



E-SERVICE CONTINUANCE: AN INSIGHT INTO ONLINE TRAVEL SERVICES IN CHINA

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1 INTRODUCTION

1.1 Research interest

The objective of this study is to determine the key factors influencing users' continuance intention to use e-services in the context of online travel services in China. With the explosion of advanced service technologies, services have evolved greatly, making e-services an important topic in the Information Systems (IS) field from both scientific and practical standpoints. This study aims at exploring e-service continuance by incorporating perceived service quality as an additional explanatory variable in understanding why users would like to continue using a specific e-service, and thus bring fresh insight into IS continuance research. Meanwhile, by understanding the factors influencing IS users' continuance intention to use e-services, e-service providers will be given a more solid foundation on which to build and develop their long-term customer relationships through appropriate strategies targeting at not only customer relationship development, but also return on investment and other financial outcomes from their IS investments in e-services.

This chapter is the starting point of the study. In this chapter the research interest of the current study is first introduced. Subsequently, the motivations and aims of the study are discussed. Then the research content is summarized. Finally, the structure of this study is presented. This chapter aims at specifying the purpose of this research and the research content. In other words, it introduces what the current study is about and why it has been conducted.

With the penetration of the Internet into people's lives, business companies are offering e-services to customers either for achieving competitive priorities or owning competitive necessity. E-services are booming and becoming pervasive in the electronic market (Chea & Luo 2008; Chen & Tan 2004; Khalifa & Liu 2007; Rust & Lemon 2001), and have become increasingly widely accepted by customers, all of which has made e-services emerge as an important topic in IS research.

While the importance of e-services has been recognized in IS literature in recent decades, only some research has been conducted that focuses on e-service adoption. Furthermore, the conceptualization and empirical validation of IS continuance models in the context of e-services has not been addressed. In addition, customer retention

remains a key managerial challenge of our day. Thus, there are calls for further research on the determinants of the continued use of e-services.

Prior IS literature posits that continued IS usage plays important roles in IS success. Bhattacharjee (2001a) discussed the distinctions between IS acceptance and IS continuance behavior, and notes that IS users' initial acceptance of IS is merely an important first step toward IS success. He highlighted the importance of IS continuance in assuring a successful IS implementation and argue that the long term viability of an IS and its eventual success depend on users' continued use of the IS rather than their first-time use of that IS (Bhattacharjee 2001a). The success of e-service providers would therefore seem to rely more on their ability to retain existing customers than to acquire new customers. As Bhattacharjee (2001a) pointed out, the effective subscriber base, market share and revenues of e-commerce companies depend on the numbers of both initial adopters and repeat users.

Retaining customers is a financial imperative for e-service providers as acquiring a new customer may cost as much as five times more than retaining an existing customer (Parthasarathy & Bhattacharjee 1998). Though users' acceptance and use of e-services can lead to productivity gains, positive economic returns and enhanced productivity, the return on investment e-service providers expect from their investments in e-service applications typically accrues in the post-adoption stage of e-services (Brynjolfsson & Hitt 1996; Kim & Malhotra 2005; Santhanam & Hartono 2003; Venkatesh 1999; Venkatesh et al. 2003). User acceptance of e-services will not unleash the full potential of investments in e-service applications for e-service providers (Kim & Son 2009). The potential benefits to be gained from increasing users' continuance intention can not only reduce operating costs substantially, but also possibly increase profit dramatically for e-service providers (Crego & Schiffrin 1995; Reichheld & Sasser 1990). Users' e-service continuance has significant implications for e-service providers that seek to enhance their e-service performance and thereby reap the full benefits from their investments on e-service applications. Thus, e-service providers should focus on e-service users' continued usage in realizing their e-service success rather than users' first-time use of e-services.

The online environment makes IS continuance a challenging issue for e-service providers because of the ease and minimal switching costs in e-services. A mouse click is enough for e-service users to switch to alternatives, which creates considerable challenges for e-service providers in retaining their existing customers in comparison with the traditional services provided by offline channels (Chea & Luo 2006).

Nowadays, IS managers are less concerned with users' initial acceptance of IS and focus more on IS continuance rather than IS acceptance, since the low use of IS and the defection of IS users have both been suggested as being one of the main causes of IS

failure. Even with the given trend, IS adoption continues to receive much attention, and less attention has been paid to the post-adoption environment in which individuals decide to continue or discontinue using an IS. IS users' continuance intention is considered to be one of the critical factors for business success due to its implications for cost saving and the achieving of long-term profitability (Khalifa & Liu 2007; Parthasarathy & Bhattacharjee 1998; Reichheld & Schefer 2000). The severe competition and the minimal switching costs in e-services makes IS users' continuance intention an ever more challenging issue in the context of e-services (Anderson & Srinivasan 2003; Chea & Luo 2008). If managers want to promote the continued usage behavior of IS users, clearly they need to understand what drives the continued usage of IS on the individual level (Limayem, Hirt & Cheung 2007). Owing to the significant influence of IS continuance on the long-term viability of IS and the proliferation of e-services, it is of importance and timeliness to study IS continuance at the individual level. Hence, identifying the factors influencing individuals' continuance intention to use e-services is a critical issue for both researchers and practitioners alike.

IS continuance, as defined by Bhattacharjee (2001a), refers to users' decisions to continue using a particular IS over a long period and focuses on users' post-adoption behavior after their initial use of IS, in contrast to IS acceptance, which focuses on users' initial or first-time use of IS (Bhattacharjee 2001a; Bhattacharjee, Perols & Sanford 2008). It also describes users' behavioral patterns, reflecting their continued usage of a particular IS (Limayem, Hirt & Cheung 2007). According to Bhattacharjee (2001a), IS continuance is not an entirely alien concept in the IS domain. He notes that IS continuance has already been investigated in the literature of IS application, for example IS implementation by Zmud (1982), incorporation by Kwon and Zmud (1987), and routinization by Cooper and Zmud (1990). Such prior studies have acknowledged the existence of the post-adoption stage in the IS adoption process (Bhattacharjee 2001a). Limayem et al. (2007) defined IS continuance as a form of post-adoption behavior. According to Limayem et al. (2007), IS continuance can be used as a synonym for the term post-adoption in IS literature though post-adoption actually includes a series of different behaviors following users' initial acceptance of IS, such as continuance, assimilation, infusion, routinization, adaptation, recommendation and complaints (Chea & Luo 2008; Karahanna, Straub & Chervany 1999; Rogers 1995). In the current study we limit ourselves to the term IS continuance.

Recently IS continuance has received increasing attention in IS research. Some studies have been conducted to explore the factors influencing IS continuance at the individual level, and many avenues have been used in the prior research to examine IS continuance from individual perspectives, including explanations based on system usage (Cenfetelli, Benbasat & Al-Natour 2008; Gefen, Karahanna & Straub 2003a, 2003b;

Hsieh, Rai & Keil 2008; Liao, Palvia & Chen 2009), user satisfaction (Bhattacharjee 2001a, 2001b; Deng et al. 2010; Limayem, Hirt & Cheung 2007), trust (Gefen 2000; Gefen, Karahanna & Straub 2003a, 2003b; Qureshi et al. 2009), and, to a lesser extent, on the individual difference factors of IS users, such as IS users' demographics, lifestyle, and experience (Recker 2010; Venkatesh et al. 2003). Prior research on IS continuance has created the theoretical perspectives of IS continuance research on the individual level.

In IS literature, one of the main schools of thought in IS continuance assumes that system usage is the main measure for explaining IS continuance. According to this school of thought, IS continuance is assumed to be an extension of IS acceptance behavior, and a vast body of research has employed the same set of variables used in IS acceptance to predict IS continuance by extending the acceptance models in a longitudinal setting (Davis, Bagozzi & Warshaw 1989; Gefen, Karahanna & Straub 2003a; Karahanna, Straub & Chervany 1999). IS adoption has traditionally been one of the key research streams in the IS discipline, and most IS adoption research has focused primarily on users' initial acceptance of IS, largely, by employing intention-based models, such as the Technology Acceptance Model (TAM) (Davis, Bagozzi & Warshaw 1989), the Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al. 2003), and the Theory of Planned Behavior (TPB) (Ajzen 1991). These intention-based models have also been widely employed to explain IS continuance. TAM posits that IS users' two main beliefs about IS, perceived ease of use and perceived usefulness, determine both users' initial acceptance of IS and the intention to continue using IS (Davis, Bagozzi & Warshaw 1989). UTAUT posits that usage intention and use behavior in both IS acceptance and IS continuance are driven by four key factors: performance expectancy, effort expectancy, social influence and facilitating conditions (Venkatesh et al. 2003). In TPB, individual behavior is assumed to be driven by behavioral intention, which is a function of the following three variables: an individual's attitude towards behavior, the subjective norms surrounding the performance of the behavior, and the perceived behavior control (Ajzen 1991). These studies suggest that IS users' beliefs about IS usage and the outcomes of using IS are the main factors motivating IS acceptance and IS continuance.

Some evidence in prior studies shows that the determinants of IS users' initial acceptance are, at least to a certain extent, different from the drivers for their IS continuance (Karahanna, Straub & Chervany 1999; Venkatesh & Morris 2000). Though IS users may form some beliefs and initial judgments about an IS, their beliefs and initial judgments will be modified after their actual use of an IS, which, in turn, results in their continuance or discontinuance of that IS usage after their initial use (Bhattacharjee 2001a; Venkatesh & Goyal 2010). Recently, Expectation-Confirmation

Theory (ECT) (Oliver 1980), drawn from psychology, has been introduced as a new theoretical perspective within individual IS continuance research, explicitly focusing on users' psychological motivations emerging after their initial adoption of a product/service and resulting in their continuance and discontinuance of using the product/service. This school of thought argues that IS continuance is determined by user satisfaction with prior IS use, which is based on expectation confirmation in prior IS use.

With regards to IS continuance, ECT has been employed to explain how and why users' reactions change over time. According to ECT, users will reevaluate their prior acceptance decision after their use of IS and decide whether to continue or discontinue using the IS. Two constructs, confirmation and user satisfaction with prior IS use are used to represent users' salient beliefs on and attitudes toward IS use respectively. Bhattacharjee (2001a) suggested that the variables in ECT may be needed in explaining individual users' IS continuance beyond the constructs in TAM, TPB, and UTAUT. In contrast, ECT views confirmation as the prerequisite of satisfaction, which, in turn, leads to the continuance or discontinuance of a product/service usage. Anderson and Sirnivasan (2003) discussed the link between satisfaction and continuance intention, and specifically notes that there is direct relationship between satisfaction and continuance intention, and their relationship appears to be intuitive. In the marketing literature satisfaction has been assumed to be one of the main motivators for repurchasing and has received empirical validation in various settings (Hallowell 1996; Rust & Zahorik 1993; Rust, Zahorik & Keiningham 1995). However, most of the previous studies were conducted in the context of traditional shopping, and it is not clear whether these previous findings can be applied to the e-service context in IS research.

Bhattacharjee (2001a) first dismissed adoption research in IS and turned to examine the factors influencing IS continuance using ECT. He borrowed heavily from ECT (Oliver 1980), and built an entirely different theoretical foundation – an IS continuance model (Bhattacharjee 2001a). In the IS continuance model, IS users' beliefs about technology (perceived usefulness) and their attitudes (satisfaction) towards their previous usage behavior are used to explain their continuance decision, and confirmation is assumed to be one of the prerequisites for their attitude. Furthermore, the IS continuance model views certain beliefs that influence IS users' subsequent continuance decisions, but which do not necessarily influence their beliefs in the initial acceptance of IS. Since Bhattacharjee (2001a), there has been an increasing research interest in investigating the determinants of IS continuance in different settings by employing the IS continuance model proposed by him as the basic research framework (Bhattacharjee 2001b; Bhattacharjee, Perols & Sanford 2008; Chiu et al. 2005; Deng et al. 2010; Liao, Palvia & Chen 2009; Limayem & Cheung 2008).

In parallel with the progress of IS continuance research, a separate research stream focusing on service quality emerged in the IS domain, especially after the proliferation of online business (Brown & Venkatesh 2005). Service quality has received much interest from researchers and practitioners with the recognition of its importance in the online environment (Rai & Sambamurthy 2006). In service literature, service quality was assumed to have the potential to influence the future behavior of service users and have an impact on the profits of IS investments (Cronin & Taylor 1992; Zeithaml, Berry & Parasuraman 1996). Service quality can be viewed as a potential motivator of individuals' IS adoption behavior (both acceptance and post-adoption behavior) and an appropriate means to evaluate IS success. Thus, service quality might be expected to be a motivator for the continuance intention of IS users as it would have the potential to influence IS users' future behavior after their initial use of an IS and, as such, be an important means to assess IS success (Bhattacharjee & Premkumar 2004; DeLone & McLean 1992, 2003; Hu et al. 2009; Zeithaml, Berry & Parasuraman 1996).

In IS literature, prior studies have identified service quality as an essential metric with which to evaluate IS success (e.g. DeLone & McLean 1992, 2003, 2004; Kettinger & Lee 1994; Zeithaml, Berry & Parasuraman 1996), and research on service quality primarily focused on examining the antecedents of service quality and examining the effects of service quality on IS users' outcomes, such as satisfaction and loyalty (Hu et al. 2009; Zeithaml, Berry & Parasuraman 1996; Zhu, Sivakumar & Parasurman 2004). Zeithaml et al. (1996) investigated the behavioral consequences of service quality in marketing literature and found that improved service quality played an important role in increasing favorable behavioral intentions and decreasing unfavorable intentions. They viewed the consequences of service quality on an individual's behavioral intention as resulting in an individual's retention or defection. However, little research has been conducted to examine the behavioral consequences of service quality in IS continuance research. In particular, research on taking an integrated perspective to examine the predictors of service quality and investigate the relationship between service quality and the IS continuance intention is lacking. Thus, there is a call for further research to examine the association between service quality and IS continuance.

1.2 The motivation and purpose of the study

The motivation for this study derives from two different streams of research: IS continuance research and service quality research. There are gaps in the current research in the above mentioned two research fields, which are the motivators for this study.

As discussed in Section 1.1, IS continuance has been one of the most recently explored topics in the IS research field. A variety of theoretical perspectives have been advanced in order to understand what motivates individuals to reuse an IS, which is important for IS success. Though IS continuance has been a topic of much research effort, a lot remains unknown about IS continuance.

In addition, though numerous studies on IS continuance have been conducted both in the system usage and user satisfaction research fields to explore IS continuance, the field has been relatively focused on system usage or user satisfaction independently. However, a focus on system usage in IS continuance cannot explain why IS users continue or discontinue their IS usage solely based on IS users' cognitions about IS, whereas, a focus on user satisfaction does not always guarantee knowledge about IS users' continuance intention. Prior research shows that both system usage and user satisfaction are important predictors of the IS continuance intention. However, in IS literature, few studies have tried to address the known limitations of the abovementioned IS continuance research by integrating system usage and user satisfaction into one model to explore the associations between system usage, customer satisfaction, and the continuance intention in the IS setting, particularly in the e-service context. Thus, this study attempts to integrate both system usage and user satisfaction in one behavioral intention model to explore IS continuance, which might provide some explanations about IS continuance and address the limitations of prior research on IS continuance.

Service quality, as a potential variable related to system usage, has not been explored in the context of e-services, particularly in the e-service continuance research context. The stream of service quality research in the IS domain has been primarily focused on exploring the measurements that evaluate IS service quality. Many IS service providers have incorporated those measurements into their management approach as a means for improving their IS service quality. However, only a little research has been done to examine the influence of service quality on the IS continuance intention. Thus, there is no proof of the value of improved service quality for promoting the continued usage of IS for IS managers (Kettinger, Park & Smith 2009).

This study examines this issue by incorporating perceived service quality as an additional variable related to system usage into the behavioral intention model, which should highlight the role it plays in predicting e-service users' continuance intention to use e-services. Furthermore, it should demonstrate to IS managers the value of improving service quality. The incorporating of service quality into the IS continuance model follows the belief-attitude-intention-behavior linkages as employed widely in traditional IS adoption research. According to Wixom and Todd (2005), perceived service quality is a cognitive belief about IS usage. Hong et al. (2008) have conducted

longitudinal research on the variables employed in prior IS continuance research and viewed satisfaction as IS users’ object-based attitude towards IS. This study attempts to examine the predictors of service quality and continuance intention and the relationships between service quality, satisfaction and retention in the e-service context. It also follows the service quality-satisfaction-loyalty linkages in the marketing literature.

Figure 1 presents the research gap in the IS literature. As Kettinger et al. (2009) argued, the association between service quality and IS users’ continuance intention is neither simple nor straightforward (Kettinger, Park & Smith 2009). Little research has been conducted to explore the association between service quality and continuance intention in IS literature. Thus, there is a specific call for the inclusion of perceived service quality in IS continuance research in order to advance our understanding of IS continuance in the e-service space.

