=7) for all endogenous constructs. The blindfolding report shows that construct cross-validated redundancy provides the Stone-Geisser's Q^2 values, which provides the predictive relevance; all values are above zero, which

supports the model's predictive relevance regarding endogenous latent variables (Hair et al., 2014). Table 9 shows the Q^2 values.

Table 9: Results of Predictive Accuracy (R^2) and Predictive Relevance (Q^2)

Endogenous latent variable	R^2 Value	Q^2 Value
ContInt	0.651	0.479
Enjoy	0.509	0.399
Satisf	0.727	0.521
WOM	0.724	0.574

The final assessment included a review of the q^2 effect size; this value provides a relative measure of predictive relevance for the endogenous construct being evaluated. Values of 0.02, 0.15, and 0.35 indicate a small, medium, or large predictive relevance for an endogenous variable (Hair et al., 2014). In this instance, a review of the q^2 effect size shows that only satisfaction on continuance intention has a strong effect in producing Q^2 or predictive relevance for continuance intention. On the other hand, a medium q^2 effect size was found for confirmation of expectations on perceived enjoyment (0.135) and perceived enjoyment on WOM (0.143). The remaining q^2 effect sizes were deemed to have a small effect on the predictive relevance of endogenous variables. Table 10 shows a summary of path coefficients f^2 and q^2.

Table 10: Summary of path coefficients, predictive accuracy effect size (f^2), and predictive relevance (q^2)

Satisfaction				Enjoyment			
	Path coefficients	f^2 effect size	q^2 effect size		Path coefficients	f^2 effect size	q^2 effect size
Perceive usefulness	0.076	0.010	0.000	Perceive usefulness	0.146	0.016	0.005
Confirmation	0.137	0.027	0.008	Confirmation	0.493	0.207	0.135
Mobility	0.189	0.038	0.013	Mobility	-0.175	0.020	0.012
Personalization	0.114	0.017	0.004	Personalization	0.324	0.071	0.045
Responsiveness	0.239	0.057	0.021	Responsiveness	-0.048	0.004	-0.002
Satisfaction				Satisfaction			
Enjoyment	0.249	0.115	0.046	Enjoyment			
Continuance intention				Continuance intention			

Continuance Intention				WOM			
	Path coefficients	f^2 effect size	q^2 effect size		Path coefficients	f^2 effect size	q^2 effect size
Perceive usefulness				Perceive usefulness			
Confirmation				Confirmation			
Mobility				Mobility			
Personalization				Personalization			
Responsiveness				Responsiveness			
Satisfaction	0.720	0.845	0.415	Satisfaction	0.357	0.146	0.070
Enjoyment	0.122	0.026	0.012	Enjoyment	0.375	0.285	0.143
Continuance intention				Continuance intention	0.221	0.065	0.031

Hypotheses testing

The results of the structural model show the influence of cognitive and affective factors on users' post-adoptive behavioral intention (i.e., continuance intention and WOM). Five factors were examined in the cognitive phase, two factors were examined in the affective phase, and the two outcome variables were used for the conative phase of the proposed model. As discussed in

Chapter 2, 16 hypotheses were drafted that outline the relationships among cognitive, affective, and conative phase factors. The results for each hypothesis are discussed below. Table 11 provides summary of hypotheses and results.

Table 11: Summary of Study Hypotheses and Results

Hypotheses	Results
Hypothesis 1: Perceived usefulness of a hotel branded mobile app positively impacts user's satisfaction with the mobile app.	Not supported
Hypothesis 2: Perceived usefulness of a hotel branded mobile app positively impacts user's perceived enjoyment of the mobile app.	Supported
Hypothesis 3: Confirmation of expectations of a hotel branded mobile app positively impacts user's satisfaction with the mobile app.	Supported
Hypothesis 4: Confirmation of expectations of a hotel branded mobile app positively impacts user's perceived enjoyment of the mobile app.	Supported
Hypothesis 5: Perceived mobility of the hotel branded mobile app positively impacts user's satisfaction with a mobile app.	Supported
Hypothesis 6: Perceived mobility of the hotel branded mobile app positively impacts user's perceived enjoyment of a mobile app.	Not supported
Hypothesis 7: Perceived personalization of the hotel branded mobile app positively impacts user's satisfaction with the mobile app.	Supported
Hypothesis 8: Perceived personalization of the hotel branded mobile app positively impacts user's perceived enjoyment of the mobile app.	Supported
Hypothesis 9: Perceived responsiveness of the hotel branded mobile app positively impacts user's satisfaction with a mobile app.	Supported
Hypothesis 10: Perceived responsiveness of the hotel branded mobile app positively impacts user's perceived enjoyment of a mobile app.	Not supported
Hypothesis 11: Satisfaction with a hotel branded mobile application positively impacts user's continuance intention.	Supported
Hypothesis 12: Satisfaction with a hotel branded mobile application positively impacts WOM.	Supported
Hypothesis 13: Perceived enjoyment of a hotel branded mobile application positively impacts user's satisfaction with a mobile app.	Supported
Hypothesis 14: Perceived enjoyment of a hotel branded mobile application positively impacts user's continuance intention.	Supported
Hypothesis 15: Perceived enjoyment of a hotel branded mobile application positively impacts WOM.	Supported
Hypothesis 16: Hotel branded mobile applications continuous usage intentions exert a positive effect on word of mouth (WOM).	Supported

Hypothesis 1 stated that the perceived usefulness of a hotel branded mobile application positively impacts users' satisfaction with the mobile app. The path coefficient between the variables identified was not statistically significant, finding that perceived usefulness does not exert an influence on satisfaction (t-value= 1.438, p> .05). The results do not support Hypothesis 1. This finding is interesting considering the results of previous studies, in which usefulness has overwhelmingly been found to impact user satisfaction.

Hypothesis 2 stated that perceived usefulness of a hotel branded mobile app positively impacts users' perceived enjoyment of the mobile app. The results show that the path between perceived usefulness and perceived enjoyment is statistically significant (t-value= 2.538, p< 0.05). The findings support Hypothesis 2. The relationship between usefulness and enjoyment has been previously examined in continuance research by examining the path between enjoyment and usefulness or a direct effect on continuance intention, and the results of this study will expand understanding of the influence of perceived usefulness on post-adoptive behavior research.

Hypothesis 3 stated that confirmation of expectations of a hotel branded mobile app positively impacts users' satisfaction with the app. The relationship between confirmation of expectations and satisfaction was found to be significant (t-value= 2.888, p< 0.01). Therefore, hypothesis 3 is supported. The findings are similar to findings in previous studies.

Hypothesis 4 stated that confirmation of expectations of a hotel branded mobile app positively impacts users' perceived enjoyment of the app. According to the results, there is a significant relationship between the variables (t-value= 8.253, p< 0.001), providing support for

Hypothesis 4. The results are in line with previous studies in the IS context, providing additional proof that this proposed relationship is important in post-adoptive behavior research.

Hypothesis 5 proposed that perceived mobility of the hotel branded mobile app positively impacts users' satisfaction with the app. The statistical findings show that mobility does have a positive impact on satisfaction (t-value= 3.205, $p< 0.001$). The results provide statistical evidence to support Hypothesis 5. The results differ from those of previous studies examining mobility. The results suggest a need for further review and better understanding of the contextual factors in the study of IS and post-adoptive behavior (continuance intention research).

Hypothesis 6 stated that perceived mobility of the hotel branded mobile app positively impacts users' perceived enjoyment of the app. The results indicate that perceived mobility has a significant but negative impact on perceived enjoyment as demonstrated by the path coefficient ($\beta= -0.175$), t-value= 2.829, $p< 0.01$). Since the results indicate a negative relationship between mobility and enjoyment, Hypothesis 6 is not supported.

Hypothesis 7 stated that personalization of the hotel branded mobile app positively impacts users' satisfaction with the app. The statistical results show that personalization has a statistically significant impact on satisfaction (t-value= 2.167, $p< 0.05$). The results support Hypothesis 7. The literature shows similar results, which demonstrate the importance of the mobile app's characteristics.

Hypothesis 8 stated that personalization of the hotel branded mobile app positively impacts users' perceived enjoyment of the app. The results indicated a statistically significant relationship between the two constructs (t-value= 4.995, $p< 0.001$). Consequently, the results support Hypothesis 8. Even though the relationship between personalization and perceived

enjoyment has not been explored extensively in continuance intention research, the author suggests that this relationship needs to be examined because personalization is a system characteristic that should be exploited in this context as it can impact users' experiences.

Hypothesis 9 stated that perceived responsiveness of the hotel branded mobile app positively impacts users' satisfaction with the app. The statistical results support Hypothesis 9, finding a statistically significant relationship between the variables (t-value= 4.038, $p< 0.001$). Studies examining responsiveness related to continuance research are limited, so these results assist in expanding the discussion related to the impact of responsiveness on post-adoptive behaviors.

Hypothesis 10 stated that responsiveness of the hotel branded mobile app positively impacts users' perceived enjoyment of the app. The statistical results demonstrate that responsiveness does not have an impact on perceived enjoyment (t-value= 0.717, $p> .05$), so the results do not support Hypothesis 10. Previous studies have not thoroughly examined the influence of responsiveness on post-adoptive behavior research. Because of the limited understanding of the impact of this construct, the researcher suggested adding it to the study to add to the body of knowledge of factors impacting post-adoptive behavior.

Hypothesis 11 stated that satisfaction with a hotel branded mobile application positively impacts users' continuance intention. The results of the statistical analysis provide support for Hypothesis 11 with a statistically significant path coefficient (t-value= 23.705, $p< .001$). The original ECM model hypothesized the relationship between satisfaction and continuance intention and the results continue to support its relevance.

Hypothesis 12 stated that satisfaction with a hotel branded mobile application positively impacts WOM, and the path coefficient provides support for Hypothesis 12 (t-value= 7.019, p< .001). Previous studies show conflicting results, so it is necessary to further investigate the impact of satisfaction on WOM.

Hypothesis 13 stated that perceived enjoyment of a hotel branded mobile application positively impacts users' satisfaction with the mobile app. Statistically significant results were found for the relationship between perceived enjoyment and user satisfaction (t-value= 5.503, p< 0.001), so the results support Hypothesis 13.

Hypothesis 14 stated that perceived enjoyment of a hotel branded mobile application positively impacts users' continuance intention. The path coefficient provides support for Hypothesis 14 with a t-value= 3.792, p< .001. Results from previous studies offer conflicting results of the relationship between enjoyment and continuance intention, providing further evidence that this relationship needs further investigation.

Hypothesis 15 stated that perceived enjoyment of a hotel branded mobile application positively impacts WOM. The results of the path coefficient show that there is a statistically significant relationship, t-value= 8.465, p< .001. The results support Hypothesis 15. The relationship between enjoyment and WOM has not been explored in depth in previous studies using the ECM, so it warrants further investigation.

Hypothesis 16 stated that hotel branded mobile applications' continuous usage intentions exert a positive effect on word of mouth (WOM). The statistical results show the path coefficient supports Hypothesis 16, t-value= 4.952, p< .001. The results are in agreement with previous

studies that have examined the same relationship. Results of the structural model are outlined in Figure 5.

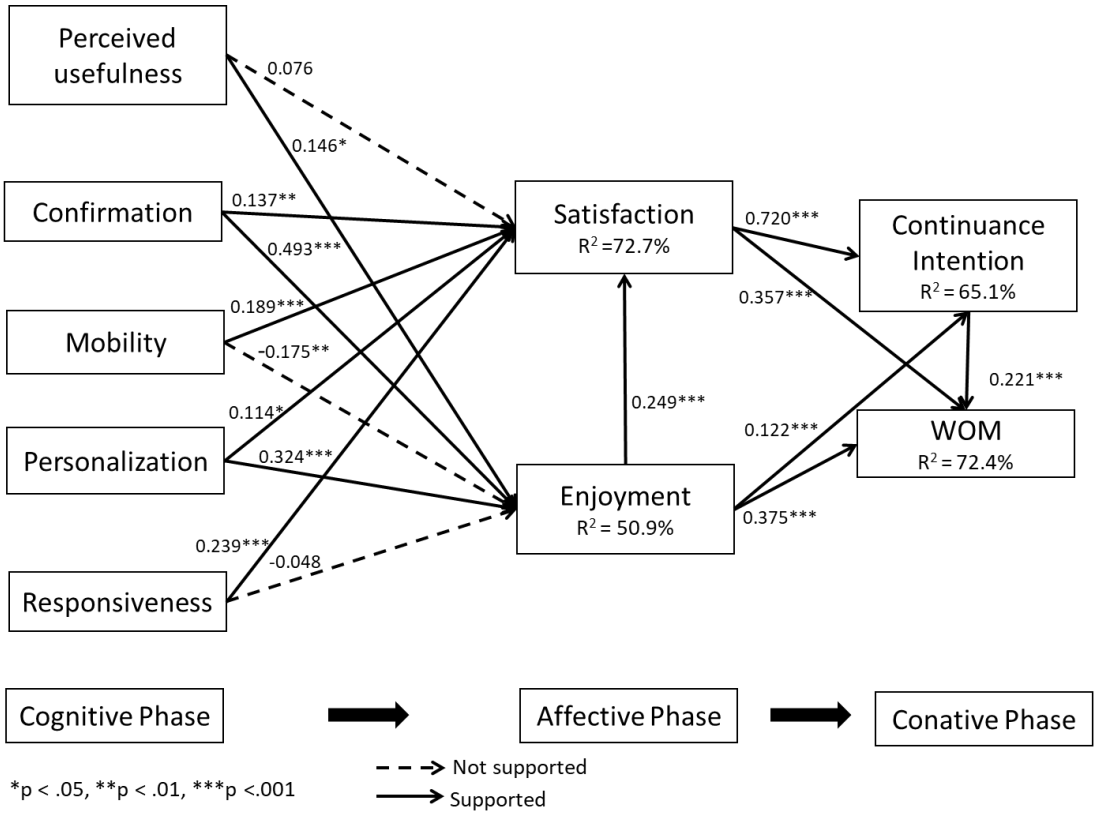

Figure 5: PLS Structural Model Results

Summary of results

As stated, the results show that satisfaction and perceived enjoyment are influenced by confirmation of expectations, perceived mobility and perceived personalization. The results lend support for hypotheses 3, 4, 5, 7 and 8. Even though mobility was found to have a statistically significant impact on perceived enjoyment, Hypothesis 6 was not supported because the influence of mobility on perceived enjoyment was found to be negative which means that mobility has a negative impact on perceived enjoyment of hotel branded mobile applications (t-

value= 2.829, p< 0.01). This is an interesting fact as the literature has shown that mobility has a positive impact on enjoyment. In terms of the remaining cognitive factors of perceived usefulness and perceived responsiveness, perceived usefulness (t-value= 1.483, p> 0.05) was not found to influence satisfaction but it positively influenced perceived enjoyment (t-value= 2.538, p< 0.01). The reverse was found for responsiveness, as the results show that it influenced satisfaction (t-value= 4.038, p< 0.001) but not perceived enjoyment (t-value= .717, p> 0.05) of hotel branded mobile applications. Therefore, the results provided support Hypothesis 2 and 9; but not Hypothesis 1 and 10. In addition, the influence on perceived enjoyment on satisfaction was examined, the results show that significant influence thus supporting Hypothesis 13.

The results of the influence of affective factors of satisfaction and perceived enjoyment on the outcome variables of continuance intention and WOM show all positive and statistically significant relationship. The results provide support for Hypotheses 11, 12, 14, 15 and 16. Both perceived enjoyment (t-value= 3.792, p< .001) and satisfaction (t-value= 23.705, p< .001) were found to influence continuance intention. However, satisfaction was found to exert the most influence on continuance intention. In terms of the factors influencing WOM, perceived enjoyment (t-value= 8.465, p< .001) has a slightly higher impact than satisfaction (t-value= 7.019, p< .001). On the other hand, continuance intention (t-value= 4.952, p< .001) was the least influential construct on WOM behavior. In terms of predictive accuracy, the model was able to explain 65.1% of hotel branded mobile app continuance intention and 72.4% of WOM. In addition, confirmation of expectations, perceived mobility, personalization, responsiveness and perceived enjoyment explain 72.7% of satisfaction. On the other hand, perceived usefulness,

confirmation of expectations, mobility, and personalization explain 50.9% of perceived enjoyment. Table 12 provides a summary of the results of the structural model path coefficients.

Table 12: Significance Testing Results of the Structural Model Path Coefficients

Relationships	Path coefficient	t-values	Significance levels	p-values	Confidence Intervals
H1: Perceived usefulness → satisfaction	0.076	1.483	NS	0.138	[-.025, .176]
H2: Perceived usefulness → perceived enjoyment	0.146	2.538	*	0.011	[.033, .26]
H3: Confirmation → satisfaction	0.137	2.888	**	0.004	[.043, .231]
H4: Confirmation → perceived enjoyment	0.493	8.253	***	0.000	[.374, .609]
H5: Mobility → Satisfaction	0.189	3.205	***	0.001	[.076, .304]
H6: Mobility → Perceived enjoyment	-0.175	2.829	**	0.005	[-.299, -.053]
H7: Personalization → satisfaction	0.114	2.167	*	0.030	[.01, .217]
H8: Personalization → Perceived enjoyment	0.324	4.995	***	0.000	[.198, .453]
H9: Responsiveness → Satisfaction	0.239	4.038	***	0.000	[.125, .359]
H10: Responsiveness → Perceived enjoyment	-0.048	0.717	NS	0.473	[-.18, .09]
H11: Satisfaction → Continuance intention	0.720	23.705	***	0.000	[.659, .779]
H12: Satisfaction → WOM	0.357	7.019	***	0.000	[.255, .458]
H13: Perceived enjoyment → Satisfaction	0.249	5.503	***	0.000	[.163, .34]
H14: Perceived enjoyment → Continuance Intention	0.122	3.792	***	0.000	[.057, .187]
H15: Perceived enjoyment → WOM	0.375	8.465	***	0.000	[.285, .463]
H16: Continuance intention → WOM	0.221	4.952	***	0.000	[.135, .309]

*p < .05, **p < .01, ***p <.001, NS= Not Significant

Summary

This chapter presented the results of the quantitative research, which included a discussion of the data screening, descriptive statistics, and measurement and structural model analysis. A total of 550 surveys were collected after data was screened only 478 were utilized for the data analysis. Statistically significant relationships between cognitive and affective factors on the conative factors of the proposed model were found, with factors directly and indirectly impacting continuance intention and WOM. All but three of the proposed hypotheses were supported. The proposed relationship between perceived usefulness and satisfaction was not supported which is contrary to previous findings. Similar results were found for the relationship between perceived responsiveness and perceived enjoyment. The relationship between perceived mobility and enjoyment was found to be significant but the results showed a negative relationship the constructs.

CHAPTER FIVE: DISCUSSION AND CONCLUSION

This chapter includes a summary of the study methods and a discussion of the study results in relation to the proposed theoretical model. In addition, theoretical and practical implications of the results are discussed. The chapter closes with limitations and suggestions for future research.

Post-adoptive behavior research has focused on the factors that influence a user's decision to continue to use an IS. Research in this area is limited in the hospitality industry and a topic that warrants the attention of hospitality scholars as it may have long-term effects of the financial success of an organization and the proper implementation and management of mobile applications by lodging firms. Research in the hospitality industry, especially the lodging industry, has been focused on the implementation of mobile apps and the features provided, leaving a dearth of knowledge in the understanding of the consumer's actual use and post-adoptive behaviors related to mobile apps. This study seeks to contribute to this gap in knowledge.

This study adds to the body of knowledge related to post-adoptive behaviors of continuance intention and WOM. The study expands the ECM by adding contextual factors related to characteristics of the information system. In addition, the model was extended by adding a second outcome variable of WOM. This allows the researcher to add to the discussion on continuance research and examine the impact of continuance intention on other post-adoptive behaviors.

In terms of practical implications, this study identified the most influential antecedents to post-adoptive behaviors. When a firm implements a mobile app, it must do so with the goal of

addressing the users' needs. Consequently, needs can only be addressed if the users find it helpful in addressing their concerns or achieving desired tasks. That is, users decide to download and use an app because it helps them achieve a goal. Once utility is achieved, satisfaction is likely to be reached. Increasing the utility of an app improves satisfaction, which can lead to the firm's desired post-adoptive behaviors of continuance intention and recommendations.

Summary of Study Methods

The purpose of this study was to investigate the cognitive and affective factors influencing consumers' decision-making process to continue using and recommend a hotel branded mobile app. To achieve this goal, the factors that influence post-adoptive behavior were identified and the theoretical model was tested.

Consistent with consumer behavior literature, the proposed theoretical model posited that the cognitive phase influences the affective phase of consumer behavior, which in turn influences the conative behavior of the consumer. Specifically, the author proposed that the cognitive phase involves users' rational perceptions and judgements. The proposed model included perceived usefulness, confirmation of expectations, perceived mobility, personalization, and responsiveness, which represent the contextual factors specific to the study. Affective factors included satisfaction and perceived enjoyment, which represent the feelings that emerge from the evaluation of the service. For the conative phase or behavioral intention, the model included the post-adoptive behavior constructs of continuance intention and WOM. To explore the relationships proposed in the conceptual model, the study used a quantitative methodology.

To obtain the data necessary for the quantitative analysis, a questionnaire was developed, borrowing items from previously developed scales to collect information on the constructs of interest. The online questionnaire was developed in Qualtrics and distributed through Amazon Mechanical Turk (AMT). Data were collected in July 2017 from users of hotel branded mobile applications. A total of 478 questionnaires were retained for data analysis.

After data collection was finalized, the data were entered in SPSS v 22.0, where they were screened for missing information, disengaged participants, and skewness and kurtosis. Descriptive statistics allowed a sample profile to be developed, and quantitative analysis was performed to test the measurement and structural models through PLS-SEM. Data analysis to test the proposed hypotheses was performed using SmartPLS3. A two-step process was followed in which the measurement model was tested first to evaluate the reliability and validity of the construct measures. Assessing the measurement model is necessary because it allows the researcher to empirically test the relationships between the indicators and constructs. The structural model revealed no issues with validity and reliability, which allowed the researcher to examine the structural model; this examines the relationships between constructs. The next section includes a discussion of the structural model as it relates to the proposed theoretical model.

Discussion of Results

The proposed theoretical model was tested through PLS-SEM. PLS-SEM is the appropriate analysis for the study because the focus is the prediction and explanation of target constructs (Hair et al., 2014). PLS-SEM is a two-step process, with an assessment of the

theoretical model conducted by examining the measurement model followed by an assessment of the structural model. Assessment of the theoretical model allowed the researcher to determine how well the data support the theory, and if the theory has been empirically confirmed, a review of the results showed no validity or reliability issues (Hair et al., 2014). Assessment of the structural model found no issues with collinearity, and significant and relevant structural model relationships with predictive accuracy and relevance. The results of the structural model revealed that all, but three hypotheses were supported; Table 11 in Chapter 4 provides a summary of the hypotheses and results.

The model shows that 65.1% of continuance intention was explained by satisfaction and perceived enjoyment. The findings show that satisfaction exerts the most influence on continuance intention. On the other hand, 72.4% of WOM was explained by continuance intention, satisfaction, and enjoyment. The path coefficients show that enjoyment is the most influential aspect and continuance intention the least influential aspect on likelihood to recommend (WOM). Overall, the model showed that satisfaction is the most salient factor that assists in influencing users' post-adoptive behaviors. That is, for consumers to continue to use and recommend the hotel branded mobile app, they must first be satisfied with their app experience. A dissatisfied user is likely to use the app once and then abandon it. For firms implementing mobile apps in the lodging industry, they have to focus on user satisfaction as their main goal. Managers that do not focus on satisfaction are likely to be left with an app that is used once and then abandoned and a capital expenditure that did not produce the desired results of an improved consumer experience. Since this model proposed that cognitive and affective factors

influence the conative phase (behavioral intention) of consumer behavior, a detailed discussion of all proposed hypotheses is warranted.

Consistent with the original ECM, the theoretical model proposed that users' perceived usefulness of a mobile application will have a positive influence on users' satisfaction (H1); however, the current study was not able to establish support for this. This finding is contrary to previous studies in similar and other contexts related to IS, which have found that perceived usefulness impacts satisfaction (Barnes & Vidgen, 2014; Bhattacherjee, 2001b; Gwebu, Wang, & Guo, 2014; Limayem & Cheung, 2011; Oghuma et al., 2016; Zhong et al., 2015). Scholars have stated that perceived usefulness is an important predecessor to satisfaction since a system that it is useful will lead to user satisfaction. However, the results of this study do not support previous findings. In light of previous research, the findings are intriguing because the researcher expected that a hotel branded mobile app would be considered useful by users to achieve desired tasks. The results may stem from the infancy in app feature implementation by hotel branded mobile apps. Previous research shows that basic features are implemented; however, based on the findings of this study, we may conclude that the features do not fulfill the needs of the users, and therefore the app users may not find it useful to complete their desired tasks. This aspect should be investigated further through open-ended questions about the usefulness aspect in this context and the specific needs of the users. On the other hand, the relationship between usefulness and perceived enjoyment was supported (H2). The results show that perceived usefulness exerts a positive effect on perceived enjoyment, and these results expand the body of knowledge as continuance intention research has examined the relationship from enjoyment to perceived usefulness (Kang & Lee, 2014; Kim, Hwang, Zo, & Lee, 2014), but not the reverse as

proposed in the hypothesis. The results show that usefulness indeed exerts an influence on the perceived enjoyment of a hotel branded mobile app. The results lead scholars to understand the importance of highlighting the useful aspects of the mobile app because it leads to users' enjoyment of the app, which can ultimately impact post-adoptive behavior (continuance intention and WOM).