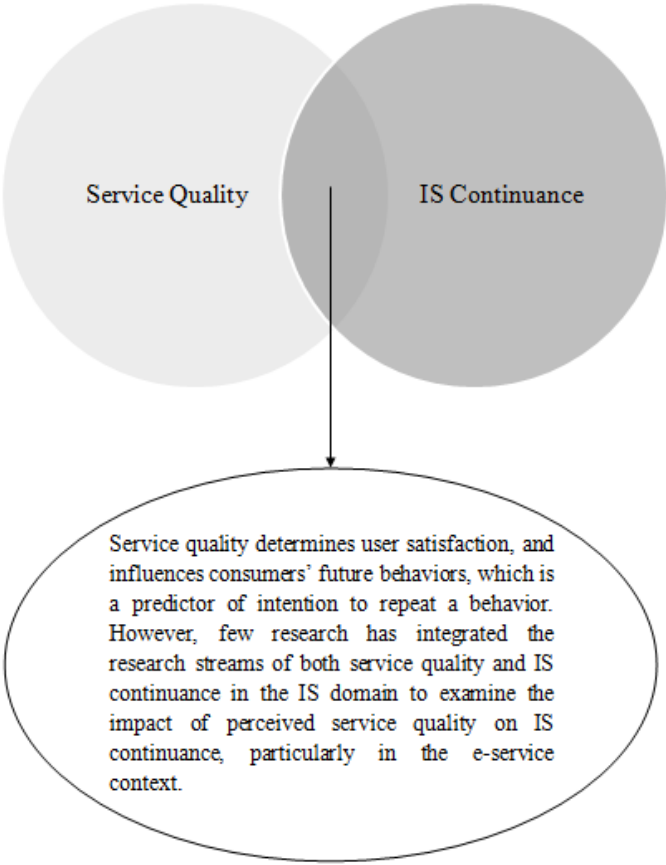


Figure 1 Research gap

This study integrates two research streams, IS continuance and service quality, by incorporating perceived service quality into IS continuance research attempting to provide a comprehensive model for predicting IS users' continuance intention to use an IS in the e-service context. Hitherto, a user's intention to adopt IS and to continue using IS both on the individual level and the organizational level have been two important foci of IS research. In general, this study aims at delineating IS continuance research from the individual perspective, and addresses the effects of both system usage and user satisfaction on users' continuance intention in the context of e-services in order to provide both theoretical and practical contributions to the two research fields.

Though IS continuance has received more attention in IS research in recent years, some problems have been acknowledged with regard to current IS continuance research. The main criticism is the employment of the current IS adoption theories in IS continuance research. In IS continuance research, both system usage and satisfaction are important predictors of IS users' retention to use IS. System usage, as a cognitive factor, has been explored to explain users' continuance intention in different IS acceptance models, e.g. TAM, TPB and UTAUT. However, in IS literature there is an argument that these models cannot explain why some users discontinue the use of an IS after their initial acceptance of it. In addition, prior research does not elaborate on the emerging of users' psychological motivation after their initial acceptance of IS. Psychological motivation can potentially influence users' subsequent continuance decisions but not their prior acceptance decisions. Current IS acceptance models provide a limited explanation of observed continuance behavior. There is a need for more rigorous research on IS continuance in order to understand the difference between IS acceptance and IS continuance and establish a theoretical foundation for IS continuance research.

In recent years, user satisfaction has been found to be another salient predictor of users' continuance intention. However, few studies have been made to explore the influence of both system usage and user satisfaction in the same model in order to better identify the factors contributing to the formation of a user's decision to continue using e-services. Prior studies also argue that satisfaction is the consequence of service quality. However, research examining the links between service quality, satisfaction and IS users' continuance intention is scant, particularly in the e-service context.

Most of the prior studies in IS continuance research were conducted in the field of traditional IS, and little research has been done to attempt to explore the determinants of IS users' continuance intention within the virtual online environment, in particular in the context of e-services, for example online banking, online government, online travel service and so on. As Oliveria et al. (2002) stated, e-services might be the key to long-term advantages in this digital era, and e-service quality is becoming even more critical for companies to retain and attract customers in the digital age.

In order to fulfill the gaps, the three motivators of this study are illustrated as follows.

First, this study aims at the advancement of the theories in IS continuance research. TAM is a popular approach in IS continuance research, and numerous studies have been conducted with TAM within different user populations and different settings. Recently ECT has also received attention in IS continuance research, and some studies have been conducted to explore the predictive ability and rigorousness of ECT within different user populations and different settings. Though TAM has been employed in numerous studies to explore IS continuance and the post-adoption behavior of IS users (Gefen, Karahanna & Straub 2003a; Hsu, Chiu & Ju 2004; Hu et al. 2009; Karahanna, Straub & Chervany 1999; Roca & Gagne 2008), its emphasis is on examining variables that lead to initial acceptance. As Bhattacharjee and Premkumar (2004) argue, IS users' beliefs about IS and attitudes towards IS use change over time as IS users gain experience with IS usage, which, in turn, may result in the change of IS users' subsequent behavior regarding IS usage, such as the continued or discontinued use of an IS. Though the focus of ECT is to explain the determinants of users' continuance intention, the potential change in both expectations and beliefs across the IS adoption process has not been explicitly examined (Bhattacharjee 2001a; Liao, Palvia & Chen 2009).

Therefore, this study aims to synthesize a model to investigate the antecedents of IS users' continuance intention by incorporating perceived service quality as an additional variable along with the two variables in TAM, perceived ease of use and perceived usefulness, and user satisfaction in ECT in the e-service context. This aims at the advancement of the theories in IS continuance research. In this study, the research model will be tested empirically in order to examine how the research model explains IS continuance in a Chinese online travel service context.

Another motivation for this study is in exploring the antecedents of e-service quality and testing it empirically. Although there are an increasing number of studies on e-service quality, currently no agreement on the dimensions of e-service quality has been arrived at in the literature. In addition, only a little research has tried to integrate the antecedents of service quality into the IS continuance model to provide a deeper understanding of the association between service quality and continuance intention. This study also aims to conceptualize the antecedents of e-service quality based on previous studies and integrate those antecedents of service quality into the synthesized IS continuance model. An empirical test will be conducted to investigate the antecedents of e-service quality and their effects on continuance intention.

Finally, the motivation to conduct the research in the travel industry is derived from the fact that online travel services have already become popular throughout the world due to their characteristic of being information-rich. A growing number of travel

organizations are offering their travel services to customers online. Some studies have been conducted to explore the factors influencing users' adoption of online travel services, but there is little evidence about what factors determine individual users' continuance intention regarding online travel services. Nowadays, for online travel service providers, the main focus in evaluating the success of online travel service applications is users' continued use of the online travel services, rather than the users' initial acceptance of online travel services. This is based on the observation that the productivity benefits of their investment in online travel services typically accrue through continuous usage of those online travel services. Little research has been conducted to address individual users' continuance intention to use online travel services and the link between improved online travel service quality and continuance intention. This means managers lack the foundation to address long-term relationships with their customers and evaluate improved service quality in their customer relationship management.

Thus, this thesis aims at contributing to IS continuance in the online travel industry by providing evidence of what determines users' continuance intention to use online travel services and the link between improved online travel service quality and continuance intention. In addition, this study will examine the research model empirically to see if the proposed research model is appropriate for describing IS continuance in the online travel industry in China.

1.3 Research question

To achieve both the general and the specific purposes of the study the following questions will be answered:

RQ1 What are the antecedents of online travel service quality?

RQ2 What are the determinants of users' continuance intention to use online travel services?

In order to fulfill the objectives and answer the research questions, some different research approaches are employed in this study. In order to explore the antecedents of service quality, a comparison of different theoretical approaches to e-service quality are conducted to help find appropriate measurements to evaluate e-service quality in the online travel service context from the perspective of customers. In order to examine the factors determining users' continuance intention to use online travel services, a comparison is conducted between the two different theoretical models in IS continuance research, TAM and ECT, that aims to find an appropriate model to explain users' continuance intention to use online travel services. The proposed IS continuance

research model is empirically tested with data collected from a survey conducted among a sample of Chinese online travel service users in the spirit of theory advancement and replication prevalent in IS continuance research.

The study results will help build a bridge between theories of the aforementioned disciplines and their application in the Chinese tourism industry. Some suggestions will be made to help the Chinese online travel service providers improve their online travel service quality in order to better satisfy their customers and take action to enhance the continued use of online travel services among individuals. The results can also be useful when managers of travel service organizations make their decisions about strategies for adjusting their online travel services and enhancing their online travel market.

1.4 The structure of the study

The thesis is organized into nine main chapters. It begins with this introductory chapter, which presents an outline of the research, including the background of the research, the motivation and objectives of the research, and the research questions.

Chapter two presents the research background by conceptualizing e-service, presenting the introduction of e-service applications in the tourism industry, presenting a brief introduction of the impact of the Internet on the users of travel services and online travel service development in China. This chapter offers a brief picture of the research context as well.

Chapter three is devoted to the discussion of IS continuance research. It provides an overview of the existing research approaches in IS continuance by presenting and comparing the two dominant research models, the Technology Acceptance Model (TAM) and the Expectation-Confirmation Theory (ECT).

Chapter four presents a literature review of e-service quality research in IS literature in order to map the study of e-service quality in IS continuance research.

Chapter five introduces the research model. Based on previous studies and theories, the hypotheses used in this study are drawn from this chapter.

Chapter six describes the methodological considerations of this study, including the methodological choice, the research design, the validity and reliability of the variables and the methods of analysis.

Chapter seven presents the results of the analysis. Both the test results of the measurement model and the proposed structure model are discussed, followed by a post hoc analysis of the relationships between the antecedents of e-service quality and continuance intention.

Chapter eight discusses the findings of the study. This chapter gives answers to the two research questions put forward in the study.

Chapter nine presents the main conclusions drawn from the research. The main contributions to both the theoretical and practical perspectives regarding IS continuance are emphasized, and the limitations of the study are discussed. Finally possible future research in IS continuance research is also suggested.

Table 1 presents an overview of the dissertation, which offers a summary of the research contents and the purpose of each chapter.

Table 1 Structure of the study

<i>Chapter</i>	<i>Contents</i>	<i>Purpose</i>
Introduction	Presents an outline of the research, including the research interest, the purpose of the research and the theoretical perspective of the research.	To explain the main research content and why this study has been conducted.
Research background	Presents the research background, including e-service concept, e-service application in the tourism industry, the impact of the Internet on travel service customers, and online travel service development in China.	To present the research background and research context of this study.
IS continuance research	Presents an overview of the current research approaches in IS continuance and a comparison of these approaches.	To present the theoretical background to IS continuance research.
E-service quality research	Presents an overview of the current research approaches in e-service quality.	To present the theoretical background to e-service quality research.
Research model and research hypotheses	Presents the research model, research hypotheses and the theoretical foundation of the research model and hypotheses.	To present what will be tested in this research and why.
Research strategy and methodology	Presents the selected methodology, the research design, research measures, the validity and reliability of the research, and data analysis methods.	To introduce the empirical study of the research.
Empirical results of the research	Presents the empirical results based on the statistical analysis and tests the research model and hypotheses.	To describe the empirical results of the research.
Discussion	Presents the discussion of the statistical results of the research.	To discuss the results of the research.
Conclusions	Presents the contributions, the limitations and future research perspectives.	To form conclusions about the implications for theoretical and practical perspectives.

2 RESEARCH BACKGROUND

This chapter mainly introduces the research background of the study. First, the definitions and concepts of e-service are introduced. Then, there is a discussion about online travel service development in the tourism industry and the impact of the Internet on tourism consumer behavior. Finally, the online travel service development in China is presented.

2.1 E-service: definition and concept

Even though e-service is becoming an important and popular topic in IS research, there is no agreement on the definition of e-service. In the literature, the concept of e-service is inextricably linked with electronic business (e-business) (Zeithaml & Bitner 2000). Prior IS literature has offered several different conceptualizations of e-service with different focuses in their definitions of e-services (de Ruyter, Wetzels & Kleijnen 2001; Ghosh, Surjadaja & Antony 2004; Rowley 2006; Rust & Lemon 2001; Salaün & Flores 2001; Turban et al. 2002; Zeithaml & Bitner 2000).

Zeithaml and Bitner (2000) simply defined e-service as web services delivered through the Internet. They argue that customers rely on the Internet to interact with or contact service providers, such as via the websites of service providers in order to access e-services. They emphasized the importance of the Internet and customers' dependence on the Internet for e-services.

De Ruyter et al. (2001) highlighted the importance of e-service in the self-service environment via the Internet based on the fact that ever more customers increasingly look for company access and customer support via the Internet, and an increasing number of service providers are distributing their core services and customer support to customers using electronic means. According to their conceptualization, e-service is interactive, content-centered, and Internet-based customer service with the support of technologies and systems offered by service providers, and is driven by customers. The customer-provider relationship is the focus in their concept of e-service (de Ruyter, Wetzels & Kleijnen 2001).

Rust and Lemon (2001) conceptualized e-service as information service or self-service, focusing on information in e-service. As Rust and Lemon (2001) noted, the

Internet provides the possibility for interactive information exchange, and the primary value exchanged between the sellers and buyers in e-service is based on information communication. E-service makes information exchange and value exchange via the Internet possible (Zeithaml, Parasuraman & Malhotra 2002; Kim, Kim & Lennon 2006). Salaün and Flores (2001) and Ghosh et al. (2004) also highlighted the importance of information in e-service. According to Salaün and Flores (2001), e-service is more than responsiveness in customer services, and more than order fulfillment. E-service should provide customers with a different experience via the interactive flow of information through the Internet compared to traditional offline channels. Their focus on information in the concept of e-service might be explained by how the information in e-services is perceived and used and what information customers need or expect will exert influence on information quality in the e-service process, which, in turn, has an impact on the formulation of customer satisfaction (Rust & Lemon 2001; Salaün & Flores 2001).

Compared to the aforementioned concepts of e-service, Rowley (2006) has made a much broader definition of e-service based on the concept of service defined by Hoffman and Bateson (1997). Rowley (2006) extended it to embrace all media and all kinds of interactions. According to Rowley (2006), e-service should include all kinds of interactivities and deeds mediated by information technology, such as the Internet, information kiosks and mobile devices, and the interactivities should include e-tailing, customer support and service, and service delivery.

Turban et al. (2002) defined pure electronic commerce (e-commerce) as a case in e-services. In their opinion, the product, the agent and the process in e-service are all digitalized. Pure e-commerce service can only be realized if the products/services traded online can be digitalized. Otherwise, a pure e-commerce service is not possible in cases where physical products are traded in e-commerce, since the products must be delivered to customers physically (Luarm & Lin 2003).

Aforementioned concepts of e-service lead us to compose the two basic characteristics of e-service: interactive service offered to customers and services delivered via the Internet. Though information is important in e-service as Rust and Lemon (2001) and Ghost et al. (2004) suggest, the content of e-service includes not only information service, but also system service, delivery service, transaction service and so on, and interactivity is a key characteristic of e-service. Thus, interactive service can be defined as one of the main features of e-service. In addition, the Internet is also critical in e-service. As Zeithaml and Bitner (2000) suggest, e-service should be conducted via the Internet, which is different from services provided via mobile technology and traditional offline channels. Thus, based on the aforementioned issues, the conceptualization of e-service can be composed as de Ruyter et al. (2001) suggest:

“E-service is an interactive content-centered and Internet-based customer service, driven by customer and integrated with related organizational customer support processes and technologies with the goal of strengthening the customer-service provider relationship” (de Ruyter, Wetzels & Kleijnen 2001, p.185).

2.2 E-service in the tourism industry

As Buhalis and Law (2008) stated, tourism is an international industry, which has a greater array of heterogeneous stakeholders than any other industry. The tourism industry, as an information-intensive industry, has developed with the support of information and communication technologies (ICTs) and information systems (Cho 1998; Buhalis 2000; Law 2000; Law, Leung & Wong 2004). Its energetic growth and development can be mirrored by the development of ICTs. We have witnessed the operational and strategic transformation practices of ICT applications in the tourism industry in the past several decades, such as the establishment of the Computer Reservation Systems (CRSs) in the 1970s, the Global Distribution Systems (GDSs) in the late 1980s as well as the development of the Internet in the late 1990s (Buhalis 2003; Buhalis & Law 2008; O'Connor 2000).

The Internet has dramatically transformed the tourism industry in the last decade with the proliferation of the Internet into people's lives, such as the way travel service providers distribute travel information in the marketplace and the way people plan their trips and consume travel services has been fundamentally reshaped (Buhalis & Law 2008; Xiang & Gretzel 2010). According to Porter (2001), the Internet has undoubtedly not only changed the business and strategies in the tourism industry, but also the structures of the tourism industry. Morgan et al. (2001) argue that the tourism industry is largely information-driven, therefore, the Internet can be considered ideally suited as a medium for travel service delivery due to the high possibility for travel information digitalization and delivery online and the Internet as a universal and interactive means of communication (Buhalis & Licata 2002). Thus, it is not a surprise that the Internet has shifted the traditional way travel services were distributed and online travel services have developed into one of the largest e-commerce domains (Buhalis & Licata 2002; Clemons, Hann & Hitt 2002). In the past decade, we have witnessed the transformational effect of the Internet on the tourism industry (Buhalis & Law 2008).

The tourism industry is ranked as the prime sector in e-commerce (Buhalis 2000). Compared to some other industries, the tourism industry is quite fit for online business because of the specific characteristics of travel service: i). Travel service is a kind of

intangible product. Though the travel service is related to physical tangible products, such as hotels, travel destinations, transportation tools and so on, there is no physical tangible product delivery in the travel service process, especially in the travel service booking process before travel. This makes the travel service fit with e-commerce applications; ii). Travel service is information-intensive (Buhalis 2000; Law 2000; Law, Leung & Wong 2004; Sheldon 1997). In essence, travel service is a kind of information service. It offers travel information to travelers as much as possible in order to meet customer needs. In addition, delivering travel services online can help increase price transparency and deal with the information asymmetry of the tourism industry; iii). Travel service is complex. Travel service involves a number of travel service organizations, including travel service suppliers, travel operators, travel agencies, other intermediaries as well as other industries, which makes the travel service operation complex. Online travel services can make travel services become easier to use and find, for example, it will be possible for travelers to book travel services provided by different travel service organizations at the same time without having to contact any of the travel service organizations.