The theoretical model proposed and found support for two relationships between the confirmation of expectations and users' satisfaction (H3) and perceived enjoyment (H4) with the hotel branded mobile app. As found in previous studies, the results highlight the importance of ensuring that users' expectations are confirmed when engaging with hotel branded mobile applications. That is, if users' expectations are not met, then satisfaction with its use will be impacted (Barnes & Vidgen, 2014; Li & Liu, 2014; Oghuma et al., 2016; Zhong et al., 2015). Consumers adopt a mobile app to assist them in achieving a goal or performing a task, and a mobile app that does not help with those goals becomes a nuisance and a waste of time, which leads to dissatisfaction. For the firm, users' negatively confirmed expectations have long-term consequences from the loss of a user to a potential loss of business. Similarly, Hypothesis 4 proposed that confirmation of expectations impacts perceived enjoyment. Previous studies show the same results as those found in the current study (Alraimi, Zo, & Ciganek, 2015; Oghuma et al., 2016; Wang, Oh, Wang, & Yuan, 2013). The results support previous studies that emphasize the importance of confirmation of users' expectations and their effect on perceived enjoyment by leading scholars. That is, if users' expectations of the hotel branded mobile application are not met, this will affect both satisfaction and enjoyment, which has a negative impact on continuance behavior and other post-adoption behaviors such as WOM.

The current model found that users' perception of mobility impacts their satisfaction with a hotel branded mobile app (H5). However, previous studies have found that there is no relationship between perceived mobility and satisfaction when studied as part of quality assessment (Li, Liu, & Wei, 2017). The results of the current study allow for a better understanding of the impact contextual factors have on users' satisfaction. Mobility allows users to perform tasks on the go without being tied to a computer. Highlighting the mobility aspect of being able to perform tasks at any time and on the go, helps the users understand the value of using the mobile app. This is especially relevant during travel and the current trend of consuming information on the go. This also translates to the hotel industry by allowing users to perform hotel-related tasks such as mobile check-in, mobile phone as room key, contact concierge, book spa, and make restaurant reservations, among other tasks. That is, a practitioner who is able to illustrate and highlight the benefits of mobility is likely to capture users' attention and influence their satisfaction with the app experience. In addition, the result expands the body of knowledge of post-adoptive behavior by introducing researchers to the idea of exploring the impact of contextual factors as an independent construct and not as part of quality assessment on continuance behavior research. The second relationship examined in the study, between mobility and perceived enjoyment, did not have support (H6). These results differ from previous literature since a positive relationship between mobility and perceived enjoyment has been found (Li et al., 2017; Yen & Wu, 2016). The results are intriguing because mobility is a distinctive characteristic of mobile applications, so it was expected to impact users' enjoyment of mobile applications. The results were contrary to what was expected because of the ubiquitous nature of mobile technology. That is, mobility as a function of mobile technology is an aspect that most

consumers use to assist in daily decision-making. Because of its widespread use and constant availability, mobility may be an aspect that users do not think about on a daily basis. Therefore, a lack of access to information on the go may be an aspect that is only reflected on when it is not readily available. It should be expected that once mobility is removed, it will negatively influence the user experience.

The theoretical model found support for the contextual factor of personalization and its impact on user satisfaction (H7) and perceived enjoyment (H8) with the hotel branded mobile app. The results are in accordance with previous studies in which personalization has been found to have a direct impact on satisfaction (Park, 2014) and personalization as a component of perceived benefits (Barnes & Vidgen, 2014). Studies examining the impact of personalization on satisfaction have found a positive relationship (Park, 2014). Similarly, studies examining personalization as one of the components of perceived benefits found that it exerted the most influence in explaining users' perceived benefits; however, overall perceived benefits were not found to influence continuance intention (Barnes & Vidgen, 2014). The results of this study contribute to a better understanding of the impact of personalization on post-adoptive behavior. That is, exploring the individual impact of personalization allows for a better understanding of its unique and individual impact on consumers' feelings of satisfaction and enjoyment. This can lead to a better implementation of mobile applications that capitalize the personalization capabilities of mobile applications. A personalized mobile app experience will address the needs of each specific user, catering information based on previous use. A personalized mobile app experience can lead companies to provide a better service delivery by tapping into users' needs

and wants. Congruency between needs and wants and the service delivery can lead to increased intention of usage and spending.

The study found support for the relationship between responsiveness of the hotel branded mobile app and user satisfaction with the app (H9). This study defined responsiveness as the extent to which users can obtain information relevant to their request (Burgoon et al., 2000). The literature has examined responsiveness as a component of interactivity (Yoo et al., 2015; Zhao & Lu, 2012) and a component of quality (Benlian, Koufaris, & Hess, 2011; Chen et al., 2012; Mouakett, 2014) in continuance research with mixed results. As a component of interactivity, it was found to directly and indirectly influence satisfaction (Yoo et al., 2015). On the other hand, other studies have not found the same influence on satisfaction (Zhao & Lu, 2012). Responsiveness as a component of quality has been found to be an influencing factor on overall quality; however, mixed results have been found regarding its direct and indirect impact on satisfaction (Benlian et al., 2011; Chen et al., 2012; Mouakett, 2014). The treatment of responsiveness as a component of other constructs leads to conflicting results and a lack of understanding of the impact of this aspect on continuance intention and other post-adoptive behaviors. Since this study considered responsiveness as an independent contextual factor, it is important to interpret the results with caution, especially when considering the treatment of responsiveness in previous studies. That is, the results may be a function of the treatment of responsiveness as an independent factor, leading to overestimating its importance related to satisfaction. The results of the study assist practitioners in understanding the importance of available relevant and pertinent information for users in the mobile application. That is, responsiveness should be considered when implementing mobile apps.

On the other hand, support was not found for the relationship between responsiveness and perceived enjoyment (H10). As previously discussed, the study of responsiveness in continuance research is limited. The findings are congruent with previous studies in which the indirect impact of responsiveness on enjoyment was not found to be significant (Mouakett, 2014). This outcome can be explained by the consumers' information needs. That is, current hotel branded mobile apps may not be providing relevant information or meeting consumers' information needs. Therefore, practitioners must place increased efforts on identifying information needs and making efforts to fulfill those needs. The practitioner will have to ask users what information they want or seek when using a mobile app and the features they want to use. Unfortunately, these questions were not asked in the current study, but it is an area that can be explored in future research.

The study found support for the relationship between user satisfaction with the hotel branded mobile application and continuance intention (H11) and WOM (H12). Results related to satisfaction and continuance intention consistently provide support for this relationship as shown by the original ECM and recent iterations of the model (Alraimi et al., 2015; Benlian et al., 2011; Bhattacherjee, 2001a, 2001b; Lin, Wu, Hsu, & Chou, 2012; Mouakett, 2014; Park, 2014; Wang, Oh, Wang, & Yuan, 2013; Zhao & Lu, 2012). The findings led researchers to conclude that satisfaction is a highly important factor in post-adoptive behavior research. Regarding WOM, previous studies show conflicting results about the proposed relationship (Chea & Luo, 2008; Chen et al., 2012; Li & Liu, 2014). The impact of satisfaction on WOM warrants further investigation in this context. It would be wise for practitioners to focus on user satisfaction since the results show that it must be reached to influence consumers' future behavior. The goal of a

firm is to capture the attention of consumers, and a properly implemented mobile app will not only improve the consumer experience and impact satisfaction but also allow the service provider to retain current consumers who may promote your app to other potential users.

The relationship between users' perceived enjoyment and satisfaction with the hotel mobile app was supported (H13). This finding is consistent with previous continuance intention research stating that enjoyment is a positive antecedent to satisfaction (Alraimi et al., 2015; Kim, Chung, Lee, & Preis, 2015; Lu et al., 2017; Mouakett, 2014; Wang et al., 2013). The results of the current study provide additional proof that enjoyment is a precursor to user satisfaction. Thus, the result illustrates the importance of ensuring the users enjoy their experience with the mobile app as it has an influence on user satisfaction. Practitioners must focus on different aspects that will lead users to enjoy their experience with the mobile app and capitalize on those aspects, thus working toward ensuring consumer satisfaction. For users to enjoy their mobile app experience, it seems that they must find it useful and be able to meet their specific needs/wants. It would have been interesting and of great value if specific aspects that influence satisfaction were identified; however, the study did not explore this. It is an area that should be examined in future research because it has the potential to impact and change our understanding of enjoyment as an influencing factor on mobile app use.

Perceived enjoyment by users of hotel branded mobile apps was found to influence continuance intention (H14) and WOM (H15). The literature shows inconsistent findings regarding perceived enjoyment and continuance intention. Previous studies have found no evidence of the influence of enjoyment on continuance intention (Lu et al., 2017); however, other studies have found support for this relationship (Gwebu et al., 2014; Jung et al., 2015;

Kang & Lee, 2014; Oghuma et al., 2016). The results seem to suggest that hedonic experiences with the mobile app can lead to increased behavioral intention. We must also consider the utility aspect of mobile apps. In this context, app users must first find it useful to meet their needs, which can then lead to enjoyment. That is, if a company wants to impact behavioral intention, first it must improve the utilitarian aspect of the app, which will then improve the hedonic experience. The influence of enjoyment on continuance intention warrants further exploration because it can lead to a deeper understanding of enjoyment and how to build and influence users' enjoyment of the mobile app. That is, if enjoyment is understood, and aspects that influence enjoyment can be built into the mobile app experience, it can be an influencing factor on users' continuance intention. Likelihood to recommend (WOM) has not received as much attention as continuance intention research; however, it warrants attention by the academic community because recommendations are highly influential in consumer decision-making (Choi et al., 2015; Jalilvand, Esfahani, & Samiei, 2011).

Users' continuance intention was supported as an influencing factor of users' likelihood to recommend (WOM) (H16). This finding is consistent with previous studies in which continuance intention exerts a positive influence on users' WOM behavior (Choi et al., 2015; Shaik & Karjaluoto, 2016; Li & Liu, 2014). The results provide evidence of the importance of continuance behavior because it exerts influence on other post-adoptive behaviors. Recommending a mobile application to friends, family, and acquaintances should be capitalized on by practitioners. The investigation of WOM as part of continuance research is limited, therefore, the results are an attempt to expand knowledge on other post-adoptive behaviors,

allowing the researcher to add to the growing body of knowledge of ECM and continuance behavior literature.

Implications

Theoretical implications

The current study has several theoretical implications important to post-adoptive behavior literature. The study expands the body of knowledge of post-adoption behavior by exploring the cognitive and affective factors that impact consumer behavior. It expands the ECM by adding contextual factors specific to the technology being studied. In addition, since the original ECM only examined continuance intention a second outcome variable, WOM, was added to the model. The addition of WOM expands ECM and examines the influence of continuance intention on other post-adoptive behaviors.

Contextual factors were added to the model in response to a call to action from IS scholars to add to theory in a systematic manner that will allow for richer theories and actionable advice (Hong et al., 2014). Factors related specifically to the technology being examined help provide a deeper understanding of their impact on consumer behavior and highlight the relative importance of each factor in the model. Adding the contextual factors of perceived mobility, personalization, and responsiveness highlights the importance of capitalizing on those specific factors in mobile apps to influence post-adoptive consumer behavior.

The study expanded the body of knowledge related to post-adoptive behaviors and specifically added to the existing literature related to the ECM. Several contributions were made in this study. First, additions to the ECM were proposed and tested to expand knowledge of post-

adoptive behaviors. Additions included cognitive and affective factors not included in the original model. The results provide a deeper understanding of specific influential factors and their relative importance to behavioral intention and other post-adoptive behaviors.

Second, the study highlighted the importance of contextual factors for proper mobile app implementation and use. The proposed expansion of the ECM stemmed from a call from IS scholars to integrate constructs that reflect the context of the IS, such as characteristics of the system, which provide insights and recommendations that support organizational goals. Specifically, the results show that contextual factors have an impact on behavioral intentions. This approach emphasizes the importance of understanding the technology being utilized with its specific characteristics, consumer use and impact it has on consumer behavior and decision making. Mobile apps have been embraced by the hotel industry but as scholars we need to understand the intricacies of the technology to ensure successful implementation and system management. Expanding the continuance research based of the technology's characteristics can help scholars make better informed decisions on mobile app design that is more likely to influence post-adoptive behaviors.

Third, the study explored the impact of cognitive factors specific to the context (i.e., mobility, personalization and responsiveness). The treatment of these factors as individual aspects is a major contribution to expanding the body of knowledge. The individual impact of these factors has not been extensively studied in post-adoptive research; therefore, this study provides new insights regarding the impact of those factors to post-adoptive behaviors. Specifically, personalization and responsiveness have been examined in previous studies as a component of other constructs. The results will help scholars understand the relative importance

of each cognitive factor on a user's affect. In several of the relationships examined, contextual factors of mobility, personalization, and responsiveness were found to be more influential than previously examined and established factors of perceived usefulness and confirmation of expectations. The inclusion of technology characteristics to theories that examine technology use helps place emphasizes on the technology itself.

Fourth, the addition of a second outcome variable related to post-adoptive behavior (WOM) allows for extending the model and our knowledge of the influence of continuance intention. Continuance intention research has been focused on the outcome variable of continuance intention or continued use (Nabavi et al., 2016; Shaikh & Karjaluoto, 2015), the addition of WOM allows to expand our knowledge of additional post-adoptive behaviors. In addition, it allows for a comparison of other constructs on post-adoptive behaviors. This increases our understanding of the factors that impact behavioral intention and recommendations. This knowledge becomes important because of increased consumer dependence on users' recommendations about purchasing behavior and decision-making.

Fifth, this study adds to the body of knowledge on hotel branded mobile apps by exploring the factors that influence users in this context. Currently, our knowledge about the lodging industry's use of mobile apps and the consumer's evaluation of their experience is limited (Kim et al., 2008, Wang et al., 2016). This area has been scarcely explored, and studies have focused on the features provided and not on the proper implementation of apps. Expanding our understanding of how consumers evaluate their use of mobile apps will be significant and becomes imperative for proper implementation.

Sixth, this study is a step towards expanding research in the hospitality industry focusing on post-adoption behavior related to mobile apps. This study is focused on moving research beyond examining the factors that influence technology adoption and shifting the focus to the stages following initial adoption and acceptance of a technology. Furthermore, this study emphasizes the need to use the appropriate models to examine technology use. That is, post-adoption behavior in the technology context should not be examined with acceptance models. Appropriate use and development of models assists with expanding the body of knowledge on continuance and post-adoptive behavior research, specifically in the hospitality industry.

This study established that contextual factors are important and impact factors that influence behavioral intention (continuance intention and WOM). This leads the researcher to the conclusion that contextual factors must be capitalized upon when implementing mobile applications. Prior to this study, contextual factors such as mobility, personalization, and responsiveness had only been studied as aspects of a construct (e.g., quality, interactivity, benefits). This study allows researchers to understand the individual importance of each aspect innate to this technology. A proper understanding of the impact of these factors will allow for a better understanding of the influence of these factors as well as proper execution, implementation, and management of hotel branded mobile applications.

Practical implications

The practical implications of this study are varied. The importance of understanding mobile apps is highlighted by the amount of money invested by companies to implement this technology. Failure to properly implement and maintain mobile apps leads to a loss of resources

by the firm. In addition, a frustrating experience for consumers leads to a lack of post-adoptive behavior (i.e., continuance intention and recommendations) desired by the firm.

This study provides several practical implications for managing hotel branded mobile applications. To promote post-adoptive behaviors of user continuance intention and recommendations, hotel management should focus on user satisfaction when implementing mobile apps. To achieve satisfaction, efforts should be made to increase the utility of the mobile app. That is, users must find the app useful to meet their needs and wants in order to be satisfied with it. The results of the study suggest that the user do not find the app to be useful; therefore, this is an area that requires special attention from app developers and consultants. To address this issue, a survey can be conducted on the user and target consumer of the hotel branded mobile app to create a profile of their needs and wants from a mobile app. The information gathered will provide developers and consultants with specific information and features that must be included on an app which should impact the perception of app usefulness. If utility is achieved, users are likely to be satisfied with their app experience.

To assist with user satisfaction, management can make efforts to influence user enjoyment, which can be achieved by leveraging the personalization, responsiveness and mobility aspects of the mobile app. Companies can facilitate responsiveness of the mobile app by ensuring the information provided is relevant and useful so it meets users' needs. In addition, resources need to be put toward ensuring mobility is maximized. This can be achieved by creating awareness of the mobile app capabilities and functions available to users. Ensuring mobility requires management's commitment to proper implementation and constant maintenance of the mobile app so that it provides access to information whenever users need it,

with updated information and features that facilitate users' ability to complete transactions without any lag time or issues.

Based on the results, personalization, mobility and responsiveness were found to be more influential on affective factors than other factors in the model. This provides significant insight for technology consultants and app developers because it identifies factors impacting users' feelings toward the mobile app. Consultants and developers should concentrate efforts to include design elements to create user awareness of the features of the mobile app. For example, developers should include features that capture the consumer's app use to facilitate personalized recommendations and push notifications. Responsiveness and mobility capabilities can be capitalized by including design features that allow the consumer to search information and make purchases on the go; such as allowing to book restaurant reservations (on and off site the hotel), spa services and purchase theater tickets. That is, the developer needs to implement features that allow the consumer to do more on the go with the mobile app. Including design features to make the user aware of the apps capabilities and benefits will induce the desired post-adoptive behaviors.

A properly implemented mobile app is likely to impact the consumer experience, which also assists the firm in achieving its organizational goals. Having access to information and the desired features in the mobile app will improve the user experience. An app that can meet the needs of the users will not only assist the users with their tasks but also reduce the need to use other travel-related apps. For the company, a satisfied user is likely to continue to use and recommend the mobile app to others. Companies want to ensure the retention of old users and the acquisition of new users as this helps them attain their bottom line.

Limitations and future research

No study is immune to limitations and this study is no exception. Several aspects of this study have limitations. First, a non-probability sampling technique was used to collect data, which does not allow for the random selection of participants; therefore, caution must be used when generalizing the results of the study. In addition, the instrument is self-administered; therefore, only individuals who elect to take the survey will be able to provide feedback about their perceptions of hotel branded mobile applications. Data collection was limited to participants in the United States; consequently, the results may not be generalizable to other countries. The study also utilized cross-sectional data, and this method does not allow for the consideration of user's perception changes over.

Hiring respondents through online panels will be a concern to some scholars as there are limitations about ensuring the participants represent the desired population. Also, this method of data collection lends itself to concerns about participants' providing honest responses. Another limitation is related to other aspects that may influence post-adoptive behaviors of continuance intention and WOM that are not being considered in this study. Factors such as mobile data availability, network capacity, brand loyalty, and individual characteristics of the users can influence user behavior. Finally, interpretation of the results is limited because of the use of prescribed scales, which do not allow for an in-depth investigation of the problem. Future research could address this by including a qualitative component to the study to ask participants open-ended questions that would allow them to express their thoughts about their mobile app use and their preferences. Questions might include: "Why would you continue use?" "Why would you discontinue use?" and "What factors would cause you to continue or discontinue use?"

Future research should consider other contextual factors specific to mobile applications such as ubiquity and localization. Also, regarding hotel branded mobile applications, researchers can examine specific aspects of their app users such as whether the individual user is a loyalty program member or supported the brand for years. Since this study examined hotel branded mobile applications, future research can focus on specific brands or users from other countries. That is, researchers can utilize the same instrument but administer it to users of specific hotel brands or to people in other countries. This will allow for comparison and a better understanding of hotel branded mobile app implementation by brand or country.

Summary

This chapter presented a summary of the study methods and a discussion of the findings. In addition, the theoretical and practical implications were examined to identify the significance of the findings to IS research in the hospitality field. The theoretical implications include extending the ECM by considering contextual factors in the model. Examining mobility, personalization and responsiveness as individual constructs provided insight into the importance of mobile app characteristics. In addition, they were found to be more influential than established factors such as usefulness and confirmation of expectations. The study added to the body of knowledge in the lodging field to understand the consumer use of hotel branded mobile apps, an area that has not been examined extensively in the lodging field. The practical implications considered allowed for specific recommendations and action items for those implementing and managing hotel branded mobile applications. Management should focus on user satisfaction when implementing mobile apps and utility of the app needs to be capitalized and highlighted.

When implementing mobile apps managers must leverage the responsiveness of the app to ensure the information provided addresses the needs and wants of the consumer. The last section covered the limitations of the current study and several recommendations for future research to move this topic forward. The online panel used consisted of participants exclusively from the United States and non-probability sampling which limits the generalizability of the results. Future research could focus on adding other contextual factors like localization and factors specific to the user like brand loyalty.

APPENDIX A: SUMMARY OF CONTINUANCE INTENTION RESEARCH

Authors /Year	Methodology	Context/Research Setting	Antecedents	Outcome Variables	Results
Karahanna, Straub, & Chervany, 1999*	Empirical	Electronic applications	Attitude towards adopting & continuing to use (constructs: trialability, result demonstrability, visibility, perceived usefulness, image, ease of use) Subjective norm toward adopting & continuing to use (top management, friends, supervisor, peers, MIS department, local computer specialists) Perceived voluntariness	Behavioral intention to adopt Behavioral intention to continue using	Authors combined innovation diffusion and attitude theories to examine pre-adoption and post-adoption beliefs and attitudes. Results suggest that there is a difference between a potential adopter and user of IT. Potential adopter intention is determined by normative pressures and users are impacted by attitude. Potential adopters attitude is impacted by innovation characteristics compared to users. Attitude of potential adopter is impacted by perceived usefulness, ease of use, result demonstrability, visibility, and trialability. Users attitude is impacted by usefulness and

Authors /Year	Methodology	Context/Research Setting	Antecedents	Outcome Variables	Results
					perception of image enhancements.
Bhattacherjee, 2001a	Empirical	Internet/Online banking	Perceived usefulness Confirmation Satisfaction	IS continuance Intention	Satisfaction, perceived usefulness, and interaction between perceived usefulness and loyalty incentives are key determinants for continuance intention. Confirmation of expectations directly affects satisfaction and perceived usefulness
Bhattacherjee, 2001b	Empirical	Electronic applications and Technologies (online brokerage)	Confirmation Satisfaction Perceived usefulness Loyalty incentives	Continuance Intention	Distinguishes between users' acceptance and continuance behavior and explains the factors for IS continuance and then proposed the ECM
Hsu, Chiu, & Ju, 2004	Empirical	Electronic applications and Technologies (WWW)	Prior perceived confirmation Satisfaction with prior use Outcome Expectation	Continuance intention	Differentiates acceptance and continuance. Intention for continued use depends on

Authors /Year	Methodology	Context/Research Setting	Antecedents	Outcome Variables	Results
			Self-efficacy		satisfaction with prior use, self-efficacy, and outcome expectations
Hsu & Chiu, 2004	Empirical	Electronic applications and Technologies (tax e-file service)	Interpersonal influence External influence Perceived usefulness Perceived risk Perceived playfulness Internet self-efficacy Perceived controllability	E-service satisfaction E-service continuance intention	Continuance intention is determined by self-efficacy and satisfaction. Satisfaction is determined by interpersonal influence, perceived usefulness, and perceived playfulness.
Bhattacherjee & Premkumar, 2004	Qualitative and empirical	Electronic applications and Technologies	Usefulness Attitude Confirmation Satisfaction	Continued use Intention	Examined both antecedent variables and outcome variables of customer satisfaction in an electronic environment. Disagreed with Oliver's attribution process model and proposed as satisfaction drives to attribution which drives to repurchase.

Authors /Year	Methodology	Context/Research Setting	Antecedents	Outcome Variables	Results
Hayashi, Chen, Ryan, & Wu, 2004	Conceptual	Electronic applications and Technologies (Database application)	Perceived usefulness Confirmation Satisfaction Computer self-efficacy	IS continuance Intention	There is no significant relationship among computer self-efficacy, perceived usefulness, confirmation, and satisfaction
Kim & Malhotra, 2005	Empirical	Website (academic portal)	System usage Perceived ease of use Perceived usefulness Intention to use IS		System usage, perceived ease of use, perceived usefulness and intention to use IS are essential for a deeper understanding of continued IS use
Chiu, Hsu, Sun, Lin, & Sun, 2005	Empirical	Electronic applications and Technologies (e-learning)	Perceived usability Usability disconfirmation Perceived quality Quality disconfirmation Perceived value Value disconfirmation Satisfaction	e-learning continuance intention	Satisfaction influences continuance intention. In turn satisfaction is influenced by usability, perceived quality, value and usability disconfirmation.
Lin, Wu, & Tsai, 2005	Empirical	Website (WWW)	Perceived usefulness, confirmation, perceived playfulness,	Continuance Intention	Includes "playfulness" and found as more important than perceived

Authors /Year	Methodology	Context/Research Setting	Antecedents	Outcome Variables	Results
			satisfaction		usefulness in the context of continuance use of website.
Hong & Tam, 2006	Empirical	Mobile (mobile data services)	Perceived service availability Perceived monetary value Gender Age Perceived usefulness Perceived ease of use Perceived enjoyment Need for uniqueness Social influence	Continued intention	All factors were found to directly or indirectly influence continuance intention except for age. The greatest influence on continuance intention was exerted by perceived enjoyment followed by social influence.
Hong, Thong, & Tam, 2006	Empirical	Mobile (mobile internet)	Perceived usefulness Confirmation Perceived ease of Use Satisfaction	Continued IT usage intention	Extended ECM in IT context while used TAM too and argues that TAM is the most parsimonious and generic model to explain both initial and continued IT adoption.
Roca, Chiu, & Martínez, 2006	Empirical	Electronic applications and Technologies (e-learning services)	Perceived quality (information quality, service quality, system quality)	Continuance intention	Results suggest that continuance intention is influenced by satisfaction, which

Authors /Year	Methodology	Context/Research Setting	Antecedents	Outcome Variables	Results
			Confirmation Perceived usability (perceived usefulness, cognitive absorption, perceived ease of use) Satisfaction subjective norm (interpersonal influence, external influence) perceived control (computer self-efficacy, internal self-efficacy)		is determined by all factors of perceived quality and perceived usability and confirmation.
Thong, Hong, & Tam, 2006	Empirical	Mobile (mobile internet)	Perceived ease of use Perceived enjoyment Perceived usefulness Confirmation Satisfaction	Continued IT usage intention	All factors were found to directly or indirectly influence continuance intention. Satisfaction and expectations (confirmation) exert a significant influence on continuance intention. The direct influence is exerted by satisfaction followed by perceived ease of use.