Customer demand for online travel services is another motivator pushing the development of online travel services in the tourism industry. Parallel to the change in the tourism industry, there is also change in consumer attitudes and behavior due to the development of the Internet. Nowadays, increasingly more travelers would like to make their travel plans and use travel services via the Internet because of its convenience, the ability to save time as well as the interactivity of the Internet. As Buhalis and Law (2008) argued, the Internet has placed travelers in the middle of functionality and service delivery in online travel services. Each traveler is different from other travelers with their own unique desires, expectations and experiences. Travelers are increasing their interest to pursue the travel services that meet their demands according to their own preferences and schedules, and losing interest in packaged tours. The Internet empowers travelers with more travel-related information, and makes them seek exceptional value for both time and money (Buhalis & Law 2008). Travelers are eager to receive tailored online travel services to meet their personal need, which makes a strong call for the development of online travel services in the tourism industry.

Travel service providers are motivated to deliver travel services online that aims at achieving benefits and competitive advantages as well as increasing market opportunities to obtain a greater share of the travel marketplace. Travel service providers are increasingly opting for delivering services online in order to meet the demands of their online customers (Turban et al. 2002). Travel service providers also expect to reach and persuade their potential customers through comprehensive, personalized and up-to-date travel services via the Internet which meet the desires or

needs of their customers (Buhalis & Law 2008). Under the challenge of market globalization, offering online travel services plays a critical role in increasing the competitiveness of travel service providers in the travel marketplace, improving their efficiency and effectiveness, reducing cost, and widening their market in the world (Buhalis 2003; Buhalis & Law 2008). Travel service providers can also use the Internet to establish direct promotion to their potential customers and send them tailor-made information meeting their desires (Lau, Lee & Ho 2001).

In the early stage of the Internet applications in the tourism industry, travel service providers offered travel services online to customers for the purpose of price priority in their competition with other travel service providers, mainly with the strategic practice of lower prices. With an increasing number of travel service providers participating in the electronic market and the popularity of Internet applications in the tourism industry, travel service providers are losing their initial price advantages, and low prices have become a minimum qualification to compete in the Internet market (Sohn & Tadisina 2008). Travel service providers offering online travel services are attempting to figure out other superiorities in online travel service practices to arrive at their purpose for Internet applications in their business, such as strategic improvement for IS success, customer relationship management and so on. Online travel service application also provides the means to evaluate IS applications in the tourism industry, since the Internet helps realize the digitalization of both travel services and the travel service process, and even the value chains in the travel industry will bring a new level of interactivity to the entire tourism industry (Buhalis & Law 2008; Law & Bai 2006; Law & Cheung 2006). Managers of travel service providers are moving their focus to seeking the sustained adoption of their online customers, but not their initial adoption, due to the fact that e-services can help achieve the long-term advantages of IS applications and retaining customers is critical when achieving the business goals of business companies (Oliveria, Roth & Gilland 2002; Rust & Kannan 2003).

In the tourism industry, new and efficient Internet business models, especially business-to-customer (B2C) e-commerce services, have gained a strong foothold in the electronic travel marketplace. Online transactions in the tourism industry are continuously growing with the proliferation of e-commerce (Law 2000). According to the results released by Forrester Research, in 2009 about 69% of travelers in Europe booked their trip online and 66% in America. Currently, online reservation services and travel agencies (such as Expedia), online evaluation and recommendation services (such as Tripadvisor), travel search engines (such as Google and Facebook), and travel management services (such as Tripit) are the main online travel services travel organizations offer to travelers.

E-service brings both opportunities and challenges to travel service providers. Its characteristics of being information-intensive and Internet-based makes the switching costs minimal in the online travel services industry, which creates major challenges for online travel service providers to retain their existing customers, since travelers can easily switch to alternative online travel service providers without much effort and cost. Furthermore, they will also receive online support from both online travel information search engines and other online social media.

2.3 The impact of the Internet on tourism consumer behavior

The Internet is increasingly being adopted by consumers as e-commerce development spreads throughout the world. Offering travel services through the Internet is becoming a trend in the tourism industry. With these changes, tourism customer behavior is also changing. Travelers like to rely on the Internet to search for travel information and conduct travel service purchasing because the interactivity of the Internet offers travelers the possibilities to achieve enriched and updated travel information and interact with travel service providers online (Law & Hsu 2005; Law, Leung & Wong 2004).

The Internet is continuously exerting a growing influence on the tourism markets. Customer behavior has changed dramatically since online travel services have been introduced and become increasingly popular. Customers have shifted from traditional offline channels to online channels to search for travel information and book travel services. This trend strongly correlates to the effort of the tourism industry to offer tailored online travel services to customers within their marketing schemes (Lohmann & Schmucher 2009).

Travel information searching and travel service purchasing are the two most important traveler activities in online travel services. Information searching is a critical part of the purchasing decision making process of travelers. Well-informed travelers can make their purchasing decision with the support of enriched travel information meeting their needs, such as information on prices, local resources, special offers, travel evaluation results and so on. Information searching may also help travelers reduce their uncertainties and risks with the support of useful travel information as well as enhance the quality of their trips (Buhalis & Law 2008; Fodness & Murray 1997). Normally, travelers like to first access the websites of travel service providers or travel information search engines, such as Google, to look for travel information according to their own personalized needs. They can find a large amount of online information meeting their needs, such as information on prices, schedules, travel destinations, hotels, and flights

and so on. Then, travelers make a comparison of the travel information found on the Internet with the help of online social media, such as virtual travel communities, online blogs, web forums and message boards, customer ratings and evaluation systems, virtual world and online videos, purposing at cheaper prices and better service, or in case of fraud or misinformation on the Internet. Following the comparison, travelers make their purchasing decisions about their trips, hotels, flights, and travel destinations and so on. Finally, they book the travel services online and make the final payment for their trips online. After the online reservation of their travel services, travelers can also conduct other activities related to their trips online, such as online check-in, changing their schedule, complaining or recommending a specific service via the Internet and so on. Figure 2 illustrates how travelers use online travel services.

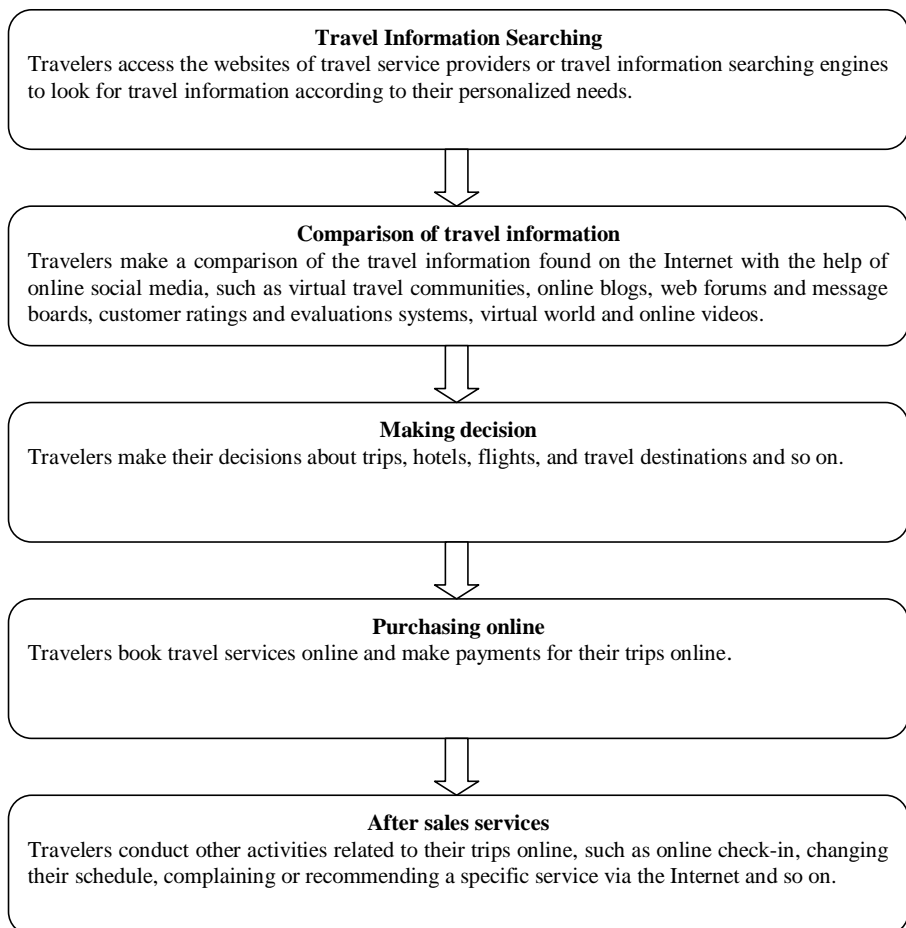


Figure 2 The online travel service process

As Buhalis (1998) stated, travelers have become more dependent on using the Internet to arrange their trips. They use online reservation systems and online travel agencies, travel search engines, destination management systems, social media as well as other online intermediaries. They spend considerable time on searching for travel information online and making comparisons with the information they have found online, particularly price information, which will be critical in their subsequent decision making. Clemons et al. (2002) argue that price is a critical issue for online travel services. Using the Internet to deliver travel services to customers directly passed on discounts generated from the reduction of both commissions and charges distributed to intermediaries (such as travel operators and travel agencies) in the traditional value chain in the tourism industry.

The switch of travelers from offline channels to online channels is related to their perceptions about online travel services. From the perspective of travelers, online travel services benefit them more compared to the traditional travel services with regard to convenience, time saving as well as cheaper prices (Gupta, Su & Walter 2004). Online travel services enable travelers to have more choice for their trips and dramatically reduce their search effort for travel information, such as the decrease of searching time with the help of travel information search engines as well as the reduction of searching costs due to the diminishing cost of data exchange online (Buhalis & Law 2008; Li & Buhalis 2005). In addition, online travel services make it possible for travelers to look for travel information conveniently and make their decisions with the support of enriched travel information. Travelers can interact with travel service providers online to obtain tailored travel services that meet their needs. Obviously, almost all the activities involved in online travel services can be conducted conveniently online without face-to-face meetings with the sales staff of travel service providers, in particular tailored travel services that meet individual customer needs can be offered online (Athiyaman 2002). These activities include travel information searching, information comparison, travel service booking, payment, service delivery and after sales services.

Despite the aforementioned benefits of online travel services to travelers, travelers are facing psychological barriers in their use of online travel services, such as the lack of trust, security risks in online transactions, privacy issues as well as service quality issues (Bauernfeind & Zins 2006; Buhalis & Law 2008; Chen 2006; Kolsaker, Lee-Kelley & Choy 2004; Mills et al. 2002). Therefore, online travel service providers should pay more attention to these issues in order to make travelers adopt online travel services and encourage people to continue using them, which are the short-term and long-term purposes of online travel service applications in business.

2.4 Online travel services in China

In order to understand the research context of this study, a brief introduction of the tourism industry in China is presented next, including its development, its features and the applications of the Internet in the Chinese tourism industry.

In order to contextualize the development of online travel services in China, we need to first understand Internet development and e-commerce development in China. Internet applications for business are booming in China with the rapid growth of the population of Internet users in China. According to a recent report by the China Internet Network Information Centre (CNNIC), at the end of June in 2010, the number of Internet users in China had arrived at 420 million and the Internet penetration rate had reached 31.8% (CNNIC 2010). The population size of Internet users in China was 50 times more than it was in 2000. Meanwhile, e-commerce in China is also multiplying almost as fast as the number of Internet users in China has over the past ten years. As CNNIC reported, in 2009 the revenue generated by e-commerce in China was about \$430 billion. It was estimated that the Chinese e-commerce market will continue growing and perhaps arrive at the revenue of \$654.3 billion by 2010 (CNNIC 2009).

The Chinese tourism industry has developed rapidly with encouragement from the Chinese government during the past 20 years, for example establishing the three “Golden weeks” holidays and the Golden Tourism Project. China has attracted a number of visitors and become one of the most popular travel destinations for travelers (Lu & Lu 2004). In 2009, China attracted about 115 million inbound travelers as well as 1.43 billion domestic travelers, and the number of outbound travelers reached 434.1 million (CNTA 2010). The World Tourism Organization (UNWTO) predicts that the Chinese tourism industry will become the top tourism industry in the world and take as much as 8.6% of the world travel market share by 2020 (CNTA 2007). According to the results released by China National Tourism Administration (CNTA), the revenue of the Chinese tourism industry was about \$1800 billion in 2009, which was an increase of 9% on the previous year, accounting for about 4.27% of the total GDP of China in 2009.

The huge Chinese travel market and the expansion of the electronic market in China are encouraging the development of online travel services in China. Increasingly, more travel service providers have moved their travel services online. In China, most travel organizations have already established their websites to offer online travel services to customers with the aim of attracting and reaching potential customers around the world. As CNNIC reported in 2010, around 7.9% of Chinese Internet users use the Internet to search for travel information and book travel services (CNNIC 2010). Compared to users of online travel services in the USA (66%) and Europe (69%), the customer demand for online travel services in China is still quite small.

The tourism industry can be particularly influenced by the Internet (Buhalis 2000; Law 2000; Law, Leung & Wong 2004). The value chain in the tourism industry has been greatly transformed by adapting the benefits of the Internet for business travel organizations (Lu & Lu 2004). Traditional, travel service suppliers, such as airlines, accommodation, catering and entertainment, depend heavily on intermediaries to deliver their travel services to customers. The intermediaries include both the tour operators and travel agencies. In China, travel operators play a weak role in the value chain, and customers rely more on travel agencies. Figure 3 presents the traditional value chain in the Chinese tourism industry.

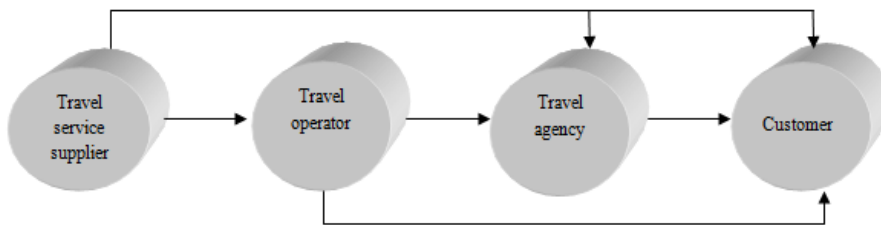


Figure 3 The traditional value chain in the Chinese tourism industry

The Internet is viewed as a new intermediary for Chinese travel organizations to deliver their travel services to customers directly. Chinese travel organizations incorporate the Internet with their traditional intermediaries in the tourism marketplace. According to Fodor and Werthner (2005), the Internet should be integrated with traditional travel intermediaries in the value chain in the tourism industry in order to harmonize it with the traditional offline channels. However, travel organizations have shifted their focus from the traditional offline channels to the online channels in travel service delivery, targeting not only the reduction of commission costs assigned to travel operators or travel agents, but also generating sustainable competitive advantages (Li & Buhalis 2006; Lu, Deng & Wang 2007; Lu & Lu 2004).

In China, travel service suppliers, travel operators, travel agencies and online travel intermediaries are the main online travel service providers. Travel service suppliers integrate both the traditional intermediaries (such as travel operators and travel agencies) and the new intermediary (such as the Internet) to deliver their travel services to customers. In addition, online intermediaries (such as travel search engines, online travel evaluation and recommendation systems) are involved in the new value chain in the Chinese tourism industry. Online intermediaries first rely on the Internet to collect a large amount of travel information via the Internet, and then deliver their travel

information services to customers through the Internet. Figure 4 presents the value chain of the Chinese tourism industry during the Internet era.

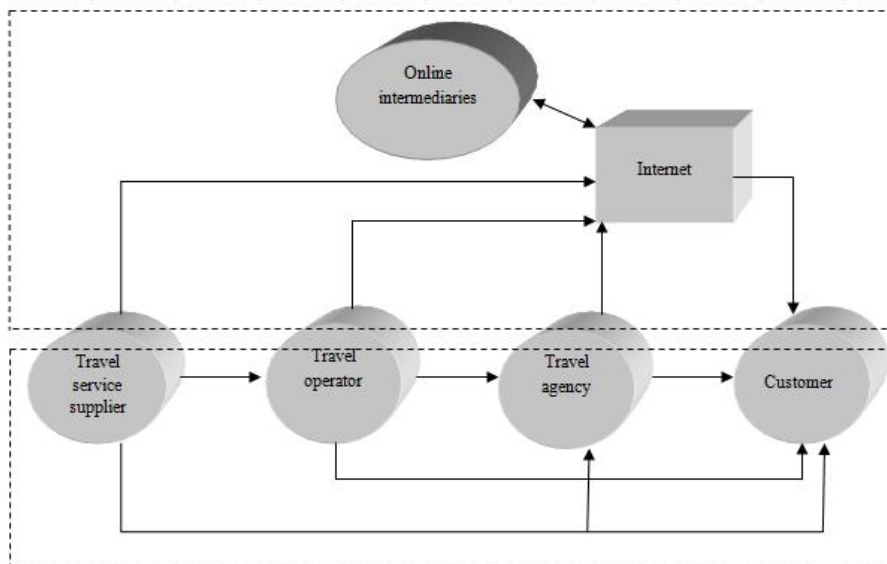


Figure 4 The value chain of the Chinese tourism industry during the Internet era

Chinese travel organizations mainly offer online travel service information searching and online travel service booking to customers. Currently online hotel reservation and online flight ticket booking are the most popular services preferred by customers, and they share the same importance in the online travel service market in China. In the second quarter in 2009, the revenue generated by online travel services had arrived at RMB 90.5 billion. In the European context, online travel sales increased by 17% from 2007 to 2008 and arrived at EUR 58.4 billion in the European market in 2008, which accounts for 22.5% of the whole travel market (Marcussen 2009). According to the forecast of the CCID (2006), in 2020 China will be the top travel destination in the world and will be listed as the fourth largest country in the world for outbound travel. It seems that in China there is a potential big travel market in online travel service providers.