Authors /Year	Methodology	Context/Research Setting	Antecedents	Outcome Variables	Results
Atchariyachanvanich, Okada, & Sonehara, 2007	Empirical	Electronic applications and Technologies (internet shopping)	Satisfaction Confirmation Perceived usefulness Perceived incentives Customer loyalty	Repurchase intention	All five factors keep the online customer purchasing through the Internet. Usefulness is a determinant factor to repurchase intention. Incentives had a significant effect on intention to repurchase
Chen, 2007	Empirical	Social media (virtual community)	Contextual factors Technological factors Satisfaction	Continuance Intention	Users' attitude and perceived usefulness changes with time and more prevalent in the early stage of IT use than in the later phase.
Liao, Chen, & Yen, 2007	Empirical	Electronic applications and Technologies (e-learning)	Subjective norm Perceived usefulness Satisfaction Perceived behavioral control Disconfirmation Perceived ease of use	Behavioral Intention	An integrated model of TPB and ECT can increase the accuracy and predict and explain customers' behavioral intentions more precisely.
Hsieh & Wang, 2007	Empirical	Information systems/ Systems/IS	Confirmation of expectations	Extended use	Proposed model that integrated TAM and ECM

Authors /Year	Methodology	Context/Research Setting	Antecedents	Outcome Variables	Results
		development/IS management (Enterprise resource planning system)	Perceived ease of use Perceived usefulness Satisfaction		explained higher variances in extended use, perceived usefulness and satisfaction. Both PEOU and PU had an impact on extended use. Moreover, satisfaction had to impact on extended use when PU and PEOU were present.
Limayem, Hirt, & Cheung, 2007	Empirical	Website (WWW)	Perceived usefulness Confirmation Satisfaction IS continuance Intention Habit	IS continuance Usage	Incorporated habit into IS research and found that habit acts as a moderating variable between IS continuance intention and IS continuance.
Bhattacherjee, Perols, & Sanford, 2008	Empirical	Information systems/ Systems/IS development/IS management	Post-usage usefulness Disconfirmation Satisfaction IT self-efficacy Satisfaction PBC	Continuance Behavior	Proposed an extended model of ECM by introducing continuance behavior where the perceived usefulness construct was renamed as post-usage usefulness. Also

Authors /Year	Methodology	Context/Research Setting	Antecedents	Outcome Variables	Results
					explained the PBC construct in detail.
Chea & Luo, 2008	Empirical	Electronic applications and technologies	Confirmation Perceived usefulness Positive affect Negative affect Satisfaction	Continuance intention Recommendation Complaint	Satisfaction is a significant predictor of all three post-adoption behaviors: continuance, complaint, and recommendation. Negative affective response to e-service use was found to directly predict complaint behavior, but positive affect and negative affect did not influence customer satisfaction.
Doong & Lai, 2008	Empirical	Electronic applications and Technologies (e-negotiation)	Perceived usefulness Disconfirmation, Satisfaction	Continuance Intention	Post-use factors are important for e-negotiation systems (ENS) and therefore ECT is an effective theory to analyze ENS. Monitoring users' disconfirmation continuously is important for ENS.

Authors /Year	Methodology	Context/Research Setting	Antecedents	Outcome Variables	Results
Limayem & Cheung, 2008	Empirical	Electronic applications and Technologies (Internet-based Learning)	Perceived usefulness Confirmation Satisfaction IS continuance Intention Habit Prior behavior	IS continuance Use	Introduced "IS habit." Both satisfaction and prior behavior have significant impact on IS continuance and habit is a moderator.
Premkumar & Bhattacherjee, 2008	Empirical	Electronic applications and Technologies (IT, online tutorials)	Perceived usefulness Perceived ease of Use Expectation Confirmation Performance Satisfaction	Intention	TAM and ECT together provide a better explanation of IT usage intention, than a single individual model/theory.
Sørebø & Eikebrokk, 2008	Empirical	Electronic applications and Technologies (Mandatory IS use)	Confirmation Ease of use Perceived usefulness	User Satisfaction	Ease of use and confirmation are significant antecedents of satisfaction while perceived usefulness is not. For a mandatory environment, therefore, authority should concentrate on these two factors more closely.

Authors /Year	Methodology	Context/Research Setting	Antecedents	Outcome Variables	Results
Vatanasombut, Igbaria, Stylianou, & Rodgers, 2008	Empirical	Electronic applications and Technologies	Relationship termination cost Relationship benefit User (perceived) empowerment Shared value Communication Perceived security Relationship commitment Trust	Customer retention	Relationship commitment and trust were found crucial to IS continuance intention. Perceived empowerment influenced relationship commitment, while perceived security influenced trust. Trust as a stronger predictor of intention than commitment.
Chou & Chen, 2009	Empirical	Information systems/ Systems/IS development/IS management (ERP)	Satisfaction Computer anxiety Personal innovativeness in IT General computer self-efficacy	Continuance intention	The strongest predictor of IS use continuance intention was satisfaction followed by computer anxiety as significant but weaker. Individual differences affect continuance intention either directly or indirectly (through satisfaction).
Jin, Cheung, Lee, & Chen, 2009	Empirical	Electronic applications and	Information quality	Continuance intention	Users will continue to use the

Authors /Year	Methodology	Context/Research Setting	Antecedents	Outcome Variables	Results
		Technologies (internet based bulletin board systems)	Disconfirmation of information quality Source credibility Disconfirmation of source credibility Satisfaction Information usefulness		information in a computer-supported social network when they are satisfied with their prior usage, and when they perceive that the information in the network is useful. Also, results suggest that individuals' perceived information usefulness and satisfaction are determined by information quality and source credibility in the context of computer-supported social networks
Kang, Hong, & Lee, 2009	Empirical	Social media (online services)	Confirmation Past use Perceived usefulness Satisfaction Self-image congruity Regret	Continuance Intention	Self-image congruity plays a key role in forming post-adoption beliefs (perceived usefulness and perceived enjoyment). Also finds that regret is

Authors /Year	Methodology	Context/Research Setting	Antecedents	Outcome Variables	Results
					an important antecedent of continuance intention.
Kettinger, Park, & Smith, 2009	Empirical	Information systems/ Systems/IS development/IS management	IS service value IS service quality Satisfaction	IS service reuse	Service value and satisfaction mediate the relationship between service quality and intention to reuse an IS service. IS service value had a stronger effect on service reuse than satisfaction.
Larsen, Sørebø, & Sørebø, 2009	Empirical	Electronic applications and technologies (e-learning tools)	Perceived task technology fit Perceived usefulness Conformation Utilization Satisfaction	IS continuance intention	Variables from the task-technology fit theory are important in explaining users' continuance intention. Overall, for users to continue to use an IS, it must be used and be a good fit for the tasks it supports. Study presents 2 findings: work system centric where continuance intention is impacted by task technology fit and utilization. The

Authors /Year	Methodology	Context/Research Setting	Antecedents	Outcome Variables	Results
					other path, IT centric, continuance is impacted by confirmation and satisfaction. The only exogenous variable with no impact on the DV was perceived usefulness.
Liao, Palvia, & Chen, 2009	Empirical	Electronic applications and Technologies (IT adoption)	Confirmation Satisfaction Perceived usefulness Perceived ease of use	IS continuance Intention	Combines attitude and satisfaction into continuance model and proposes a new theory, Technology Continuance Theory (TCT) which claims that it has capability to explain user attitude at different stages of adoption life cycle.
Sørebø, Halvari, Gulli, & Kristiansen, 2009	Empirical	Electronic applications and Technologies (e-learning tool)	Perceived autonomy Perceived competence Perceived relatedness Perceived usefulness Confirmation	Continuance intention	Perceived autonomy and competence are important in explaining continuance intention. Perceived autonomy, perceived

Authors /Year	Methodology	Context/Research Setting	Antecedents	Outcome Variables	Results
			Intrinsic motivation Satisfaction		competence & confirmation have an indirect effect on continuance intention. On the other hand, perceived usefulness and intrinsic motivation have a direct effect on continuance intention.
Tao, Cheng, & Sun, 2009	Empirical	Information systems/ Systems/IS development/IS management (educational simulation games)	TAM: Perceived ease of use, Perceived usefulness, Confirmation, Satisfaction Emotion: Perceived attractiveness, Perceived playfulness Agency theory: Learning performance, Risk aversion, Goal conflict, Incentive Learning factors: Learning atmosphere, Learning motivation	Intention to continue using	All aspects of ECT except for satisfaction were established to have an impact on continuance intention. Agency theory factors were not found to be significant. All TAM factors except for PU and PEOU influenced satisfaction. Satisfaction as theorized positively impacted continuance intention. Learning factors were not found to be significant on

Authors /Year	Methodology	Context/Research Setting	Antecedents	Outcome Variables	Results
					learning performance Emotional factors were found to influence PU and PEO
Jin, Lee, & Cheung, 2010	Empirical	Social media	Positive disconfirmation of purposive value Positive disconfirmation of entertainment value User satisfaction Affective commitment	Continuance intention	Users' continuance intention to participate in an online community is determined by satisfaction with prior experience and affective commitment to the community Satisfaction and affective commitment are influenced by positive disconfirmations of purposive and entertainment values. Emotional connections play an important role to continue using. Satisfaction was found to have a significant impact on affective commitment.

Authors /Year	Methodology	Context/Research Setting	Antecedents	Outcome Variables	Results
Kang & Lee, 2010	Empirical	Social media	Website information quality Website system quality Website information satisfaction Website system satisfaction Perceived habit Perceived usefulness Perceived enjoyment Computer anxiety Customer satisfaction	Continuance Intention	Website information and system satisfaction play critical roles in forming continuance intention through perceived usefulness and perceived enjoyment. Computer anxiety serves as an important moderator toward continuance intention.
Kim, 2010	Empirical	Mobile (mobile data service)	Confirmation Perceived usefulness Perceived enjoyment Perceived fee Social norm PBC Satisfaction	Continuance Intention	For mobile data service (MDS) continuance analysis, an integrated model of ECM and TPB explains more perfectly than either single model. Necessary resources and capabilities are perceived as important antecedents.

Authors /Year	Methodology	Context/Research Setting	Antecedents	Outcome Variables	Results
Liao, Palvia, & Lin, 2010	Empirical	Internet/Online	Confirmation with ordering process Confirmation with fulfillment process Perceived usefulness Satisfaction with ordering process Satisfaction with fulfillment process	Continuance intention	Results show that the customer satisfaction with the ordering and fulfillment process, and the perceived usefulness of the website have a significant influence on intention to continue using the website. Also, perceived usefulness affects their satisfaction with the ordering process.
Lee, 2010	Empirical	Electronic applications and Technologies	Expectation Confirmation Model: Confirmation Satisfaction Perceived usefulness (post-adoption expectations) TAM: Perceived ease of use Perceived usefulness Attitude	Continued IT usage intention	Satisfaction has the most significant effect on users' continuance intention. Perceived usefulness, attitude, concentration, subjective norm, and perceived behavior control are significant but weaker predictors.

Authors /Year	Methodology	Context/Research Setting	Antecedents	Outcome Variables	Results
			Theory of Planned Behavior: Subjective norm Behavioral control Attitude Flow Theory & User acceptance Perceive enjoyment Concentration		
Recker, 2010	Empirical	Information systems/ Systems/IS development/IS management	Grammar familiarity Modeler background Modeling experience Perceived ease of use Perceived usefulness Confirmation Satisfaction	Intention to continue to use	Satisfaction, confirmation, usefulness and ease of use assist with continued usage intentions. Individual differences (i.e. grammar familiarity, background and experience) influencing usefulness, ease of use and satisfaction.
Al-Maghrabi, Dennis, & Halliday, 2011	Empirical	Internet/Online	Site quality Trust Perceive usefulness Enjoyment Subjective norm	Continuance intention	Perceived usefulness, enjoyment, and subjective norms are determinants of online shopping continuance. The results show that the strongest

Authors /Year	Methodology	Context/Research Setting	Antecedents	Outcome Variables	Results
					predictor is enjoyment.
Al-Maghrabi & Dennis, 2011	Empirical	Internet/Online	Site quality Trust Perceive usefulness Enjoyment Social pressure	Continuance intention	Perceived usefulness, enjoyment, and social pressure are determinants of online shopping continuance in Saudi Arabia. The study found that perceived enjoyment is the most influential factor to continuance intention.
Benlian, Koufaris, & Hess, 2011	Empirical	Information technology/ ICT/ Technology/ Software	Rapport Responsiveness Reliability Flexibility Features Security SaaS quality Perceived usefulness Satisfaction	SaaS (software as a service) continuance intention	Service quality dimensions (i.e. rapport, etc.) were found to be essential in the evaluation of service quality. In addition, service quality and its factors were found to have a positive influence on perceived usefulness and satisfaction which ultimately positively

Authors /Year	Methodology	Context/Research Setting	Antecedents	Outcome Variables	Results
					influenced continuance intention. Perceived usefulness was found to have a greater impact than satisfaction.
Hong, Thong, Chasalow, & Dhillon, 2011	Empirical	Website (intranet)	Confirmation Perceived ease of use Social influence Facilitating conditions Satisfaction Perceived usefulness Comfort with change (consistency of system layout; consistency of user knowledge) Habit Personal innovativeness	Intention to continue using Intention to use future features	Results show that users' level of comfort with change, the facilitating conditions provided, and habit are predictors of intention to continue using and intention to use future features. Users' level of comfort with constant changes was found to be the strongest predictor. Also, intentions to continue using are determined by users' satisfaction and perceived usefulness of the system upgrades. Innovative users who are more likely to use future

Authors /Year	Methodology	Context/Research Setting	Antecedents	Outcome Variables	Results
					releases of new features.
Hung, Chang, & Hwang, 2011	Empirical	Electronic applications and Technologies (research tool)	Perceived usefulness Disconfirmation Satisfaction Causal attributions	Continued intention	Results show that perceived usefulness, satisfaction and causal attributions exert a direct impact on continuance intention. Satisfaction is influenced by perceived usefulness and disconfirmation. Disconfirmation influences satisfaction and causal attributions exerting the most influence on satisfaction.
Hossain & Quaddus, 2011	Empirical	Information technology/ ICT/ Technology/ Software	Technology characteristics Characteristics of external environment RFID expectations Organizational characteristics Self-efficacy Satisfaction RFID adoption	Intention to continued use	System adoption is impacted by technological, organizational, and environmental factors and expectations and self-efficacy. Continued usage intention involves satisfaction with

Authors /Year	Methodology	Context/Research Setting	Antecedents	Outcome Variables	Results
			Confirmation		current use and self-efficacy.
Lee & Kwon, 2011	Empirical	Internet/Online (online shopping)	Confirmation Perceived usefulness Familiarity Intimacy Satisfaction	Continuance intention	The results show that continuance intention is impacted by perceived usefulness, familiarity and intimacy. However, the effects of intimacy were larger than those of perceived usefulness. The results show that intimacy affects continuance intention more than familiarity.
Liang & Yeh, 2011	Empirical	Mobile games	Playfulness Ease of use Attitude Subjective norm Attitude Contextual effects (task & consumption place)	Continuance intention	Contextual factors have significant moderating effect on continuance intention. Attitude exerts an influence on continuance intention when not considering contextual factors. Ease of use was found to have no influence on user attitude but a direct

Authors /Year	Methodology	Context/Research Setting	Antecedents	Outcome Variables	Results
					effect on continuance intention. Playfulness and subjective norm did not have a direct impact on continuance intention.
Lin, Chen, & Fang, 2011	Empirical	Electronic applications and Technologies (online learning)	Frequency of negative critical incidents Perceived ease of use Quality attributes cumulative satisfaction Attitude Perceived usefulness Overall satisfaction	Continuance intention	All factors were found to directly or indirectly influence continuance intention. Negative critical incidents were found to negatively impact ease of use, usefulness and satisfaction. Perceive usefulness exerts no significant influence on continuance intention. However, attitude exerts the greatest direct impact on continuance intention.
Kim, 2011	Empirical	social media	Confirmation Perceived usefulness	Continuance intention	Results show that satisfaction and media influence

Authors /Year	Methodology	Context/Research Setting	Antecedents	Outcome Variables	Results
			Perceived enjoyment User satisfaction Interpersonal influence Media influence		have no impact on continuance intention. Perceived usefulness and enjoyment were found to be predictors of continuance intention. Confirmation was found to have an impact on satisfaction, usefulness and enjoyment.
Limayem & Cheung, 2011	Empirical	Electronic applications and Technologies	Perceived usefulness Confirmation Satisfaction Habit	Continuance intention Continuance usage	Confirmation and usefulness impact satisfaction. Consequently, impacting continuance intention. Usefulness was found to directly influence continuance intention. Habit was found moderate the relationship between continuance intention and usage
Son & Han, 2011	Empirical	Internet/Online	Technology readiness (drivers-	Satisfaction Retention	Findings suggest that usage patterns

Authors /Year	Methodology	Context/Research Setting	Antecedents	Outcome Variables	Results
			optimism, innovativeness; inhibitors – insecurity, discomfort) Usage patterns (usage rate of: basic functions, innovative functions, variety of use of innovative functions)		(specifically, use of innovative functions, have a significant positive effect on consumer satisfaction and retention (continuance intention)
Venkatesh, Thong, Chan, Hu, & Brown, 2011	Empirical	Electronic applications and Technologies (e-government)	Satisfaction Disconfirmation Perceived usefulness Attitude Effort expectancy Social influence Facilitating conditions Trust	Continuance intention	Effort expectancy, social influence, facilitating conditions are important in explaining the intervening variables (i.e., disconfirmation, attitude and satisfaction). Trust has a key effect on individuals' pre-and post-usage attitudes and on satisfaction.
Chang & Zhu, 2012	Empirical	social media	Satisfaction Confirmation perceived bridging social capital perceived bonding social capital	Social networking site continuance intention	Bridging social capital has a significant effect on users' satisfaction and intention, but bonding social

Authors /Year	Methodology	Context/Research Setting	Antecedents	Outcome Variables	Results
			flow experience		capital has none. Flow experience affects users' satisfaction but does not affect their intention
Chen, Meservy & Gillenson, 2012	Empirical	information-oriented mobile service (mobile app)	Information quality System related Process quality Perceived usefulness Confirmation Satisfaction Hedonic value	Continuance intention	The quality of the system e.g., availability, responsiveness, flexibility and quality of the process e.g., ability to localize and personalize the information lead to greater realization of the expected benefits of the IOMA. Hedonic value impacts the intention to continue to use IOMA.
Chen, 2012	Empirical	Mobile (banking)	Technology readiness Service quality Perceived risk Relationship quality	Continuance intention	Results suggest that technology readiness and service quality indirectly influence on continuance intention through the mediation of relationship quality

Authors /Year	Methodology	Context/Research Setting	Antecedents	Outcome Variables	Results
					(consisting of satisfaction and trust). Perceived risk had no significant impact on relationship quality.
Kim, 2012	Empirical	Mobile (mobile apps)	Perceived usefulness Confirmation Perceived enjoyment Perceived monetary value User satisfaction Habit Variety of use	Continuance intention Actual use	Continuance intention and habit influence the actual use of apps. Results show that habit is a more prevalent predictor of actual use compared to intention. Results suggest that user satisfaction, perceived monetary value, and variety of use are antecedents to habit.
Lin, Wu, Hsu, & Chou, 2012	Empirical	Internet/Online	Perceived sacrifices (perceived fee, change of viewing habits, technicality, knowledge of alternatives) Perceived value Perceived benefits (personalization, high quality, content richness,	Continuance intention	Results show that perceived net value (derived from perceived sacrifices and benefits) is a strong predictor to satisfaction and continuance intention.

Authors /Year	Methodology	Context/Research Setting	Antecedents	Outcome Variables	Results
			value-added services) Confirmation Satisfaction		
Lin, 2012	Empirical	Electronic applications and technologies	Perceived fit Satisfaction	Continuance intention Positive impacts on learning	The results show that perceived fit and satisfaction are important antecedent to continuance intention and impact on learning.
Lin & Rivera-Sanchez, 2012	Empirical	Communication	Disconfirmation Perceived usefulness Satisfaction Resistance Perceived value	Continuance intention	Results suggest that continuance intention is directly impacted by resistance (negatively) and satisfaction. All factors indirectly impact continuance intention. Both perceived usefulness and perceived value have a negative effect on resistance thus lowering an individual's resistance to use the system.
Shiau & Chau, 2012	Empirical	social media	Confirmation Perceived usefulness	IS continuance intention	Authors found that the ECM has a greater explanatory

Authors /Year	Methodology	Context/Research Setting	Antecedents	Outcome Variables	Results
			Satisfaction Perceived ease of use		power than TAM or their proposed integrated model. Confirmation and satisfaction were the salient factor impacting continuance intention. Perceived usefulness and perceive ease of use were not found to have an impact on continuance.
Zhao & Lu, 2012	Empirical	social media (microblogging)	Perceived network size Perceived complementarity Perceived interactivity (control, playfulness, connectedness, responsiveness) Satisfaction	Continuance intention	Results show that the 4 dimensions of perceived interactivity are impacted by perceived network size and perceived complementarity. All dimensions of interactivity but responsiveness were positively related to users' satisfaction, which significantly impacts continuance intention.
Yeh & Teng, 2012	Empirical	Information systems/ Systems/IS	Perceived extended usefulness	IS continuance intention	The authors proposed different

Authors /Year	Methodology	Context/Research Setting	Antecedents	Outcome Variables	Results
		development/IS management	(efficiency, effectiveness) Perceived needs fulfillment (extended usefulness, relatedness, self-development) Confirmation IS use satisfaction		dimensions of usefulness. The results do not support the proposed hypotheses that the extended usefulness is a better predictor to satisfaction and continuance intention. Related to the construct of perceived extended usefulness, efficiency and effectiveness were found to be significant. In regards to "needs fulfillment", relatedness was not found to exert an influence on needs fulfillment. All constructed were found to influence continuance intention.
Akter, Ray, & D'Ambra, 2013	Empirical	Mobile	M-health service quality (convenience, confidence, cooperation, care, concern on privacy)	Continuance intention	All service quality factors were found to positively associated with service quality with convenience

Authors /Year	Methodology	Context/Research Setting	Antecedents	Outcome Variables	Results
			Customer satisfaction Quality of life		emerging as the strongest component. Furthermore, service quality was found to have an influence on satisfaction, quality of life and continuance intention. Also, satisfaction mediates the relationship between service quality and quality of life and continuance intention.
Cao, Jiang, Oh, Li, Liao, & Chen, 2013	Empirical	social media	Confirmation Fulfillment of social needs (fulfillment of social presence, fulfillment of emotion belonging) Fulfillment of self-actualization needs (fulfillment of self-expression, fulfillment of happiness) Satisfaction	Continuance intention	Fulfillment of self-actualization needs exerts a significant impact on continuance intention. Satisfaction mediates the impact of fulfillment of social needs on continuance intention, no direct effect was found.

Authors /Year	Methodology	Context/Research Setting	Antecedents	Outcome Variables	Results
Cheung, Lee, & Lee, 2013	Empirical	social media	Disconfirmation of reciprocity Disconfirmation of helping others Satisfaction Knowledge self-efficacy	Intention to continue sharing knowledge	The results suggest that feelings of reciprocity impacts satisfaction which impact self-efficacy. Both were found to influence continuance intention.
Halilovic & Cicic, 2013	Empirical	Electronic applications and Technologies (software)	Satisfaction Confirmation Perceived usefulness Conditions of support	Continuance intention	Conditions of support are found to be a significant antecedent to satisfaction and continuance intention
Huang, Wu, & Chou, 2013	Empirical	Information technology/ ICT/ Technology/ Software (data mining tools)	Task modeling Tool functionality Task technology fit Confirmation Perceived usefulness User satisfaction Frequency of prior use Habit	Continuance use intention	Task-technology fit has a direct effect on user satisfaction and perceived usefulness. Also, an indirect effect on continuance intention. User satisfaction and perceived usefulness, habit emerged as predictors of continuance use intention.
Molina, Moreno, & Moreno, 2013	Empirical	Electronic applications and	Effort expectation Perceived usefulness	Continuance intention	Previous attitudes do not have an impact on the

Authors /Year	Methodology	Context/Research Setting	Antecedents	Outcome Variables	Results
		Technologies (e-learning)	Social influence Trust Facilitating conditions		continuance intention, previous beliefs about effort expectations, perceived usefulness and trust have an influence on continuance intention.
Setterstrom, Pearson, & Orwig, 2013	Empirical	Mobile (web enabled cell phones)	Perceived usefulness Enjoyment Technicality Perceived fee Perceived value Uncertainty avoidance Habit	Continued use intention	Perceived usefulness, enjoyment and perceived fee influenced perceived value. Perceived value impacts continued use intention. Technicality had a negative effect on perceived value in continued use. Enjoyment played influenced for continued users. Habit was a mediator between perceived value and continued use intention.
Stone & Baker-Eveleth, 2013	Empirical	Electronic applications and Technologies (e-books)	Satisfaction Confirmation Perceived usefulness	Continuance intention	Confirmation influences Perceived usefulness of

Authors /Year	Methodology	Context/Research Setting	Antecedents	Outcome Variables	Results
					electronic textbooks and satisfaction with electronic textbooks. Satisfaction and perceived usefulness of e-textbooks influence continuance intention
Sun, 2013	Empirical	Website	Uncertainty adoption Observation of prior adoption Discounting own information Initial beliefs Imitating others Adjusted beliefs Intention to use Modified beliefs Negative disconfirmation Satisfaction	Intention to discontinue	Discounting of one's own beliefs and the imitating of others when adopting a new technology are driven by the observation of prior adoptions and perceptions of uncertainty. Imitation can help reduce post-adoption regret.
Shiau & Luo, 2013	Empirical	Social media (blogs)	Confirmation Habit User involvement Perceived enjoyment Satisfaction Blogging time	Continuance intention	Continuance intention was predicted by user involvement, satisfaction and perceived enjoyment. Habit showed no strong relationship with

Authors /Year	Methodology	Context/Research Setting	Antecedents	Outcome Variables	Results
					satisfaction and use intention. Perceived enjoyment, confirmation of expectation and user involvement impacted satisfaction. Perceived enjoyment is impacted by involvement and confirmation of expectations. Blogging time moderates the effect of habit on perceived enjoyment, but has no impact on satisfaction and continuance.
Shu, 2013	Empirical	social media	Message quality Source credibility Perceived interactivity Perceived usefulness Confirmation Perceived playfulness Satisfaction	Continuance intention	Continuance intention impacted by satisfaction, which in turn is affected by interactivity and usefulness. Confirmation and playfulness did not exert an influence on satisfaction.