The Chinese tourism industry has been rapidly developed by the broader Chinese economic development, which has attracted both international and domestic travel service providers to enter the huge Chinese market through the Internet. Some research has been conducted on e-commerce benefits and barriers, the evaluation of websites, customers' adoption of online travel services in the context of the Chinese tourism industry, but customers' continuance intention to use online travel services, especially

the relationships between online travel service quality, customer satisfaction and customers' continuance intention to use online travel services, has not been explored in the context of the online travel services in China. Thus, research on the issue of IS continuance can usefully explore the predictors used for determining users' continuance intention regarding Chinese online travel services, which is meaningful for both researchers and practitioners.

3 IS CONTINUANCE RESEARCH

This chapter presents prior research on IS continuance in the IS domain. First, two schools of thought on IS continuance in prior research are discussed. Then, the Technology Acceptance Model, as one of the main theoretical models used in prior research on IS continuance, is introduced. This is followed by a discussion of another theoretical model, Expectation-Confirmation Theory. Finally, a comparison of the two models with respect to IS continuance research is conducted. The purpose of this chapter is to establish the theoretical base for this thesis by grounding it on prior research conducted on IS continuance.

3.1 IS continuance research

In recent years, IS continuance has received increasing attention in IS research, and a great deal of research has been conducted on IS continuance in different contexts (Bhattacharjee 2001a, 2001b; Bhattacharjee, Perols & Sanford 2008; Bhattacharjee & Premkumar 2004; Cenfetelli, Benbasat & Al-Natour 2008; Limayem & Cheung 2008; Limayem, Hirt & Cheung 2007). This study has conducted a literature review focusing on the literature in IS research journals that addresses the theme of IS continuance, although research on IS continuance has also been published in other literature, such as marketing, psychology. The literature review includes the research articles published in the major journals in IS discipline, as identified at the Senior Scholars Forum in 2007. The review aims at providing a consistent and systematic overview of the rigorous research background of IS continuance research in the IS domain. In order to make a relevant review, the journal issues of the major IS journals from January 2001 to August 2010 were reviewed. The major IS journals reviewed are:

- MIS Quarterly
- Information Systems Research
- Information Systems Journal
- European Journal of Information Systems
- Journal of Association of Information Systems
- Journal of Management Information Systems

In the search for the appropriate literature for review, the key words searching methods was used for each of the selected journals. Phrases such as information systems continuance, continuance intention, post-adoption behavior, repurchase intention and repurchase were used. In total, 19 research articles on the theme of IS continuance from the perspectives of individuals were identified and reviewed. The distribution of the 19 research articles in the major IS journals is presented in Table 2. Drawing on a review of the prior literature on IS continuance, a summary of the dominant ways that IS continuance has been examined in past research is presented in Appendix 3.

Table 2 Distribution of articles in the major IS journals

<i>Journal name</i>	<i>Amount of research articles</i>
MIS Quarterly	9
Information Systems Research	4
Information Systems Journal	1
European Journal of Information Systems	4
Journal of Association of Information Systems	1
Journal of Management Information Systems	0
Total	19

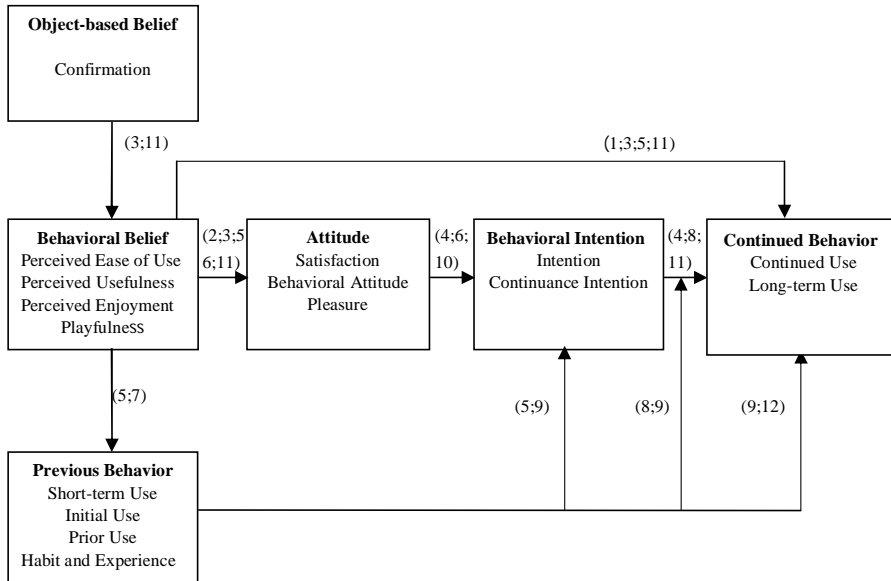
In summary, different schools of thought have been employed to explain IS continuance in IS literature. The current study introduces two main schools of thought in IS literature. The first school implicitly views IS continuance as an extension of IS users' initial acceptance behavior, and uses the same set of variables to explain both IS acceptance and IS continuance (Hsu, Chiu & Ju 2004). Based on this school, some studies have been conducted to explain IS continuance from a variety of theoretical perspectives, such as the Technology Acceptance Model (TAM) (Davis 1989; Davis, Bagozzi & Warshaw 1989), the Theory of Planned Behavior (TPB) (Ajzen 1991), the Diffusion of Innovation (DOI) (Rogers 1995) as well as Social Cognitive Theory (SCT) (Bandura 1989). According to these theories, IS user's continuance behavior is determined by both user's beliefs about IS and the outcomes of using IS. However, these theories have employed different variables to represent IS user's beliefs and affective responses that aim to indicate both IS user's acceptance and continuance decision in relation to IS usage. In TAM, the beliefs are presented in relation to two different beliefs about IS users regarding IS usage, namely perceived ease of use and perceived usefulness, in TPB they are presented in relation to social norms and attitudes toward behavior and perceived behavioral control, in DOI they are presented in relation to perceived characteristics regarding innovating, and in SCT by self-efficacy and outcome expectations. The first school assumes that IS users' beliefs about technology

and the outcomes of using it can interpret both IS acceptance and IS continuance decisions across a variety of information technologies and contexts.

Compared to focusing almost exclusively on IS users' beliefs about technology and the outcomes of using IS to explain IS continuance in the first school of thought, the second school of thought assumes other beliefs can be employed to explain IS users' continuance intention, and argues that these beliefs might influence IS users' subsequent IS continuance decisions after their initial acceptance of IS, but not their prior acceptance of IS (Hsu, Chiu & Ju 2004). Theoretical support for the second school originated from the Expectation-Confirmation Theory (ECT) (Oliver 1980, 1993). In ECT, user satisfaction with prior IS use is assumed to be a salient predictor of IS continuance intention, and confirmation is posited to be a prerequisite of user satisfaction.

In addition, prior research has shown that some other factors might impact on the IS continuance of IS users, such as habit, experience and short-term and long-term use. Hong et al. (2008) made a review of the research on IS continuance based on both TAM and ECT, and specified the factors influencing an individual user's IS continuance from different theoretical perspectives. Figure 5 illustrates the constructs used to examine IS continuance based on both TAM and ECT in prior IS literature.

Users' beliefs, such as confirmation, perceived ease of use, perceived usefulness, perceived enjoyment and playfulness, and attitudes, such as satisfaction, behavioral attitude and pleasure, toward IS use determine their behavior intention together with their previous behavior, such as users' short-term use, initial use, prior use, habit and experience, which, in turn, shapes users' continued behavior, such as continued IS use or long term IS use. Users' previous behavior, such as habit, experience, short-term use, initial use and prior use, influence their behavioral intention and continued behavior and moderate the relationship between behavioral intention and continued behavior in the post-adoption stage.



Adapted from Hong et al. (2008).

(1) Agarwal & Prasad (1997); (2) Bajaj & Nidumolu (1998); (3) Bhattacharjee (2001a); (4) Bhattacharjee, Perols & Sanford (2008); (5) Jackson, Chow & Leitch (1997); (6) Karahanna (1999); (7) Kim & Malhotra (2005); (8) Kim, Malhotra & Narasimhan (2005); (9) Limayem, Hirt & Cheung (2007); (10) Prekumar & Bhattacharjee (2008); (11) Thong, Hong & Tam (2006); (12) Venkatesh, Speier & Morris (2002).

Figure 5 Synthesis of prior research on IS continuance

As mentioned above, IS continuance has been much discussed in the IS research field, as it is important for both business companies' survival and success in practice. Though a variety of theoretical perspectives have been advanced in order to understand what affects users' continuance intention to use IS, IS continuance remains understudied in IS literature. According to Liao et al. (2009), in the lifecycle of an individual's IS usage both the determinants and the mechanisms for an individual's adoption decision vary from stage to stage, for example at the initial IS adoption stage and the subsequent post-adoption stage. Thus, it may not be appropriate to employ the same variables to interpret both IS users' initial adoption and their continued IS usage across time given that it may result in negative consequences and reduced IS effectiveness. Both scholars and practitioners need a better understanding of IS users' adoption behavior differences over time in order to manage the issues involved in IS adoption effectively, such as system design, individual cognition, and organizational actions.

3.2 Technology acceptance model

3.2.1 The origin

TAM, an application of attitude theories regarding IS use context, has been one of the most widely applied models for explaining user intention regarding IS use. TAM enjoys an excellent reputation with regard to its robustness, parsimony and explanatory power. Liao et al. (2009) state that TAM has a strong foundation in psychological theory (Chau 1996; Taylor & Todd 1995), it is parsimonious and can be used as a guideline to develop a successful information system (Venkatesh & Davis 2000), and the robustness of TAM is supported by the large amount of research across time, settings, populations, and technologies (Liao, Palvia & Chen 2009; Venkatesh & Davis 2000).

In the late 1980s, TAM was developed for the IS discipline by Davis (Davis 1989; Davis, Bagozzi & Warshaw 1989). It is rooted in the social psychology theory of reasoned action (TRA) (Ajzen & Fishbein 1980; Fishbein & Ajzen 1975), an intention theory that has been widely accepted for several decades. TRA postulates that beliefs affect attitude, which influences intention, while intention, in turn, brings about behaviors (Fishbein & Ajzen 1975). TAM is a theoretical model for identifying the casual links between two key cognitive beliefs (perceived usefulness, perceived ease of use), and their relationships to IS users' attitude, behavioral intention and actual usage of IS. TAM adapts a belief-attitude-intention-behavior relationship in TRA and posits that users' behavioral intention to use IS is determined by their cognitive beliefs, such as perceived ease of use and perceived usefulness, together with their attitude toward using IS. Attitude and behavioral intention are two internal psychological variables that have direct effects on users' actual behavior. By definition, behavioral intention is a measure of the strength of one's willingness to try and perform a certain behavior (Ajzen 1991), which is expected to lead to actual IS use. Attitude refers to " *the degree of a person's positive or negative feelings about performing the target behavior*" (Davis, Bagozzi & Warshaw 1989, p. 984).

TAM postulates that perceived usefulness and perceived ease of use are the external factors that motivate both IS user's attitude and intention. Perceived usefulness is defined as " *the prospective user's subjective probability that using a specific application system will increase job performance*" (Davis, Bagozzi & Warshaw 1989, p. 985). Perceived ease of use refers to " *the degree to which the prospective user expects the target system to be free of effort*" (Davis, Bagozzi & Warshaw 1989, p. 985). The definitions of the core constructs in TAM are presented in Table 3.

Table 3 Constructs in TAM

<i>Core construct</i>	<i>Definition</i>
Perceived ease of use	The degree to which the prospective user expects the target system to be free of effort (Davis, Bagozzi & Warshaw 1989, p. 985).
Perceived usefulness	The prospective user’s subjective probability that using a specific application system will increase his or her job performance (Davis, Bagozzi & Warshaw 1989, p. 985).
Attitude	The degree of a person’s positive or negative feelings about performing the target behavior (Davis, Bagozzi & Warshaw 1989, p. 984).

TAM posits that perceived ease of use and perceived usefulness determine users’ intention to use IS, which, in turn, determines the actual use of IS with intention to use IS serving as a mediator of actual IS use. Attitude towards IS use is expected to mediate the effects of the beliefs of both perceived ease of use and perceived usefulness, and determines users’ intention to use IS together with perceived usefulness. Perceived usefulness is expected to be directly impacted by perceived ease of use. Figure 6 presents the relationships between the core constructs in TAM. The model posits that the higher the perceived ease of use and perceived usefulness, the higher the attitude, which leads to a higher degree of behavioral intention to use IS and, through that, to a higher degree of actual IS usage. It is thus expected that a higher degree of perceived usefulness and perceived ease of use will lead to a higher degree of behavioral intention to use IS.

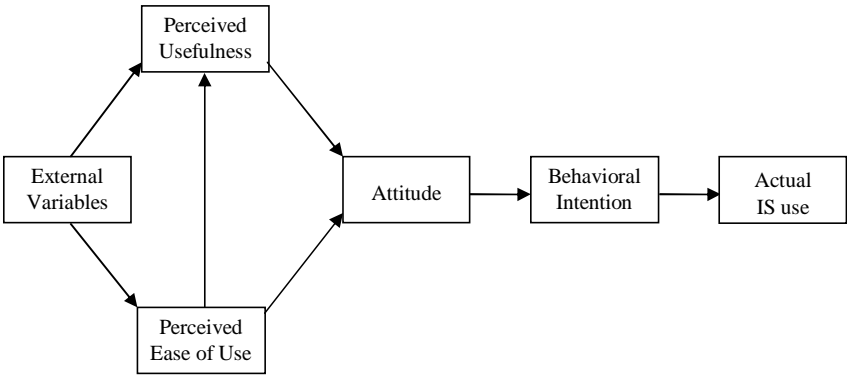


Figure 6 Technology Acceptance Model (Davis, Bagozzi & Warshaw 1989)

3.2.2 Model extensions

TAM is initiated from work-related innovations by employees in office contexts, and some attempts have been made to enhance the explanatory and predictive power of TAM in various contexts since its original publication (Legris, Ingham & Collette 2003; Liao, Palvia & Chen 2009). Prior research extended TAM by incorporating some other important variables or constructs into it, such as the antecedents and moderators of beliefs, additional or alternative belief factors, and different dimensions of IS usage as well as factors from related IS models.

One of the most important extensions of TAM was made by Venkatesh and Davis (2000), who proposed an extended model of TAM, named TAM2. TAM2 adds the five antecedents for perceived usefulness into the original TAM, including subjective norms, image, job relevance, output quality and results demonstrability. Further, experience and voluntariness are included in TAM2 as moderators for the relationships with subjective norms (See Figure 7). TAM2 explained up to 60% of the variance in perceived usefulness (Venkatesh & Davis 2000), and has been empirically tested in IS research.

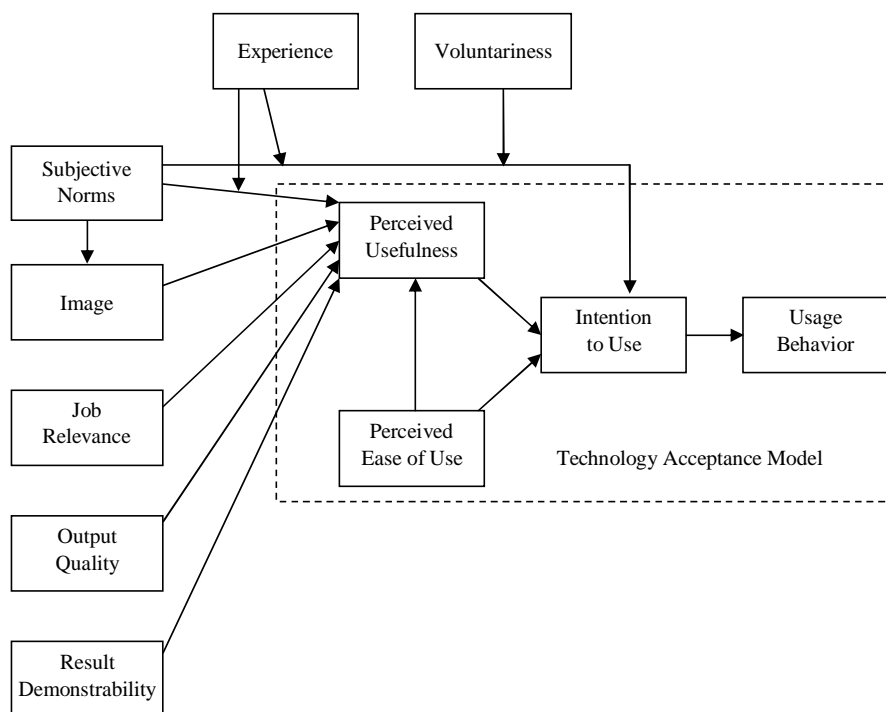


Figure 7 TAM2 (Venkatesh & Davis 2000)

Later, Venkatesh and Bala (2008) extended TAM2 (Venkatesh & Davis 2000) by incorporating the model of the determinants of perceived ease of use into it (Venkatesh 2000), titled TAM3 (See Figure 8).