Authors /Year	Methodology	Context/Research Setting	Antecedents	Outcome Variables	Results
					Confirmation impacted interactivity and usefulness, which affect satisfaction.
Terzis, Moridis, & Economides, 2013	Empirical	Electronic applications and Technologies (e-learning)	Confirmed goal Confirmed usefulness Confirmed content Confirmed facilitating conditions Confirmed playfulness Confirmed ease of use	Continuance behavioral intention	Direct determinants to continuance intention were ease of use and playfulness. Usefulness and content was found to influence continuance through playfulness. Facilitating conditions and goal impact ease of use and usefulness.
Wang, Oh, Wang, & Yuan, 2013	Empirical	Mobile (newspapers)	Confirmation Perceived usefulness Perceived ease of use Perceived enjoyment Perceived fee Satisfaction	Continuance intention	Trial experience impacts post-trial beliefs and attitude. Perceived fee has an impact on the intention to continue to use after initial trial. Confirmation impacted user's beliefs. Beliefs impacted continuance intention directly

Authors /Year	Methodology	Context/Research Setting	Antecedents	Outcome Variables	Results
					and indirectly through satisfaction.
Barnes & Vidgen, 2014	Empirical	Website	Confirmation Perceived usefulness Socialness Personalization Satisfaction	Continuance intention	Socialness exerted the strongest influence on satisfaction. Confirmation impacted all variables. Continuance intention is impacted by satisfaction and perceived usefulness. Perceived usefulness exerting the strongest impact.
Belanche, Casaló, Flavián, & Schepers, 2014	Empirical	Electronic applications and Technologies (e-service income tax return)	Public administration recommendations E-service quality (efficiency, privacy, fulfillment, system availability) Interpersonal recommendations Trust in public administration Trust in public e-service Trust in the internet	Continuance intention	Trust in the public e-service mediates the influence of trust in public administration and trust in the Internet on continuance intentions. E-service quality and public administration and interpersonal recommendations influenced trust.

Authors /Year	Methodology	Context/Research Setting	Antecedents	Outcome Variables	Results
			Perceived usefulness Satisfaction		
Bonsón, Escobar, & Ratkai, 2014	Empirical	social media	Confirmation Perceived usefulness Social influence Satisfaction Attitude	Continuous use intention	Confirmation and perceived usefulness were found to impact attitude and satisfaction, but social influence exerted no effect. Results suggest that intention to continue using the system is affected mainly by users' attitude toward using Facebook.
Chang, Hsu, Hsu, & Cheng, 2014	Empirical	social media	Relationship resources Technology infrastructure Knowledge resources Human resources Experience Satisfaction Perceived value	Continuance intention	Perceived value influences satisfaction and continuance intention. Experience level impacts relationship resources, knowledge resources and human resources and the impact more salient to high-experience members. Technology

Authors /Year	Methodology	Context/Research Setting	Antecedents	Outcome Variables	Results
					infrastructure was found to be more significant to low-experience members.
Chen, Jong, & Lai, 2014	Empirical	Electronic applications and Technologies (e-appointment system)	Optimism Innovativeness Discomfort Insecurity Satisfaction Trust	Continuance intention	Optimism and innovativeness significantly influenced continuance intention through satisfaction and trust. Discomfort and insecurity did not influence satisfaction and trust or continuance intention
Cheng, 2014a	Empirical	Electronic applications and Technologies (e-learning)	Information quality System quality Support service quality Instructor quality Perceived usefulness Confirmation Flow Satisfaction	Continuance intention	Information quality, system quality, support service quality, and instructor quality exert an influence on perceived usefulness, confirmation, and flow, which in turn together explain satisfaction with the system. Satisfaction in turn leads to continued usage intention.

Authors /Year	Methodology	Context/Research Setting	Antecedents	Outcome Variables	Results
Cheng, 2014b	Empirical	Information technology/ ICT/ Technology/ Software (digital library)	Information relevance System accessibility Technical support Interface design Navigation Perceived usefulness Confirmation Perceived ease of use Satisfaction	Continuance intention	Information relevance, system accessibility, and technical support exert an impact on continuance intention of the digital library through beliefs constructs.
Fuglseth & Sørebø, 2014	Empirical	Information technology/ ICT/ Technology/ Software	Techno-overload Techno-invasion Techno-complexity Techno-insecurity Techno-uncertainty Technical support provision Literacy facilitation Involvement facilitation Employee satisfaction	Employee intention to extend the use	Technostress creators (i.e. overload, complexity, insecurity and uncertainty) and inhibitors (i.e. involvement, support, literacy) influence employee satisfaction which ultimately influence use extension.
Gao & Bai, 2014	Empirical	Social media	System quality Information quality Relevant network size Perceived complementarity Flow Satisfaction	Continuance intention	Flow, perceived usefulness and satisfaction determine continuance intention SNS. Also, network size and perceived complementarity

Authors /Year	Methodology	Context/Research Setting	Antecedents	Outcome Variables	Results
			Perceived usefulness		were found to be the main factors affecting flow. Information quality is the main factor affecting perceived usefulness and system quality was the only factor that significantly affects satisfaction.
Gwebu, Wang, & Guo, 2014	Empirical	Social media	Usefulness Trust Enjoyment Habit Loyalty Satisfaction	Continuous use Comprehensive use	Proposed integrated model helps explain continuance intention and comprehensive use. Enjoyment and loyalty directly impact continuance intention. Continuous intention is indirectly influenced by trust. Loyalty and habit influence comprehensive use.
Hernandez-Ortega, Serrano-Cinca, & Gomez-Meneses, 2014	Empirical	Electronic applications and Technologies	Environment Compatibility with culture Perceived ease of use Perceived usefulness	Continued use intention	Contingency factors directly explain the firm's perceptions and, indirectly, satisfaction and continuance intentions.

Authors /Year	Methodology	Context/Research Setting	Antecedents	Outcome Variables	Results
			Perceived security Satisfaction		
Hsiao & Chang, 2014	Empirical	Mobile advertising	Perceived value of mobile ads Perceived trust in advertiser Confirmation Perceived usefulness of mobile ads Satisfaction	Continuance intention	All factors influence satisfaction except for trust. Perceived value, perceived usefulness, and satisfaction directly influence continuance intention.
Hsieh, Chen, & Hung, 2014	Empirical	Electronic applications and Technologies (eportfolio/e-learning)	Perceived usefulness Perceived ease of use Attribution Disconfirmation Attitude Satisfaction	Intention to continuously use	Perceived ease of use still influences the perceived usefulness and attitude towards the ePortfolio. Satisfaction and attribution are the key factors driving the users' continuous intention. Satisfaction and attribution will change because of the users' expectation disconfirmation, and will influence the users to continued use.

Authors /Year	Methodology	Context/Research Setting	Antecedents	Outcome Variables	Results
Hsu, Yu, & Wu, 2014	Empirical	Social media	Subjective norm Disconfirmation Perceived behavioral control Perceived usefulness Perceived ease of use Attitude Satisfaction Flow	Continuance intention	Perceived usefulness, subjective norm, satisfaction, perceived behavioral control, attitude and flow are important for user's social networking website.
Kang & Lee, 2014	Empirical	Communication system (instant messaging)	Degree of self-customization Perceived fit Self-efficacy Perceived enjoyment Perceived usefulness Perceived ease of use	Continuance intention	Study found that self-customization enhances perceived fit and self-efficacy. In turn these factors improve users' motivation and continuance intention
Kim, Hwang, Zo & Lee, 2014	Empirical	Augmented reality (AR smartphone apps)	Information quality Interactivity Visual quality Perceived usefulness Perceived enjoyment Satisfaction	Continuous intention	The results showed that information quality was the most influencing factor for AR continuance intention among AR factors, while perceived enjoyment was not a significant antecedent.

Authors /Year	Methodology	Context/Research Setting	Antecedents	Outcome Variables	Results
Kourouthanassis, Lekakos, & Gerakis, 2014	Empirical	Social media (social networking site)	Positive disconfirmation Performance (hedonic values and social values) Satisfaction Trust Self-image congruity	Continuance intention to use	High match between SNS and their self-image leads to loyalty even if they experience low satisfaction levels. The same trend was found with trust and its moderating effect on the relationship between satisfaction and continuance intention
Li & Liu, 2014	Empirical	Internet/Online (online travel services)	Confirmation Satisfaction Perceived usefulness	Continuance intention WOM	Satisfaction and perceived usefulness positively impact continuance intention. Both constructs with perceived usefulness, positively impact WOM behavior.
Lin, Fan & Chau, 2014	Empirical	social media (Social networking sites)	Pleasure Awareness Connectedness System quality User satisfaction Sense of belonging	Continuance intention	Awareness, connectedness, system quality influence satisfaction and belonging. In turn, satisfaction and belonging influence

Authors /Year	Methodology	Context/Research Setting	Antecedents	Outcome Variables	Results
					continuance intention.
Lankton, McKnight, & Thatcher, 2014	Empirical	Information technology/ ICT/ Technology/ Software	Technology trusting expectations Technology trusting performance Technology trusting disconfirmation Satisfaction Trusting intention	Continuance intention	Trusting expectations influence trusting intention through performance, disconfirmation, and satisfaction. Trusting intention adds predictive power to satisfaction construct as together they predict usage continuance intention.
Mäntymäki & Islam, 2014	Empirical	Virtual games	Confirmation Perceived usefulness Perceived enjoyment Satisfaction Perceived aggregate network exposure (moderator)	Continuance intention	Effect of satisfaction and perceived usefulness on continuance intention moderated by network exposure.
Mohamed, Hussein, Hidayah Ahmad Zamzuri, & Haghshenas, 2014	Empirical	Internet/Online (online shopping)	Lifestyle (Time oriented, Net-oriented, Price-oriented, Preference for website)	Continuance intention	Satisfaction contributes to individual online shopping continuance intention.