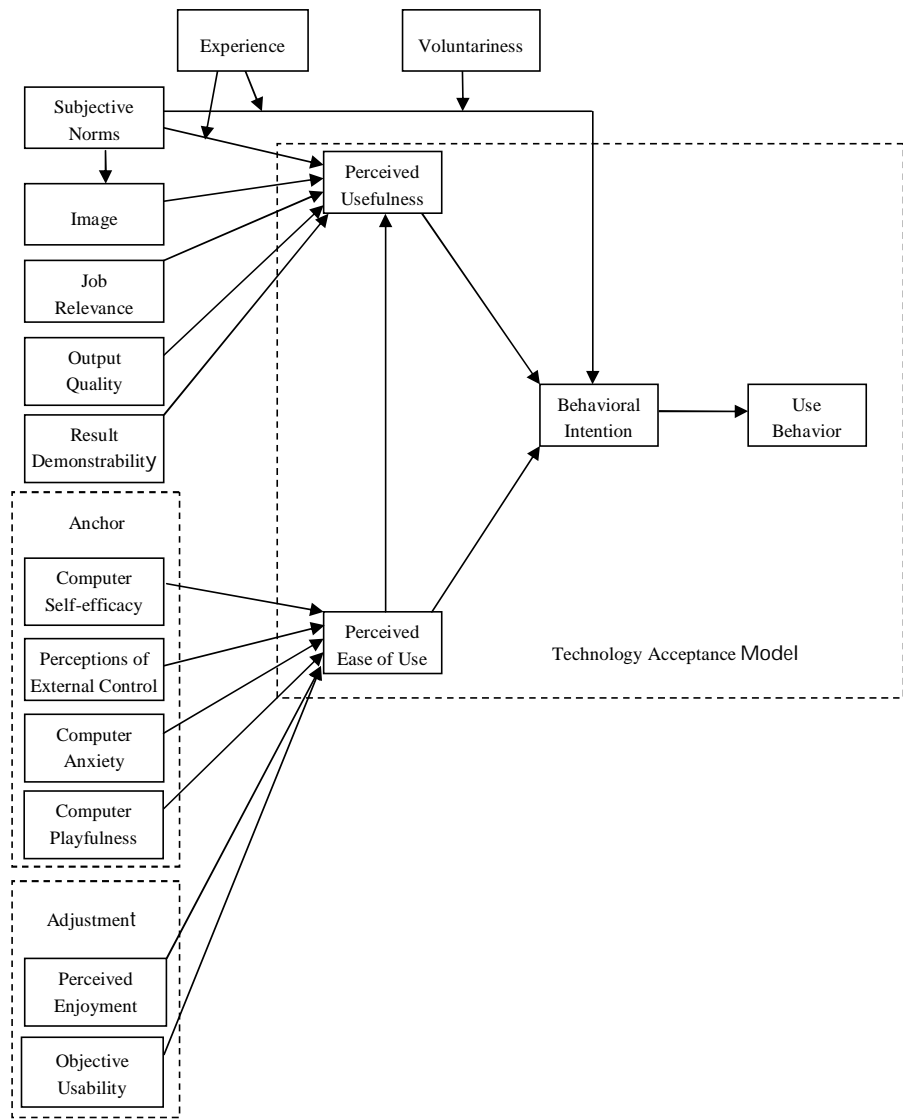


Figure 8 TAM3 (Venkatesh & Bala 2008)

In TAM3, the determinants of perceived ease of use are suggested to exert no influence on perceived usefulness, and the determinants of perceived usefulness have no influence on perceived ease of use. TAM3 presents a new theoretical extension which moves beyond TAM2 (Venkatesh & Davis 2000) and the model of the determinants of

perceived ease of use developed by Venkatesh (2000). TAM3 supports the proposed relationships in both TAM2 and the model of the determinants of perceived ease of use, and further extends the intervention of experience on three relationships. In TAM3, experience is posited to moderate the relationships between: i) perceived ease of use and perceived usefulness; ii) computer anxiety and perceived ease of use; and iii) perceived ease of use and behavior intention (Venkatesh & Bala 2008). TAM3 presents a complete nomological network of the determinants of IS adoption and use.

Another important extension of TAM is made by Venkatesh et al. (2003) to the Unified theory of acceptance and use of technology (UTAUT). Venkatesh et al. (2003) conducted a review of the constructs in eight different models which have been employed to explain IS adoption, such as TRA, TAM, the motivational model, TPB, a combined theory of planned behavior/technology acceptance model, the model of PC utilization, DOI, and SCT, and consolidated some constructs from the eight different models as the variables in UTAUT to predict both IS users' intention and their subsequent IS usage behavior. UTAUT formulates that user intention and use behavior are determined by four key constructs, namely performance expectancy, effort expectancy, social influence, and facilitating conditions, together with four moderators of key relationships, namely gender, age, experience, and the voluntariness of use (See Figure 9) (Venkatesh et al. 2003).

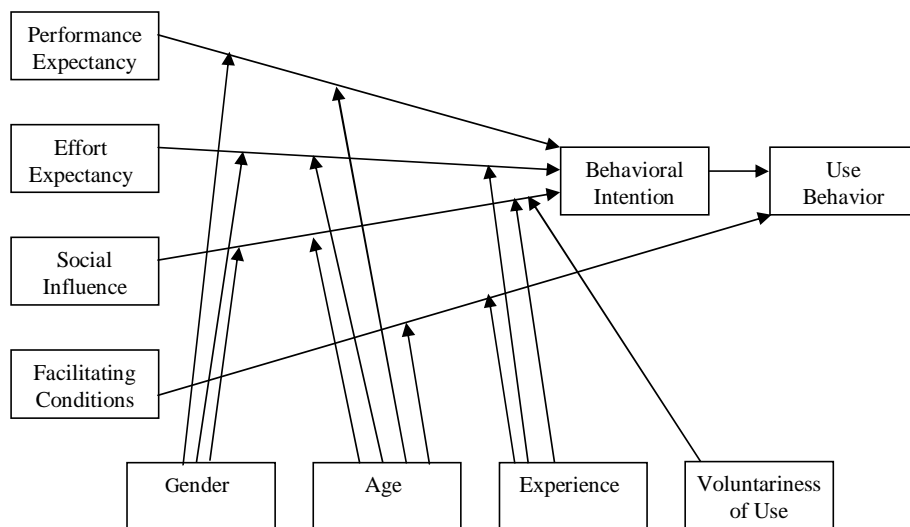


Figure 9 The Unified Theory of Acceptance and Use of Technology (Venkatesh et al. 2003)

According to UTAUT, performance expectancy refers to “*the degree to which an individual believes that using the system will help him or her to attain gains in job performance*” (Venkatesh et al. 2003, p. 447); effort expectancy is defined as “*the degree of ease associated with the use of the system*” (Venkatesh et al. 2003, p. 450); social influence refers to “*the degree to which an individual perceives that important others believe he or she should use the new system*” (Venkatesh et al. 2003, p. 451); and facilitating conditions are defined as “*the degree to which an individual believes that an organizational and technical infrastructure exists to support the use of the system*” (Venkatesh et al. 2003, p. 453). According to the definitions, the concepts of performance expectancy and effort expectancy in UTAUT are similar to the definitions of perceived usefulness and perceived ease of use in TAM. As Lee et al. (2004) note UTAUT is the most intensive model elaboration of TAM. UTAUT was found to account for 69% of the variance in usage intention (Venkatesh et al. 2003) and has since been employed widely in IS research.

IS literature also reveals more theoretical extensions to TAM. Taylor and Todd (1995) proposed a decomposed version of the Theory of Planned Behavior (TPB) by integrating TPB (Ajzen 1991) into TAM. Roca et al. (2006) proposed a decomposed model of TAM using ECT as background and incorporating information quality and system quality. Some other studies have extended TAM by integrating the variables from the Innovation Diffusion Theory (Rogers 1995) with TAM or the variables from other intention models. TAM has been extended by incorporating some other constructs to examine IS intention as well, such as trust, self-efficacy, perceived enjoyment and playfulness (Gefen, Karahanna & Straub 2003a; Mao & Palvia 2006; Shih 2004a; Vijayasarathy 2003; Yu et al. 2005).

Despite the improvement in the explanatory and predictive power of these extended models based on the basic TAM, IS researchers still maintained their great interest in TAM due to its parsimony and reliability in the IS domain (Lai & Li 2005). TAM has been employed to explore the determinants of IS continuance and post-adoption behavior in different IS settings, such as Internet usage, e-commerce, e-learning, e-government, e-banking and mobile services (Gefen, Karahanna & Straub 2003a; Hsu & Chiu 2004; Hsu, Chiu & Ju 2004; Hu et al. 2009; Karahanna, Straub & Chervany 1999; Liao, Palvia & Chen 2009; Roca & Gagne 2008; Wixom & Todd 2005). TAM attempts to explain the determinants of IS continuance intention that are general and can be applied to a large range of populations and in different technology settings. Prior research based on TAM has empirically validated the exploratory and predictive power of TAM in explaining the variance of IS continuance to a large extent.

3.3 Expectation-Confirmation Theory

3.3.1 *Expectation-Confirmation Theory*

Expectation-Confirmation Theory (ECT) has been one of the most widely used models in consumer behavior literature for explaining consumer satisfaction, post-purchase behavior, and service marketing in general (Anderson & Sullivan 1993; Dabholkar, Shepherd & Thorpe 2000; Oliver 1980, 1993; Patterson, Johnson & Spreng 1997; Tse & Wilton 1988). ECT was originally adapted from the Consumer Satisfaction/Dissatisfaction Model (CS/D), which aims to predict the determinants of consumer satisfaction and dissatisfaction and the leading outcomes of consumer satisfaction and dissatisfaction. It was mainly employed in product repurchase and service retention contexts in marketing research (Bhattacharjee, Perols & Sanford 2008; Oliver 1980).

ECT assumes that an individual's usage behavior includes acceptance, experience, verification, and the continued use process. When users make their decisions on product repurchasing or service continuance, they go through a multi-stage process as follows (Oliver 1980). First, prior to their purchase of product/service for the first time, consumers form their initial expectations on the product/service usage. Second, customers accept and purchase the product/service, and form their perceptions about its performance following their initial consumption. Third, customers evaluate the performance of the product/service usage and make a decision on the extent to which their pre-adoption expectations are confirmed. Fourth, based on their evaluation results in the performance of the product/service usage, such as confirmation or disconfirmation, consumers form their satisfaction level or affective reaction to their prior product/service usage. Finally, the satisfaction level forming in consumers' prior product/service usage either enhances or inhibits their continuance intention to purchase the product/service. In other words, satisfied consumers will form a repurchase intention, while dissatisfied users will not continue their subsequent use and purchasing of the product/service (Bhattacharjee 2001a; Liao, Palvia & Chen 2009).

In ECT, consumer satisfaction with their prior use of a product/service is primarily assumed to determine their intention to repurchase a product/service (Anderson & Sullivan 1993; Oliver & Shapiro 1993). Satisfaction is viewed as a key factor in building and retaining the loyalty of long-term customers. As Anderson and Sullivan (1993) state *"investing in customer satisfaction is like taking out an insurance policy. If some temporary hardship befalls the firm, customers will be more likely to remain loyal"* (Anderson & Sullivan 1993, p.140). ECT also theorizes that consumer

satisfaction is determined by their pre-purchase expectations and the dissonance between their pre-purchase expectations and the perceived performance of the product/service. The dissonance between original pre-purchase expectations and the perceived performance of a product/service is captured in the construct of confirmation. Consumers' pre-purchase expectations provide the baseline or reference level for them to make their judgments about the product/service they have used, while confirmation is positively associated with consumer satisfaction. Consumers' original pre-purchase expectations are assumed to be negatively associated with confirmation while perceived performance is assumed to be positively related with confirmation. Low pre-purchase expectations and high perceived performance are more likely to lead to positive confirmation. Consumers' expectations will be positively confirmed when the perceived performance is better than expected, or negatively confirmed when the perceived performance is worse than expected, which has an impact on their satisfaction level. Satisfied consumers are likely to form a repurchase intention, while dissatisfied consumers will not continue to purchase the product/service any more. The core construct and the relationships in the ECT are presented in Figure 10.

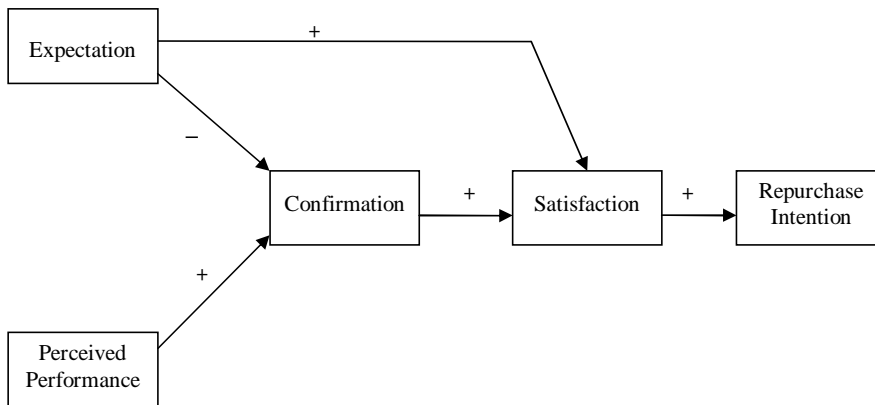


Figure 10 Expectation-Confirmation Theory (Oliver 1980)

According to ECT, expectation refers to the perceived belief probabilities of the outcome of a product or a service (Oliver 1980). Perceived performance refers to the perceived actual outcome of a product or a service (Oliver 1980). (Dis)confirmation refers to a (mis)match between the customer's level of expectation toward a product or a service and the perceived actual performance of the product or service (Oliver 1980). Satisfaction is defined as a judgment that a product or service feature, or the product or service itself, provided a pleasurable level of consumption-related fulfillment, including

a level of under or over fulfillment. The definitions of the core constructs of ECT are provided in Table 4.

Table 4 Constructs in ECT

<i>Core construct</i>	<i>Definition</i>
Expectation	The perceived belief probabilities of the outcome of a product or a service (Oliver 1980).
Perceived performance	The perceived actual outcome of a product or a service (Oliver 1980).
Confirmation	A (mis)match between the customer's level of expectation toward a product or a service and the perceived actual performance of the product or service (Oliver 1980).
Satisfaction	A judgment that a product or service feature, or the product or service itself, provided a pleasurable level of consumption-related fulfillment, including a level of under or over fulfillment (Oliver 1980).

The predictive power of ECT has been validated and demonstrated in prior research across a different range of product repurchasing and service continuance contexts, such as restaurant service (Swam & Trawick 1981), camcorder repurchasing (Spreng, MacKenzie & Olshavsky 1996), business professional services (Patterson, Johnson & Spreng 1997), automobile repurchasing (Oliver 1993), photographic products (Dobholkar, Shepherd & Thorpe 2000) and compact disc players (Tse & Wilton 1988). In prior consumer literature, there are also some suggestions about variations to the original ECT. According to Churchill and Suprenant (1982) and Tse and Walton (1988), perceived performance should be viewed as an additional determinants of consumer satisfaction together with confirmation and expectation. Spreng et al. (1996) proposed dropping the association between the two constructs of expectation and satisfaction. As they argued, the influence of expectation on satisfaction is fully mediated by the construct of confirmation, and expectation has no direct impact on satisfaction (Spreng, MacKenzie & Olshavsky 1996). However, in prior consumer literature, confirmation and satisfaction are viewed as the two emergent constructs in ECT for explaining and predicting consumer satisfaction and the repurchase intention.

3.3.2 An IS continuance model based on ECT

ECT was first introduced to the IS context and adapted by Bhattacharjee (2001a). According to Bhattacharjee (2001a), an individual's continued IS usage decision is similar to a consumer's repeated purchase decision because both decisions: *i) follow an*

initial (acceptance or purchase) decision; ii) are influenced by the initial use of (IS or product) experience, and iii) can potentially lead to ex post reversal of the initial decision (Bhattacharjee 2001a, p. 355). Bhattacharjee (2001a) made a comparison of the key distinctions between IS acceptance and IS continuance, and proposed an IS continuance model based on ECT (Oliver 1980), with some modifications in order to adapt ECT to the IS setting.

In the IS continuance model, perceived usefulness in TAM is integrated into the ECT framework together with confirmation of expectations and user satisfaction to explain users' continuance intention to use IS. Bhattacharjee (2001a) highlighted the importance of post-adoption expectations in the post-adoption stage and developed the original ECT from the mixed pre- and post-consumption assertion into a pure post-adoption model. Prior technology acceptance research asserts that perceived usefulness is an adequate expectation in the context of IS continuance, and it has been demonstrated to have a consistent impact on users' intention to use IS across temporal stages, such as the IS acceptance stage and the IS post-adoption stage (Davis, Bagozzi & Warshaw 1989; Karahanna, Straub & Chervany 1999). In the IS continuance model, perceived usefulness is assumed to represent IS users' post-adoption expectations after their initial use of IS, which is consistent with the definition of expectation as an individual belief or as the sum of beliefs in ECT. The original ECT focuses on the pre-adoption expectations, but does not explicitly discuss post-adoption expectations. The IS continuance model (Bhattacharjee 2001a), on the other hand, focuses solely on the post-adoption expectations. Post-adoption expectations are especially important in predicting IS continuance, since user expectations about IS use may change over time.

In the IS continuance model, users satisfaction with their prior IS use and the perceived usefulness of IS use both have a positive influence on their continuance intention to use IS. User satisfaction with IS use is determined by the perceived usefulness of the IS (post-adoption expectations) and the confirmation of expectations (pre-adoption expectations). In addition, IS users' confirmation of expectations (pre-adoption expectations) has a positive influence on the perceived usefulness of IS. The core constructs and relationships in the IS continuance model are shown in Figure 11.

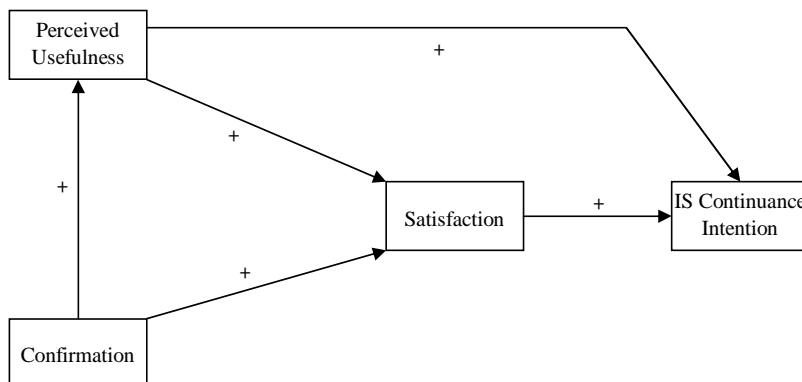


Figure 11 IS continuance model based on ECT (Bhattacharjee 2001a)

Bhattacharjee (2001a) empirically validated the IS continuance model in the context of online banking services. The IS continuance model was found to account for 41% of the variance in the IS continuance intention (Bhattacharjee 2001a), and has since been widely applied to examine users' continuance intention to use IS in different IS contexts, such as e-banking (Bhattacharjee 2001a; Vatanasombut et al. 2008), e-government (Bhattacharjee, Perols & Sanford 2008), e-learning (Chiu et al. 2005; Liao, Palvia & Chen 2009; Limayem and Cheung 2008; Roca, Chiu & Martinez 2006), e-commerce (Bhattacharjee 2001b; Cenfetelli, Benbasat & Al-Natour 2008; Hsu & Chiu 2004; Lin, Wu & Tsai 2005), virtual communities (Chen 2007), website usage (Limayem, Hirt & Cheung 2007) and mobile Internet usage (Thong, Hong & Tam 2006).

The IS continuance model has been tested in research on IS continuance and several variations have been proposed to the original IS continuance after its inception. Chea and Luo (2008) applied the IS continuance model to examine users' continuance intention together with other two different post-adoption behaviors in the post-adoption stage, namely recommendation and complaint, and found that user satisfaction had a positive influence on both continuance intention and recommendation behavior, but a negative influence on complaint behavior (Chea & Luo 2008). Bhattacharjee et al. (2008) later extended the IS continuance model by linking continuance intention to actual continued IS usage behavior and elaborated the contingent factors that shaped IS continuance intention and behavior. They assert that IS continuance intention is determined by user self-efficacy together with satisfaction and perceived usefulness, and that their continued IS usage will be determined by the facilitating conditions together with satisfaction (Bhattacharjee, Perols & Sanford 2008). Liao et al. (2009) combined the construct of attitude into the IS continuance model, and found that users'

IS continuance intention was determined by both their satisfaction with prior IS use and their attitude to IS use. For short-term users, the intention to continue using IS was determined by user satisfaction, while the final and long-term use of an IS was determined by user attitude toward IS usage (Liao, Palvia & Chen 2009).

The IS continuance model has emerged as an important candidate for explaining users' continuance intention to use IS (Bhattacharjee 2001a, b; Bhattacharjee, Perols & Sanford 2008; Chiu et al. 2005; Liao, Palvia & Chen 2009; Limayem & Cheung 2008). It attempts to provide an explanation for the general determinants of IS continuance that can be applied to a broad range of user populations and technologies. The empirical tests of the IS continuance model in different IS contexts have shown that, to a large extent, the IS continuance model explains the variance in IS continuance intention (Bhattacharjee 2001a; Bhattacharjee, Perols & Sanford 2008).

3.4 Comparison of TAM and ECT

Both TAM and ECT have been applied and tested in the IS context to explain the determinants of users' continuance intention. TAM has dominated research on IS usage, including both IS acceptance and IS continuance, and has been the subject of much exploration and discussion regarding its application and extensions in prior IS literature (Lai & Li 2005; Shih 2004b). ECT is just beginning to gain prominence in the IS setting. TAM focuses on users' initial acceptance of an IS, and posits that IS adoption is determined by users' behavioral intention to use an IS, which is, in turn, motivated by user attitude toward IS use. ECT aims to evaluate users' continuance intention to use IS and postulates that user satisfaction is the most important factor determining users' intention to continue using IS. Compared to the tremendous amount of IS adoption and IS continuance research widely applying TAM in different settings and different populations in IS literature, research using ECT to investigate IS continuance is proportionally much smaller (Bhattacharjee 2001a; Bhattacharjee & Premkumar 2004).

Based on the comparison of the theoretical underpinnings and application practices of TAM and ECT, three major differences can be distinguished between them.

First, although TAM has been applied to examine IS continuance and post-adoption behavior (Gefen, Karahanna & Straub 2003a; Hsu & Chiu 2004; Hsu, Chiu & Ju 2004; Hu et al. 2009; Karahanna, Straub & Chervany 1999; Liao, Palvia & Chen 2009; Roca & Gagne 2008; Shiu 2004b), it emphasizes the examining of the variables that lead to initial acceptance. On the other hand, the focus of ECT is to explain the determinants of users' continuance intention after their initial acceptance of IS.

Second, TAM hypothesizes that user behavior toward IS use is determined by their attitude, while ECT posits that users' continuance intention to use IS is primarily influenced by user satisfaction. Though satisfaction is viewed as an attitude in the IS continuance model. It is argued that attitude and satisfaction are distinct (Oliver 1980; Oliver 1981; Tse & Wilton 1988).

Third, in TAM perceived ease of use and perceived usefulness are viewed as underlying motivators which affect user attitude and intention toward behavior, and the two salient beliefs are highly associated with user outcome expectations about IS use (Ajzen 1991; Davis, Bagozzi & Warshaw 1989). The two salient beliefs are adopted in TAM to measure user expectations in a single time period, and to explain and predict users' behavioral intention. On the other hand, ECT postulates that user satisfaction is strongly related to confirmation, which is a function of the difference between users' pre-adoption expectations and perceived performance after their prior usage experience. The IS continuance model based on ECT developed by Bhattacharjee (2001a) replaces pre-adoption expectations with post-adoption expectations and posits that satisfaction is a function of expectations and confirmation because ECT does not explicitly discuss the potential expectation change across the accumulation of user experience and its impact on users' psychological states and cognitive processes (Bhattacharjee 2001a; Liao, Palvia & Chen 2009).

4 RESEARCH ON E-SERVICE QUALITY

This chapter presents a review of the research literature on e-service quality. First, it presents the conceptualization of service quality in prior literature. Subsequently, the operationalization of both traditional service quality and e-service quality in prior literature is described. Then it discusses the main content of e-service quality in the literature followed by a discussion of the relationships between e-service quality, customer satisfaction and customer retention. Finally, a description of the research on online travel service quality is presented.

4.1 Conceptualization of service quality

Service quality has been intensively studied as a research stream. However, a universally agreed conceptualization of service quality is lacking, partly owing to the difficulties in defining and assessing service quality due to the fact that service quality is abstract and complex (Brown & Swartz 1989; Parasuraman, Zeithaml & Berry 1985).

Service quality theory originates from product quality and customer satisfaction literature. Lewis and Booms (1983) made an early conceptualization of service quality from the gap view rooted in ECT (Oliver 1981), focusing on a comparison between service expectations and service performance. As they state:

“Service quality is a measure of how well the service level delivered matches customer expectations. Delivering quality service means conforming to customer expectations on a consistent basis.” (Lewis & Booms 1983, p. 99)

Based on the early conceptualization of service quality by Lewis and Booms (1983), Parasuraman et al. (1985) further define service quality as a comparison between what customers feel service companies should offer to them and what they actually provide. They assert that service quality is more difficult for consumers to assess compared to the quality of goods because the evaluation of service quality is made not only on the outcome of a service, but also involves the service delivery process (Parasuraman, Zeithaml & Berry 1985) and is determined by the difference between customers' expected and perceived service from service companies (Zeithaml 1988). Their conceptualizations of service quality originate from the definition of service quality

developed by Lewis and Booms (1983) from the gap view. Many researchers in the marketing domain have adopted ECT as the foundation for measuring service quality.

Over time, the focus on the conceptualization of service quality has shifted away from the gap view to a more performance-based perspective (Cronin & Taylor 1992; Parasuraman, Zeithaml & Berry 1988). Parasuraman et al. (1988) defined perceived service quality as “*a global judgment, or attitude, relating to the superiority of the service*” (p. 16). According to Cronin and Taylor (1992), the prior conceptualization and measurement of service quality are based on a flawed paradigm, and service quality should be measured as an attitude representing consumers’ overall evaluation of a service over a long term (Cronin & Taylor 1992). They also note that expectations are not necessary in evaluating service quality. Many other researchers in service quality literature concur with the attitudinal conceptualization of service quality (e.g., Bolton & Drew 1991; Boulding et al. 1993; Spreng & Mackoy 1996).

In IS literature, service quality is widely viewed as a belief related to user perception of IS service performance (DeLone & McLean 2003, 2004; Wixom & Todd 2005). This conceptualization of service quality concurs with the assumption of Cronin and Taylor (1992) that expectations are not necessary in service quality assessment. In IS literature service quality is viewed as a belief rather than an attitude in the marketing literature. Service quality (belief) has been demonstrated to exert an influence on user satisfaction (attitude), and shape IS use intention together with user satisfaction (DeLone & McLean 2003, 2004; Wixom & Todd 2005), which follows the belief-attitude-intention-behavior linkages in the IS domain.

According to Zeithaml et al. (2000), e-service quality is the extent to which a website facilitates the efficient and effective shopping, purchasing, and delivery of products or services to customers. Accordingly, in this study the quality of the online travel service focusing on the performance of online travel services rather than on the comparison of “what is expected” and “what is actually delivered or perceived” in the online travel services, recognizing the belief conceptualization of service quality in the IS literature. As Churchill and Surprenant (1982) and Cronin and Taylor (1992) noted, performance can adequately capture a customer’s perception of the service quality offered by service providers. Zeithaml et al. (2002) also argue that expectations are not well formed in the context of e-service quality. Thus, e-service quality refers to the extent to which customers feel about the overall service quality relating to service performance, which is closely associated with user perception on service performance, focusing on service performance and recognizing the conceptualization of service quality built on the performance-based perspective.

4.2 Operationalizing service quality

A large body of research has been conducted attempting to identify the dimensions of service quality in different settings. The early studies on the dimensions of service quality are mainly employed in physical goods literature.

Grönroos (1984) identified technical quality and functional quality as the two dimensions of service quality based on the expectation confirmation paradigm. Technical quality represents what customers receive in the service encounter, or the outcome of service using, and functional quality is related to the service delivery, representing customers' perceptions about the service interaction.

The expectation confirmation framework is also the base of the SERVQUAL model developed by Parasuraman et al. (1985, 1998). In the service literature, the SERVQUAL model was viewed as the most frequently utilized paradigm for assessing customers' perception of service quality in different service settings. The SERVQUAL model measures service quality using the expectation confirmation framework. The original conceptual service quality model consists of ten dimensions, namely access, communication, competence, courtesy, credibility, reliability, responsiveness, security, tangibles and understanding/knowing the customer (Parasuraman, Zeithaml & Berry 1985). Later, Parasuraman et al. (1998) empirically validated the proposed 10-dimension service quality model across different service industries, and refined the conceptual model into five dimensions targeted at providing a more generic instrument for service quality evaluation across a broad range of service contexts (Parasuraman, Zeithaml & Berry 1988, 1991) (See Figure 12).

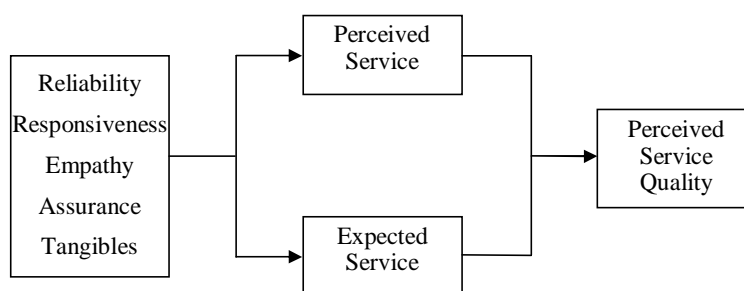


Figure 12 The SERVQUAL model (Brady & Cronin 2001)

The five dimensions of the SERVQUAL are illustrated as the follows.

- Tangibles: The appearance of physical facilities, equipment, personnel and communication materials;

- Reliability: The ability to perform the promised service dependably and accurately;
- Responsiveness: The willingness to help customers and provide prompt services;
- Assurance: The knowledge and courtesy of employees and their ability to convey trust and confidence;
- Empathy: Care and individualized attention provided to customers.

Prior research has widely applied the five dimensions of SERVQUAL to assess customer perception of service quality in various service organizations regardless of the types of service, such as banks, credit card companies, telephone companies and travel companies. The SERVQUAL was found to be a valid instrument for measuring service quality in the traditional service market constituting the basis of a universal measurement instrument of service quality.

However, the generic SERVQUAL model has faced criticism in the literature because of the difficulties of replicating the five dimensions of service quality in different service settings. Prior literature argues that some other dimensions of the services should be considered when evaluating service quality. Service quality dimensions tend to be context-bounded and service-type-dependent. The measurement used to assess service quality in one industry may be different from another industry. The services with high service involvement (such as online ticket booking or online banking services) perhaps have a different measurement to evaluate service quality compared to services with low service involvement, such as fast food services (Bienstock 1997; Van Dyke, Kappelman & Prybutok 1997). The SERVQUAL is mainly based on the expectation confirmation theoretical framework. In the conceptualization of service quality by Cronin and Taylor (1992), they posit that expectation is not necessary in measuring the service quality of a specific service. They proposed a model to measure service quality based on performance only, called SERVPREF. Some research in the literature shows support for the exclusion of expectation in evaluating service quality (Cronin & Taylor 1994; Dabholkar, Shepherd & Thorpe 2000; Zeithaml, Parasuraman & Malhotra 2002).

Rust and Oliver (1994) argue that the service quality perception is multidimensional. They highlighted the importance of the technical and functional dimension of service quality proposed by Grönroos (1984) and developed a conceptual framework to evaluate service quality based on service encounters. The three-component model consists of service product (i.e. technical quality), service delivery (i.e. functional quality) and service environment.

Dabholkar et al. (1996) argue the service quality perceptions are both multidimensional and multilevel, and the SERVQUAL model has not explicitly

indicated the structure of the service quality construct. Thus, they developed a hierarchical conceptual model to evaluate service quality based on service performance and tested it in the retail service context. Dabholkar et al. (1996) identified three levels in the proposed model: overall perceptions of service quality, primary dimensions of service quality, and subdimensions of the primary dimensions. As Dabholkar et al. (1996) noted many facets and dimensions should be taken into account in service quality perception. Their multilevel model states that service quality is a higher-order factor defined by two additional levels of the attributes of service quality.

The SERVQUAL scale has been also employed in research to measure service quality in the context of e-services. As discussed in Chapter 1 and Chapter 2, e-service has continuously increased its importance in IS research, and e-service quality has become a new research stream in the IS domain. However, in light of the criticism of SERVQUAL in the literature, there is doubt about whether the SERVQUAL is an appropriate way to measure e-service quality. Prior literature on e-service quality argues that SERVQUAL is problematic for evaluating service quality and may not be an appropriate instrument for evaluating e-service quality given that e-service is distinct from traditional service due to three characteristics: the absence of sales staff, the absence of traditional tangible elements, and customer self-service (Li & Suomi 2009).

4.3 Operationalizing e-service quality

In service marketing literature, both the conceptualization and the measurement of service quality have been the two most debated topics. Nowadays, the debate on the two topics continues because of the failed attempts to employ SERVQUAL/SERVPEFR and to replicate the conceptualization of service quality in different industries, such as in the e-service contexts.

The increase of e-service applications in the business field raises the recognition of the importance of e-service quality by both researchers and practitioners. Prior e-service literature shows evidence that there is no generic agreement on the measurement to evaluate e-service quality, though a number of studies have been conducted to explore the e-service quality measurement in different service contexts. This study makes a summary of the measurements used to explain service quality in different research contexts in online settings (See Appendix 4).

Some prior research on e-service quality has taken the SERVQUAL instrument as its starting point and made some adaption to allow the traditional SERVQUAL to fit into the e-service setting. Service performance in service encounter becomes the base of the perception of service quality, but not a comparison of perceived service and expected

service. Earlier research on e-service quality heightened research interest in the dimensions of usability and interactivity (Cox & Dale 2001; Yoo & Douthu 2001). Yoo and Douthu (2001) investigated website service quality, and proposed a scale for the measurement of website quality called SITEQUAL to measure the online service quality of websites. In the proposed SITEQUAL, four constructs are assumed to influence user perception of the overall service quality of a website, including aesthetic design, ease of use, processing speed and interactive responsiveness. Cox and Dale (2001) established a 6-dimension scale to measure online retailing service quality with a comparison to the five dimensions in the SERVQUAL, and these dimensions are communication, website appearance, credibility, accessibility, availability and understanding.