Authors /Year	Methodology	Context/Research Setting	Antecedents	Outcome Variables	Results
			Online shopping experience (satisfaction) Post online shopping experience (Perceived usefulness, Perceived ease of use) Personality (Emotional stability, extraversion)		Perceived ease of website use does not directly contribute to online shopping continuance intention. Price-oriented lifestyle, perceived ease of website use and usefulness contributed to satisfaction with experience. Time-oriented, net-oriented and price-oriented lifestyles and preference for a website contribute to perceived ease of web site use. Extraverts have online shopping intention while emotional stability moderates the relationship between perceived usefulness of web site and satisfaction in online shopping.
Mouakket, 2014	Empirical	online reservations systems	Hedonic value	Continuance intention	Utilitarian and hedonic values were found to influence

Authors /Year	Methodology	Context/Research Setting	Antecedents	Outcome Variables	Results
			Subjective norm Perceived usefulness e-service quality dimensions (efficiency, reliability, contact, privacy, responsiveness)		satisfaction with influences continuance intention. Furthermore, subjective norm (i.e. influence of others) was found to influence continuance intention.
Park, 2014	Empirical	Electronic applications (Social media)	Satisfaction Personalization Perceived switching costs	Continuance intention	The study found that personalization increases its switching cost and satisfaction, which results in continued use of SNSs.
Tang, Tang, & Chiang, 2014	Empirical	Electronic applications and Technologies (blogs learning)	Perceived self-efficacy Experiential learning Confirmation Perceived usefulness Satisfaction	Continuance intention	Study found that perceived self-efficacy, perceived usefulness and experiential learning, could be critical variables for investigating continuance blog learning intention.
Yuan, Liu, Yao, & Liu, 2014	Empirical	Mobile banking	Perceived task technology fit Perceived usefulness Perceived ease of use	Continuance intention	The results show that the main predictors of continuance intention are satisfaction,

Authors /Year	Methodology	Context/Research Setting	Antecedents	Outcome Variables	Results
			Perceived risk Confirmation Perceived usefulness Satisfaction Gender		perceived usefulness, perceived task-technology fit, and perceived risk. Satisfaction, in turn, is determined by confirmation, perceived usefulness, and perceived risk. Perceived usefulness is affected by confirmation, perceived ease of use, and perceived task-technology fit. However, the direct effect of perceived ease of use to continuance intention is not significant. The results also show that gender significantly moderates the effect of perceived risk to continuance intention.
Alraimi, Zo, & Ciganek, 2015	Empirical	Internet/Online (online courses)	Perceived openness Confirmation	Continuance intention	Continuance intention is influenced by

Authors /Year	Methodology	Context/Research Setting	Antecedents	Outcome Variables	Results
			Perceived reputation Perceived usefulness Satisfaction Perceived enjoyment		reputation, openness, usefulness, enjoyment and user satisfaction. Reputation and openness were found to exert the strongest influence.
Bhattacherjee & Lin, 2015	Empirical	Information technology/ ICT/ Technology/ Software	Subjective norm Perceived usefulness Disconfirmation Habit Satisfaction Continuance intention	Continuance behavior	Satisfaction has a direct on continuance behavior and an indirect effect mediated by continuance intention. Habit was found to have a direct effect on continuance behavior and was found to suppress the effect of intentional cognitive processes on behavior
Hsu & Lin, 2015	Empirical	Paid mobile apps	Perceived performance Value for money Emotional Social Confirmation Satisfaction App rating	Intention to purchase paid apps	Confirmation was positively related to perceived value (all its factors) and satisfaction. Value-for-money, app rating and free alternatives to paid

Authors /Year	Methodology	Context/Research Setting	Antecedents	Outcome Variables	Results
			Free alternatives to paid apps Habit		apps were found to have a direct effect on intention to purchase paid apps.
Jung, tom Dieck, & Chung, 2015	Empirical	Social media	Interaction Ubiquity Trust Perceived benefit Perceived enjoyment	Continued use intention	Interaction and ubiquity influence continued use of social media by luxury hotel guests in the UK through the mediating effects of trust, benefits and perceived enjoyment.
Lin & Filieri, 2015	Empirical	Online flight check in services	Personal innovativeness Subjective knowledge Perceived usefulness Perceived ease of use	Continuance intention	Innovativeness and subjective knowledge have a direct effect on continuance intention, and an indirect effect through partial mediation of perceived ease of use and perceived ease of use on continuance intention towards online check-in service. Furthermore, the results show that perceived

Authors /Year	Methodology	Context/Research Setting	Antecedents	Outcome Variables	Results
					usefulness is a greater predictor to continuance intention.
Zhong, Lou & Zhang, 2015	Empirical	mobile travel booking services	Perceived usefulness Satisfaction Subjective norm Perceived behavioral control	Continuance intention	Perceived usefulness, satisfaction, subjective norm and perceived behavioral control have a direct positive impact continuance intention. Moreover, the authors found that satisfaction has a greater impact on continuance intention than perceived usefulness
Oghuma, Libaque-Saenz, Wong, & Chang, 2016	Empirical	Mobile instant messaging system	Confirmation Perceived service quality Perceived usefulness Perceived enjoyment User interface Perceived security Satisfaction	Continuance intention	All variables were found to have an impact on continuance either directly or indirectly through satisfaction. Security was the only aspect to not have a significant impact on satisfaction.

Authors /Year	Methodology	Context/Research Setting	Antecedents	Outcome Variables	Results
					Continuance intention is directly and positively impacted by satisfaction, usefulness and enjoyment.
Ozturk, Nusair, Okumus & Hua, 2016	Empirical	Mobile hotel booking technology	Perceived risk Perceived ease of use Subjective norm Innovativeness Utilitarian value Hedonic value	Continued use	Utilitarian and hedonic value is positively impacted by ease of use, subjective norm and innovativeness. However, perceived risk negatively impacts both hedonic and utilitarian values. Both hedonic and utilitarian values impact continuance intention to use mobile hotel booking technology.
Lu, Liu & Wei, 2017	Empirical	Mobile applications	Disconfirmation of mobility Disconfirmation of enjoyment Disconfirmation of usefulness Disconfirmation of ease of use Mobility	Continuance intention	Disconfirmation enjoyment and belief influence post-usage of those factors. In turn, post-usage enjoyment influence satisfaction. Post-

Authors /Year	Methodology	Context/Research Setting	Antecedents	Outcome Variables	Results
			Enjoyment Usefulness Ease of use Satisfaction Attitude		usage mobility did not. Both influence post-usage attitude but neither directly influence continuances intention.
*Authors did not mention the term “continuance” they contrast between pre-adoption and post-adoption beliefs and attitudes.					

APPENDIX B: 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

Approval of Exempt Human Research

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

To: **Liza M. Cobos**

Date: **June 02, 2017**

Dear Researcher:

On 06/02/2017, the IRB approved the following activity as human participant research that is exempt from regulation:

Type of Review:	Exempt Determination
Project Title:	Determinants of continuance intention and WOM for hotel mobile app users
Investigator:	Liza M. Cobos
IRB Number:	SBE-17-13189
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.

On behalf of Sophia Dziegielewski, Ph.D., L.C.S.W., UCF IRB Chair, this letter is signed by:

Signature applied by Renea C Carver on 06/02/2017 11:48:06 AM EDT

IRB Coordinator

APPENDIX C: SURVEY INSTRUMENT

Introduction

Dear Participant:
This study is looking to examine your use and the factors that influence your decision to continue using and recommend to others hotel branded mobile apps (phone or tablet apps) from hotel companies such as Hilton and Marriott. Hotel branded mobile apps provide the user access to the hotel's mobile commerce system allowing for personalized product recommendations, promotions, product distribution and facilitate transactions.

Thank you for agreeing to share your experiences and participating in our research on using hotel branded mobile apps. The survey has been reviewed and exempt by UCF's Internal Review Board. Please answer all questions truthfully to the best of your knowledge. There are no right or wrong answers and your answers will be kept anonymous, preventing them to be identified with you personally. The survey should take 10-15 minutes to complete. The compensation for your participation in the study is $1.

Submission of the completed survey will be interpreted as your informed consent to participate and that you affirm that you are at least 18 years of age and a user of hotel branded mobile applications. Before you begin, please note that the data you provide may be collected and used by Amazon as per its privacy agreement. This agreement shall be interpreted according to United States law.

If you have questions or concerns related to the study or to report a problem with the survey, contact Liza Cobos, PhD Candidate, University of Central Florida, Rosen College of Hospitality Management, 9907 University Blvd., Orlando, FL 32819, by email at liza.cobos@knights.ucf.edu.

I have read the above description.
I voluntarily AGREE to participate in this study. I do NOT agree to participate in this study.

Have you ever used a hotel branded mobile app? (ex. Hilton or Marriott mobile app).

Yes
No

How many times a year do you use hotel branded mobile apps (ex. Hilton or Marriott mobile app)?

1-2 times a year 3-6 times a year
7-12 times a year
More than 12 times a year

Please provide the name(s) of the hotel branded mobile app(s) you use most often.

What are some of the features you use on a hotel branded mobile app (e.g. reservation, check-in, room key, etc.)

What type of mobile device(s) do you use to make travel arrangements?

Smartphone
Tablet
Both

How many years have you been using **mobile devices?**

Do you use hotel branded mobile apps for:

Business travel only
Leisure/personal travel only
Both
Other

How many years have you been using **mobile apps?**

Survey questions

The following questions seek to explore the aspects that impact your use of hotel branded mobile apps. Hotel branded mobile apps provide the user access to the hotel's mobile commerce system allowing for personalized product recommendations, promotions, product distribution and facilitate transactions.

Please indicate to what extent you agree with the following statements about the **usefulness of hotel branded mobile apps.**

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree

Using hotel branded mobile apps improves my performance in managing hotel related services.	O	O	O	O	O	O	O
Using hotel branded mobile apps increases my productivity in managing hotel related services.	O	O	O	O	O	O	O
Using hotel branded mobile apps enhances my effectiveness in managing hotel related services.	O	O	O	O	O	O	O
Overall, hotel branded mobile apps are useful in managing hotel related services.	O	O	O	O	O	O	O

Please indicate to what extent you agree with the following statements about your expectations of hotel branded mobile apps.

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
My experience with using hotel branded mobile apps has been better than what I expected.	O	O	O	O	O	O	O
The service level provided by hotel branded mobile apps has been better than what I expected.	O	O	O	O	O	O	O
Overall, most of my expectations from using hotel mobile apps have been confirmed.	O	O	O	O	O	O	O

Please indicate to what extent you agree with the following statements about the mobility of hotel branded mobile apps. The term "mobility" refers your ability to have access to information, communication and services anytime, anyplace.

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
I know that hotel branded mobile apps are an instrument for hotel information and booking.	O	O	O	O	O	O	O
It is convenient to access hotel branded mobile apps anywhere at anytime.	O	O	O	O	O	O	O
Mobility makes it possible to get real-time information.	O	O	O	O	O	O	O
Mobility is an outstanding advantage of hotel branded mobile apps.	O	O	O	O	O	O	O

Please indicate to what extent you agree with the following statements about the personalization capabilities of hotel branded mobile apps.

Hotel branded mobile apps can provide me with personalized services, products, or information tailored to my specific hotel stay.	O	O	O	O	O	O	O
Hotel branded mobile apps can provide me with more relevant services, products, or information tailored to my preferences or personal interests.	O	O	O	O	O	O	O
Hotel branded mobile apps can provide me with the kind of personalized services, products, or information that I might like.	O	O	O	O	O	O	O

Please indicate to what extent you agree with the following statements about the responsiveness of hotel branded mobile apps.

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
Hotel branded mobile apps provide appropriate information to fulfill my needs.	O	O	O	O	O	O	O
Hotel branded mobile apps provide the information that I need to fulfill my needs.	O	O	O	O	O	O	O
Hotel branded mobile apps provide relevant information.	O	O	O	O	O	O	O
The information provided in hotel branded mobile apps is useful.	O	O	O	O	O	O	O

Please answer the following question.

	Africa	Europe	United States
Please select the option "United States".	O	O	O

Please indicate to what extent you agree with the following statements about your overall experience with hotel branded mobile apps.

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
I am satisfied with my overall experience with hotel branded mobile apps.	O	O	O	O	O	O	O
I am pleased with my overall experience with hotel branded mobile apps.	O	O	O	O	O	O	O
I am content with my overall experience with hotel branded mobile apps.	O	O	O	O	O	O	O
I am delighted with my overall experience with hotel branded mobile apps.	O	O	O	O	O	O	O

Please indicate to what extent you agree with the following statements about your enjoyment using hotel branded mobile apps.

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
Using hotel branded mobile apps is enjoyable.	O	O	O	O	O	O	O
Using hotel branded mobile apps is pleasurable.	O	O	O	O	O	O	O
I have fun using hotel branded mobile apps.	O	O	O	O	O	O	O

Please indicate to what extent you agree with the following statements about your intention to continue using hotel branded mobile apps.

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
I intend to continue using hotel branded mobile apps rather than discontinue using them.	O	O	O	O	O	O	O
My intentions are to continue using hotel branded mobile apps rather than use any other alternative means (ex. call hotel, use hotel website, etc.).	O	O	O	O	O	O	O
If I could, I would like to discontinue my use of hotel branded apps.	O	O	O	O	O	O	O
I plan to continue using the hotel branded mobile apps in the future.	O	O	O	O	O	O	O

Please indicate to what extent you agree with the following statements about your intention to recommend hotel branded mobile apps.

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
I will say positive things about hotel branded mobile apps to other people.	O	O	O	O	O	O	O
I will recommend hotel branded mobile apps to anyone who seeks my advice.	O	O	O	O	O	O	O
I will refer my acquaintances to hotel branded mobile apps.	O	O	O	O	O	O	O

Please answer the following question.

	Extremely happy	Sad
Please select the option "Extremely happy".	O	O

What is your gender?

Male
Female

What is your **current** marital status?

Married or domestic partner
Widowed
Divorced
Separated
Never married

What is your age?

18-24
25-34
35-44
45-54
55-64
65-74
75-84
85 or older

What is your highest level of education completed?

Some high school
High school graduate or GED equivalent
Some college
2-year college
degree 4-year
college degree
Professional degree
Doctorate

What is your **primary** occupational status?

Employed full time
Employed part time
Unemployed looking for work
Unemployed not looking for work
Retired
Student
Disabled

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

Less than $20,000
$20,000 - $29,999
$30,000 - $39,999
$40,000 - $49,999
$50,000 - $69,999
$70,000 - $89,999
$90,000 -$109,999
$110,000- $129,999
$130,000- $149,999
More than $150,000

How many people contribute to your household income?

Thank you very much for completing our survey. Your response is very valuable to us and will be used to inform academic research and industry practices. In order to receive credit for completing the survey you must enter the survey code in Mturk system. Your survey code is **MOBILEAPP17.**

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