Recently, the research on e-service quality has adopted a much broader scope on e-service quality compared to its past focus on usability and interactivity. Prior research has shown growing recognition that different variables exert an influence on user perception of the overall service quality in the online setting, for example the process dimensions and outcome dimensions (Collier & Bienstock 2006). In addition, empirical validation from different research contexts has validated this arguments in the online setting, for example in online financial services, (Jun & Cai 2001; Sohn & Tadisina 2008; Yang, Jun & Peterson 2004; Waite 2006), e-commerce services (Santos 2003), online retailing services (Gounaris, Dimitriadis & Stathakopoulos 2005; Kim, Kim & Lennon 2006; Kim & Stoel 2004; Lee & Lin 2005; Wolfinbarger & Gilly 2003; Yang & Jun 2002; Yang, Peterson & Cai 2003), and pure online services (Cristobal, Flavian & Guinaliu 2007; Fassnacht & Koese 2006; Surjadaja, Ghosh & Antony 2003).

Wolfinbarger and Gilly (2003) developed the dimensions of e-tailing quality, initially titled COMQ, to attempt to examine the relationship between service quality and IS success, and later the scale was developed to become eTailQ. Their research results suggest that the following four dimensions are important antecedents of the overall service quality of e-tailing: website design, security, reliability and customer service (Wolfinbarger & Gilly 2003).

Madu and Madu (2002) studied how to better understand customers and provide online services to meet both customer needs and expectations, and proposed a 15-dimension scale of the measurements of e-service quality.

Santos (2003) explored the dimensions of e-service quality on focus groups and asserts that both incubative and active dimensions are important compositions of e-service quality, which, in turn, influences customer retention. The incubative dimension includes five attributes, such as ease of use, linkage, appearance, structure and layout, and content, while the active dimension consists of efficiency, reliability, communication, security, incentives and support (Santos 2003).

The research of Field et al. (2004) on the e-service process suggests that the service process should be considered when measuring e-service quality. They proposed a process model for e-service quality evaluation by identifying e-service system entities and transactions between those entities and by mapping key quality dimensions into them (Field, Heim & Sinha 2004).

Yang and Jun (2002) made a comparison of online-purchasers and non-purchasers and identified their perception differentiation of service quality. Further studies by Yang and Fang (2004) on the differentiation of online service satisfaction and dissatisfaction based on service quality found four salient quality dimensions which are suggested as leading to satisfaction or dissatisfaction with an IS: responsiveness, reliability, ease of use and competence.

In the e-service settings, because of the physical separation of customers and e-service providers, the issue of service recovery is also highlighted in e-service quality (Collier & Bienstock 2006). According to Zeithaml et al. (2002), e-service quality is related to the entire website service from the pre-service to the post-service. They updated the SERVQUAL model (Parasuraman, Zeithaml & Berry 1985, 1988), and developed an e-SQ model for measuring e-service quality (Zeithaml, Parasuraman & Malhotra 2002). The e-SQ model consists of five dimensions: security, communication, reliability, responsiveness and delivery. Later Parasuraman et al. (2005) proposed an E-S-QUAL for measuring the quality of web services delivered via the websites of companies where customers conducted their online shopping. They note that two different scales are necessary for capturing e-service quality. One is the basic E-S-QUAL scale consisting of four dimensions: efficiency, fulfillment, system availability, and privacy. The other is the E-RecS-QUAL focusing on service recovery, which consists of the following three dimensions: responsiveness, compensation, and contact (Parasuraman, Zeithaml & Malhotra 2005). Kim et al. (2006) examined the E-S-QUAL model in the online apparel retailing context and extended it to a 9-dimension scale for measuring e-service quality (Kim, Kim & Lennon 2006).

In the IS literature some other variables have also been demonstrated to have effects on customers' perception of service quality, such as technology readiness, service experience, user satisfaction and loyalty (Cristobal, Flavian & Guinaliu 2007; Rowley 2006; Yang & Jun 2002; Yen 2005). Yen (2005) articulates that technology readiness is an important attribute in customer perception of online service quality (Yen 2005). The research results of Yang and Jun (2002) and Rowley (2006) in e-service adoption also shows that experience influences customer perception and evaluation of e-service quality. Cristbal et al. (2007) investigated the relationships between service quality, customer satisfaction and loyalty and state that perceived quality or the degree of customer satisfaction is especially related to customers' loyalty to a website. Thus, they

proposed a 4-dimension scale for assessing e-service quality based on customer satisfaction and website loyalty (Cristobal, Flavian & Guinaliu 2007).

Obviously, the prior research shows that the dimensions of e-service quality differ significantly. The differences between the dimensions of e-service quality arise, in part, from the fact that the focus and the research contexts are different in different research projects.

4.4 The main content of e-service quality

Though previous research on e-service quality provides a body of work for the measurement of service quality in the e-service context, there is no generic measurement in the prior literature to evaluate overall e-service quality. Prior research mainly examines the antecedents of overall e-service quality focusing on system quality, information quality, and service quality with theoretical supporting from the IS success model of DeLone and McLean (1992, 2003, 2004), a multi-dimensional view of service quality (Rust & Oliver 1994). DeLone and McLean (1992, 2003, 2004) developed their IS success model based on their theoretical and empirical work aimed at evaluating the effectiveness of an information system design, and assert that information quality, system quality and service quality are the three most important variables for evaluating user satisfaction with IS use, which, in turn, leads to users' intention to use IS. In marketing literature, there is also evidence that information quality, system quality and service quality are the antecedents of customers' overall satisfaction.

As discussed in Chapter 2, e-service is an Internet-based service, which can be viewed as Internet-based information systems for different purposes, such as attracting consumers, enhancing customer satisfaction and retaining customers, and eliciting customer purchases (Kuan, Bock & Vathanophas 2008; Law & Bai 2008; Lowry et al. 2008). Prior studies show that information quality, system quality, and service quality are significant dimensions of the overall e-service quality, and the three variables exert influence on users' intention to continue using e-services via user satisfaction, such as in the context of e-commerce services (Wang 2008).

According to DeLone and McLean (1992, 2003, 2004), information quality is measured in terms of accuracy, timeliness, completeness, relevance, and consistency. The Internet offers an interactive communication channel to both buyers and sellers. In e-service, customers usually surf the Internet to look for information for their specific needs. From the customer perspective, the information that users encounter can help them be aware of the offerings of online service companies and make decisions on their continued online behavior based on the information found online. Information quality is

assumed to have a positive impact on users' intention to use IS (Jeong, Oh & Gregoire 2003).

The evaluation of system quality originates from DeLone and McLean's IS success model, which refers to the degree to which the information systems contribute to individuals or organizations (DeLone & McLean 1992). In e-service, system quality can be defined as the desired technical characteristics of website design from the customer perspective, and those desired technical characteristics include usability, availability, reliability, adaptability, and response time, which are examples of qualities valued by users of an e-commerce system (DeLone & McLean 2004). There is ample evidence that system quality has an influence on individual IS users, such as their attitude, behavioral intention and subsequent behavioral intention (Liu, Arnett & Litecky 2000; Wixom & Watson 2001). IS users may continue using IS due to its good system quality, or discontinue using it because of poor system quality.

DeLone and McLean (2003) updated their original IS success model (DeLone & McLean 1992) in light of the dramatic changes in IS practice, particularly the advent and explosive growth of e-commerce. They highlighted the importance of service quality in the updated IS success model. In the updated IS success model, service quality refers to the overall support delivered by the service provider, and assurance, responsiveness and empathy are posited to be the three most important attributes of service quality. As DeLone and McLean (2003, 2004) noted, service quality is more important than previously thought in the online environment, IS users are also customers, and poor service quality will lead to lost customers and sales. Service quality is also seen to be another variable which exerts a positive influence on both IS user satisfaction and intention to use IS together with information quality and system quality (DeLone & McLean 2003, 2004). Prior research has also empirically validated the argument that service quality is important in e-commerce success (Fassnacht & Koese 2006; Yi & Gong 2008). Service quality is found to be a primary determinant of user satisfaction, loyalty, and competitive advantage for e-commerce companies (Fassnacht & Koese 2006), and thus influences users' intentions (Yi & Gong 2008).

Although service quality, especially e-service quality, is a hot topic in the IS domain, and a number of studies have been conducted attempting to capture the dimensions of overall e-service quality, currently there is no convergent measurement of information quality, system quality and service quality in e-service literature. As Wen (2009) noted, some dimensions are jointly involved with information quality, system quality and service quality, hence it is hard to generate a measurement scale to assess the three variables of the website quality singularly and difficult to illustrate the valid relationships between the three variables. Thus, in IS literature, some prior research on e-service quality has explored the antecedents of e-service quality from the three

dimensions respectively, whereas some other research has done so based on the assumption that the three dimension of quality are jointly involved.

In addition, some other constructs are found to have an influence on e-service quality, such as trust, enjoyment and experience. According to Bienstock (1997) and Van Dyke et al. (1997), there is no generic instrument to evaluate service quality. In the e-service field, the measures used to evaluate e-service quality should be based on both the research context and the service type.

4.5 Service quality, customer satisfaction and customer retention

Numerous studies have been conducted to clearly demonstrate the relationship between service quality and customer satisfaction across various service contexts. As Anderson and Fornell (1994) noted, there is distinction between service quality and customer satisfaction. In marketing literature, Parasuraman et al. (1988) defined service quality as a global judgment, or attitude, whereas satisfaction is defined as *“a summary psychological state resulting when the emotional surrounding disconfirmed expectations is coupled with the consumer’s prior feelings about the consumption experience, it is related to a specific transaction”* (Oliver 1981, p.27). Satisfaction is also viewed as an attitude. The existing marketing literature has identified the distinction between service quality and consumer satisfaction (Bolton & Drew 1991; Cronin & Taylor 1992, 1994; Oliver 1993; Parasuraman, Zeithanl & Berry 1988; Patterson & Johnson 1993). Though both of them are attitudes, there is a distinction between the two relevant constructs reflecting the conceptual domains of the two constructs. Service quality is a long-term attitude, reflecting consumers’ evaluative perceptions of a service encounter at a specific point in time. However, consumer satisfaction is a transient and experience-specific attitude, which is based on a consumer’s specific service encounter. Consumer satisfaction involves both the end state of a service encounter and a service process and reflects both cognitive and emotional elements. As we discussed in Section 4.1 on the conceptualization of service quality in IS literature, service quality is largely assumed to be a belief related to IS use, but is not an attitude that influences user satisfaction with prior IS use.

At the heart of various studies on service quality is the notion that service quality asserts a direct influence on consumer satisfaction, and service quality is demonstrated to be an antecedent to satisfaction (Anderson & Fornell 1994; Sweeney & Soutar 2001). Prior marketing literature also has evidence showing that service quality affects the continuance intention indirectly via customer satisfaction. The positive relationships between service quality, satisfaction and continuance intention has been proven to be

true in the IS context, such as in the online environment (Herington & Weaven 2009). In IS literature, service quality is assumed to be a way to attract and retain customers effectively through high levels of customer satisfaction in the online context (Grönroos et al. 2000). It has been confirmed that service quality has a positive impact on customers' repurchase intentions or loyalty in the online context (Cenfetelli, Benbasat & Al-Natour 2008, Kuan, Bock & Vathanophas 2008; Saeed & Abdinnour-Helm 2008; Zhou, Lu & Wang 2009). Furthermore, Cenfetelli et al. (2008) argue that service quality influences users' continued website usage via customer satisfaction with the website. Saeed and Abdinnour-Helm (2008) assert that both information quality and system quality have an impact on users' extended usage and the exploratory usage of a website via the perceived usefulness of a website. Zhou et al. (2009) also investigated the influence of website design quality and service quality on users' continuance intention and found that service quality had a stronger impact on consumer trust and satisfaction compared to website design quality, which shaped their continuance intention together with website design quality.

4.6 Service quality in online travel services

The Internet provides opportunities for travel service providers to offer online travel services to their customers and is aimed at meeting customer needs for travel services and offering personalized travel services to customers. The critical importance of e-service and e-service quality in e-service success and retaining customers has been highlighted in prior literature (Oliveria, Roth & Gilland 2002). However, little research has explicitly examined the measurement of online travel service quality and the influence online travel service quality exerts on both user satisfaction and their continuance intention to use the online travel services. Meanwhile, online travel service providers have not recognized the importance of online travel service quality with respect to motivation or finding the right strategies to enhance their online travel service quality to customers (Li & Suomi 2009). Though some of the online travel service providers have realized the importance, they seem not to understand what influences user perception of online travel service quality and how they could improve their online travel service quality.

Currently, there is no convergent measurement of online travel service quality, though some research has tried to explore the dimensions of the online travel service quality. Table 5 presents a brief summary of the dimensions of online travel service quality found in prior literature.

Table 5 A literature review of the main dimensions of online travel service quality

<i>Author(s)</i>	<i>Service setting</i>	<i>Research methods</i>	<i>Dimensions</i>
Jeong & Lambert (1999)	Online travel services	Literature view	Ease of use, completeness, relevancy, information accuracy, and clarity and navigation quality.
Kaynama & Black (2000)	Online travel services	Literature review	Content and purpose; accessibility; navigation; design and presentation; responsiveness; background information; personalization and customization.
Jeong & Lambert (2001)	Online travel service	Survey	Perceived usefulness and attitude.
Kim & Lee (2004)	Online travel agencies and suppliers	Survey	Information content, reputation and security, structure and ease of use, and usefulness.
Law & Ngai (2005)	Online travel services	Literature review	Layout and graphics, language, user interface and navigation, information architecture and general.
Ho & Lee (2007)	E-travel services	Survey	Information quality, security, website functionality, customer relationships and responsiveness.
Law & Bai (2008)	Online travel service	Survey	Service/product information, purchase information, destination information, quality of information, contact information, language, layout and graphics, information architecture, user interface and navigation, and general.
Bai, Law & Wen (2008)	Online travel services	Survey	Functionality: purchase information, service/products information, destination information, quality of information and contact information. Usability: language, layout and graphics, information architecture, user interface and navigation, and general.

Jeong and Lambert (1999, 2001) proposed a scale composed of six potential dimensions to evaluate overall online travel service quality by focusing on information quality and system quality, including ease of use, completeness, relevancy, information accuracy, clarity and navigation quality. Based on the traditional well-known SERVQUAL scale (Parasuraman, Zeithaml & Berry 1985, 1988), Kaynama and Black (2000) developed a scale for online travel service evaluation with some adjustments of the attributes in order to make it fit into the online travel service settings. The developed scale consists of the following dimensions: content and purpose, accessibility,

navigation, design and presentation, responsiveness, background information, personalization and customization. Kim and Lee (2004) indicate that website quality regarding both online travel agencies and travel service suppliers are closely related to information content, reputation and security, structure and ease of use, and usefulness. These studies have proposed conceptual frameworks for evaluating online travel service quality in different travel service settings, but lack further research to empirically validate these proposed frameworks.

Later, Law and Ngai (2005) assert that the following five dimensions should be considered when evaluating online travel service quality: layout and graphics, language, user interface and navigation, information architecture and general. Law and Bai (2008) further investigated the measurement of online travel service quality based on research on Chinese online travel service users, and extended the previous 5-dimension scale (Law & Ngai 2005) into a measurement instrument composed of the two main dimensions namely usability and functionality. The functionality dimension consists of five attributes, namely service/products information, purchase information, destination information, quality of information and contact information, and the usability dimension consists of five attributes, including language, layout and graphics, information architecture, user interface and navigation, and general (Law & Bai 2008). They also note that website quality exerts a positive impact on customer satisfaction directly, which, in turn, leads to customers' purchase intentions (Bai, Law & Wen 2008).

Ho and Lee (2007) made a review of the components of e-travel service quality and identified the dimensions of e-travel service quality by use of empirical data, namely, information quality, security, website functionality, customer relationship, responsiveness and fulfillment.

These studies concur on the focus of both information quality and system quality in evaluating overall online travel service quality, and have not explicitly investigated the dimensions of service attributes in online travel service quality evaluation though service attributes has also been identified as being important when evaluating service quality in the online environment, particularly for service-oriented online travel services. In addition, little research has attempted to explore the relationships between the dimensions of online travel service quality and the continuance intention to use online travel services. Thus, there is a call for a well-developed measurement of online travel service quality in the e-service setting. As discussed in Section 4.5, there are positive relationships between e-service quality, satisfaction and retention. A sound measurement of online travel service quality will be useful in guiding online travel service providers in enhancing online travel service quality in practice, especially with respect to how to properly design, administer, and analyze their online travel service process. It will also be helpful in monitoring customer satisfaction, which, in turn, will

help online travel service providers achieve their long term goal of establishing both strong customer relationships and excellent customer loyalty.

5 RESEARCH MODEL AND RESEARCH HYPOTHESES

This chapter presents the research model, its constructs and the relationships hypothesized among the constructs. The synthesized research model in this study incorporates both the perceived ease of use and perceived service quality constructs into the IS continuance model based on ECT (Bhattacharjee 2001a) and further extends the antecedents of service quality into the IS continuance model. First, the research model is introduced. Second, the reasons for the IS continuance model based on ECT being chosen as the foundation for the research model are presented and that is followed by an illustration of the integration of both perceived service quality and perceived ease of use into the research model and the conceptualization of the constructs. Finally, based on previous studies, the relevant research hypotheses of the research model are presented.

5.1 Research model

Based on the discussion on IS continuance research in Chapter 3, the IS continuance model based on ECT (Bhattacharjee 2001a) was chosen as the base of our research model. The IS continuance model provides an excellent starting point for the further exploration of IS continuance since it explains IS continuance by considering both pre- and post-adoption behavior and has been supported by a growing empirical base in the IS usage literature. However, the advancement of any preliminary model of human behavior requires additional theoretical refinement and empirical testing in order to improve its robustness and predictive ability across a wider range of contexts. In this spirit of theory advancement, some modifications and extensions to the original IS continuance model are proposed in this study.

As discussed in Chapter 1, there are gaps in the current IS continuance research. This study attempts to fill the gaps in IS continuance literature by theorizing and empirically validating an extended IS continuance model. This study synthesizes the theoretical research model based on both theoretical and empirical findings from prior research on IS continuance based on research on ECT, TAM and e-service quality, and postulates a hybrid model that might predict individuals' intentions to continue using e-services. The synthesized research model incorporates the constructs of perceived service quality and

perceived ease of use into the IS continuance model and extends the antecedents of e-service quality into the IS continuance model as well.

The nomological structure of the research model is consistent with the traditional belief-attitude-intention linkages in IS literature (David, Bagozzi & Warshaw 1989; Venkatesh et al. 2003; Ajzen 1991). In IS literature, satisfaction is typically viewed as user attitude towards IS, which is primarily measured by various beliefs about IS, such as information, system usage and IS service (Wixom & Todd 2005). In the research model, perceived ease of use, perceived usefulness and perceived e-service quality are three variables representing IS user beliefs about e-service use, which shape IS user satisfaction (attitude) towards e-service use, which, in turn, influences user intention to continue using e-services.

In this study IS continuance model based on ECT (Bhattacharjee 2001a) is the basic research framework, but not TAM, because there are arguments about the appropriateness of TAM in IS continuance research in the prior literature. Although, in prior IS literature, TAM has been employed to investigate IS continuance in different contexts, both from individual and organizational perspectives, TAM has been argued to hold true solely for initial use because in TAM neither past use experience nor prior evaluation has been examined in predicting continuance intention. Thus, there is a warning against the careless application of TAM in studies on IS continuance study, and models other than TAM are recommended for use in IS continuance research (Bhattacharjee 2001a, 2001b; Kim & Malhotra 2005).

The IS continuance model based on ECT is based on solid theoretical foundations focusing on the psychological motives in the post-adoption stage from an individual perspective, and it has been successfully adapted to the IS context with strong empirical support from prior IS research (Limayem & Cheung 2008). Following this perspective, the current study attempts to develop a more complete IS continuance model by taking into account other important user perceptions, such as perceived service quality and perceived ease of use, which have been widely used to explain IS success and IS adoption in prior IS literature, respectively (Davis, Bagozzi & Warshaw 1989; Venkatesh & Davis 2000; DeLone & McLean 1992, 2003, 2004). An expanded framework is proposed by incorporating perceived service quality (post-adoption belief) and perceived ease of use (post-adoption belief) as additional post-adoption beliefs into the IS continuance model to act as the antecedents of IS continuance intention, and to further extend that by specifying the key antecedents of e-service quality into the research model.

In this study, variables from different perspectives have been incorporated into the research model in order to explore the determinants of users' continuance intention to use e-services. The prior IS research shows evidence that such integration can help

better understand an IS phenomenon (Moore & Benbasat 1991; Taylor & Todd 1995; Liao, Palvia & Chen 2009). For example, Moore and Benbasat (1991), Taylor and Todd (1995), and Liao et al. (2009) have integrated variables from different adoption perspectives (e.g., TAM, TPB, ECT, Cognitive Model) into a single research framework in order to improve the explanation of both IS acceptance and IS continuance based on prior research on IS adoption behavior.

The incorporating of perceived service quality as a new variable in the research model is derived from prior research on user satisfaction and IS success in the IS domain. Previous research on service quality in traditional IS service organisations demonstrates that there is a positive relationship between service quality and future repurchase or reuse intentions by providing strong empirical support from different contexts (Dabholkar 1996; Zeithaml, Berry & Parasuraman 1996). A number of instruments have been developed to measure user satisfaction in prior studies in the IS field, and service quality was found to be a most significant predictor of user satisfaction (Cronin & Taylor 1992; Anderson & Sullivan 1993; Spreng & Mackoy 1996; Robinson 1999; Cronin, Band & Hult 2000; Cenfetelli, Benbasat & Al-Natour 2008). Much research on IS post-adoption behavior has demonstrated that satisfaction was a key predictor of users' intention to continue or discontinue using IS (Patterson, Johnson & Spreng 1997; Bhattacharjee 2001a, 2001b; Chiu et al. 2005; Bhattacharjee, Perols & Sanford 2008; Kettinger, Park & Smith 2009; Lee 2010). Therefore, this research proposes that the service quality-continuance relationship will also hold in the e-services context and that perceived e-service quality has a positive effect on users' continuance intention to use e-services. The inclusion of perceived e-service quality into the research model enables us to better understand the role of service quality in explaining user behavior in the IS continuance context.

Placing the construct of perceived ease of use into the research model is adapted from the TAM. The inclusion of perceived ease of use into the research model is justified by its consistent predictive power of usage behavior in both IS acceptance and IS continuance adoption in prior research based on TAM (Bhattacharjee 2001b; Davis, Bagozzi & Warshaw 1989; Venkatesh & Davis 2000). Perceived ease of use has been assumed to be a salient predictor of IS acceptance, and to also hold importance in predicting post-adoption behavior in prior IS research, especially in research based on TAM. In addition, the inclusion of perceived ease of use in the research model might offer a better understanding of the role of the complex nature of an IS as a boundary condition in explaining IS continuance, given that the complexity of an IS is closely related to IS user perception on the ease of use in IS use (Moore & Benbasat 1991).

Further extension of the IS continuance model is needed to specify the key antecedents of e-service quality that might help to better understand IS continuance

from the service quality perspective. The research model follows the tradition in e-service quality research of making SERVQUAL the basic framework for explaining e-service quality perception and of making modifications to the SERVQUAL model (Parasuraman, Zeithaml & Berry 1985, 1988) in order to make it fit into the e-service setting, for example dropping expectations and rewording and adding dimensions related to e-services in the research model. This study recognizes that e-service quality perceptions are multi-dimensional, but not multi-level, and that e-service quality perception should be based on e-service performance, but not on the comparison of users' perceived and expected e-service performance.

In this study, in order to examine the decomposition of perceived e-service quality, seven measures are employed as the antecedents of e-service quality: perceived ease of use, website design, reliability, system availability, privacy, responsiveness and empathy. These specific factors that are used to predict user perceptions of e-service quality are derived from the decomposition and integration of the factors identified in prior e-service quality literature. Prior research identifies overall e-service quality as an attribute of IS, and many studies have been conducted to explore the dimensions of e-service quality in different contexts in the IS field (Zeithaml, Parasuraman & Malhotra 2002; Santos 2003; Field, Heim & Sinha 2004; Yang & Fang 2004; Parasuraman, Zeithaml & Malhotra 2005; Cristobal, Flavian & Guinaliu 2007; Sohn & Tadisina 2008; Bai, Law & Wen 2008). However, the determinants of e-service quality still need to be explored because of the wide applications of e-service in different contexts and the lack of a universally agreed instrument to determine user perception of e-service quality.

In this research, continuance intention is designated as a dependent variable in the research model. Researchers are interested in intention because of its ability to predict future behavior. Often, intention is viewed as a proxy of future behaviors. In the literature on IS research, users' intention has been demonstrated as the strongest and most immediate predictor of individual behavior with theoretical justification for this association from cognitive dissonance theory (Festinger 1957). Prior research has empirically validated the strong association between intention and behavior in the IS adoption context from different settings (Bhattacharjee 2001b; Davis, Bagozzi & Warshaw 1989; Taylor & Todd 1995; Venkatesh & Davis 2000; Venkatesh et al. 2003). Thus, much of IS research has taken the intention-behavior connection for granted and focused on exploring the predictors of users' intention to use IS. In this study we follow the prior tradition in IS research and set users' intention to continue using e-services as the dependent variable in the research model.

In the research model the post-adoption expectations in the proposed model are represented by perceived usefulness, perceived ease of use and perceived service quality, which is consistent with the view posited in the original ECT that post-adoption

expectations refer to users' beliefs about the attributes possessed by an IS (Bhattacharjee 2001b). Satisfaction and the three post-adoption variables are hypothesized as the salient determinants of users' continuance intention to use e-services (See Figure 13).

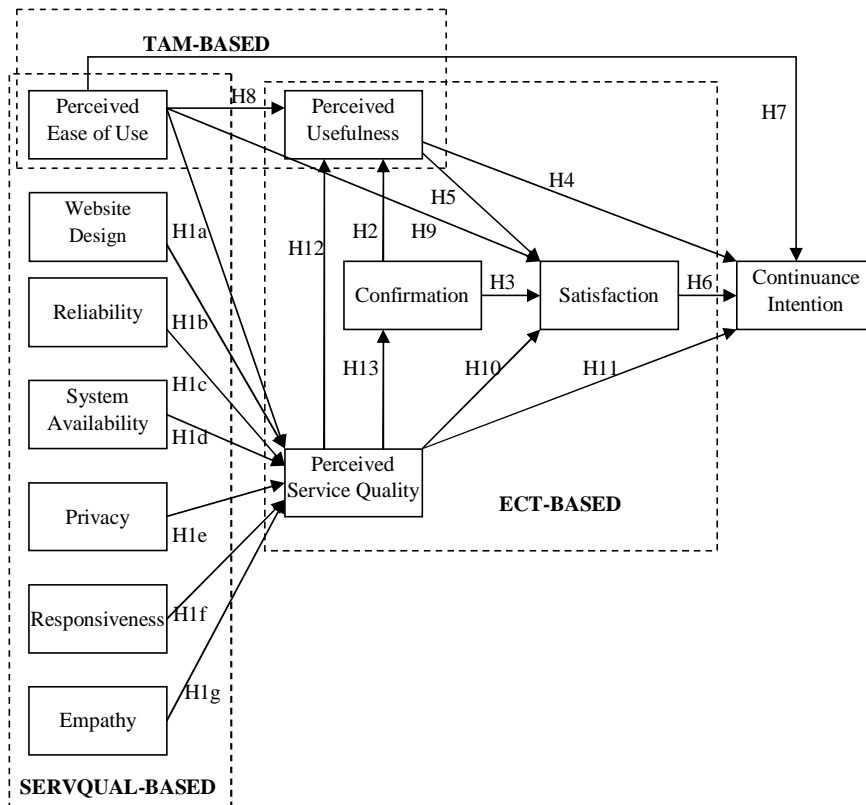


Figure 13 Research model

Satisfaction is hypothesized to be the primary predictor of continuance intention to use e-services in the research model. In ECT, satisfaction is viewed as an attitude, and posited to have strong saliency in predicting repeat purchase or use intention. This association between satisfaction and continuance intention has been validated in IS research (Bhattacharjee 2001a, 2001b). As Bhattacharjee (2001b) argued, satisfaction is identical to the notion of attitude in IS literature. Thus, the attitude-intention association validated in IS adoption research provides additional support for the association between satisfaction and continuance intention.

Perceived usefulness, as a salient determinant of behavioral intention regarding IS use in TAM, is another important predictor for the continuance intention to use e-

services in the research model (Bhattacharjee 2001a, 2001b; Bhattacharjee, Perols & Sanford 2008). Bhattacharjee (2001a) argues that perceived usefulness is a rational and subjective component of users' usage decisions, while satisfaction is an affective component of users' usage decisions. The two components have relative strengths in determining the continuance decision when the rational and affective components oppose each other. For example, users may continue using e-services if they consider it useful, even though they are not satisfied with their prior use of e-service.

The third determinant of the continuance intention in the research model is perceived service quality. Prior research found service quality to be a key factor influencing user satisfaction in relation to prior IS usage. The efficacy of user perception of service quality in improving e-service users' continuance intention to use e-services is largely unknown. E-service quality, as a subjective component of a user's usage decision, is expected to exert a direct influence on a user's continuance intention to use e-services.

Perceived ease of use is another variable expected to have an impact on users' continuance intention to use e-services. Perceived ease of use has been found to be a factor motivating users to use or continue to use IS in prior research in the IS domain, especially research based on TAM (Davis, Bagozzi & Warshaw 1989; Venkatesh & Davis 2000). In fact, few studies on IS continuance based on ECT have explored the influence of perceived ease of use on users' continuance intention given that the perceived ease of use has been argued to peter out after a user's repeated use of an IS, and perceived usefulness is therefore important in understanding a user's intention to continue using it (Karahanna, Straub & Chervany 1999). Thus, it is necessary to examine the association between perceived ease of use and IS continuance intention.

In general, the goal of our study is to place the constructs of perceived service quality and perceived ease of use in a comprehensive behavioral intention model that could highlight the roles they play in predicting users' continuance intention to use e-services.

The definitions of the research constructs in the model are provided in Table 6. This research model is used to explore the determinants of a user's continuance intention to use IS. Thus, the constructs of the research model fit those respondents who use IS in their work or life, but not those who have never used IS.

Table 6 Definitions of the constructs in the research model

<i>Construct</i>	<i>Definition</i>
Independent variables	
Perceived Ease of Use (PEOU)	The extent to which the respondents feel it is easy to use the online travel services.
Website Design (WD)	The extent to which the respondents feel the website interface of the online travel services is well designed and visually appealing.
Reliability (REL)	The extent to which the respondents feel about the consistency of performance and dependability of the online travel services.
System Availability (SA)	The extent to which the respondents feel about the correct technical function of the online travel services.
Privacy (PRI)	The extent to which the respondents feel about the safety of the online travel services and the protection of user information.
Responsiveness (RES)	The extent to which the respondents feel about the effective handling of problems and responses via the Internet in the online travel services.
Empathy (EMP)	The extent to which the respondents feel about the care and individualized attention provided to users via electronic channels in the online travel services.
Perceived Usefulness (PU)	The extent to which the respondents feel it is useful to use online travel services.
Confirmation (CON)	The (mis)match between a customer's level of expectation toward the online travel services and the perceived actual performance of it.
Perceived Service Quality (PSQ)	The extent to which the respondents feel about the performance of the online travel services.
Satisfaction (SAT)	The extent to which the respondents feel that the online travel services provide a pleasurable level of consumption-related fulfillment, including levels of under or over fulfillment.
Dependent variable	
Continuance Intention (CI)	The extent to which the respondents feel that they intend to continue their use of online travel services.

5.2 Research hypotheses

In this part we explore the relationships among the constructs put forward in the research model.

5.2.1 Hypotheses about e-service quality

Although e-service quality has been studied extensively in the prior literature, and different measurement scales have already been developed for measuring service quality in the online settings, the existing research on e-service quality has been described as fragmented due to the lack of a unifying conceptualization of service quality in online settings in the prior literature, such as the absence of a universally agreed upon scope of e-service quality (Parasuraman, Zeithaml & Berry 1985; Hu et al. 2009; Wolfinbarger & Gilly 2003). Thus, it is necessary to identify the antecedents of service quality in the specific research context of online travel services. Based on both the combining and synthesising of the factors specified to explain the overall e-service quality in the existing literature, a measurement instrument for service quality evaluation is proposed. It consists of seven dimensions, including perceived ease of use, website design, reliability, system availability, privacy, responsiveness and empathy. In the research model, the decomposition of the factors predicting the overall service quality is based on the assumption that information quality, system quality and service quality are jointly involved with each other.

Perceived ease of use

Perceived ease of use is defined as how easy it is for customers to use the online travel services. It has been assumed to influence service quality in prior research in online settings, and its saliency in predicting service quality has been highlighted in prior literature (Dabholkar 1996; Yoo & Douthu 2001; Jun & Cai 2001; Santos 2003; Yang, Patterson & Cai 2003; Sohn & Tadisina 2008).

Sohn and Tadisina (2008) explored service quality in the online finance service context and found that perceived ease of use exerted an influence on user perception of online finance service quality with empirical validation of the argument in their study. In their study, perceived ease of use is viewed as a characteristic of IS technology. They note that perceived ease of use influences user perception of e-service quality in a different way to that which has been typically asserted in prior IS adoption research. In the online travel services context, in order to make individuals able to interact with the travel service providers and conduct the necessary activities successfully via the Internet, the interface must be easy to use. Furthermore, essential travel information should be provided to users and be easy to find. If the perceived ease of use of the online service is low, users may not have a positive experience, which, in turn, inhibits their future intention to continue using that online service. Thus, it is assumed that:

H1a: Perceived ease of use is positively related to user perception of online travel service quality.

Website design

In the online setting, a website is viewed as the main way to access online services and the basic necessity for conducting a successful online purchase process. According to Li and Suomi (2009), a website is viewed as the starting point for e-service users to gain confidence. Thus, website design is assumed to be crucial in the e-services context (Than & Grandon 2002). Website design exerts influence on user perception of the image of e-service providers, and attracts user interest in conducting online purchases by having good navigation and by providing useful information to online users (Li & Suomi 2009). A deficiency in website design may make users form a negative perception of the website, which, in turn, results in discontinuance of their e-service use. Thus, both appropriate information and multiple functions should be considered for the website design in order to attract customers and meet their needs.

The association between website design and e-service quality has been studied extensively in the prior e-service quality literature (Cristoal, Flavian & Guinaliu 2007; Field, Heim & Sinha 2004; Jun & Cai 2001; Lee & Lin 2005; Wolfinbarger & Gilly 2003; Yang & Fang 2004). Wolfinbarger and Gilly (2003) conducted an empirical study to examine e-service quality and its effect on user satisfaction and loyalty, and found that website design was a strong predictor of the service quality judgments made by customers, and thus positively associated with user satisfaction and loyalty for Internet retailers. Lee and Lin (2005) conducted a study to explore the determinants of e-service quality in the business-to-commerce e-commerce service context and found that website design had a minor impact on e-service quality. They also note that although the issue of website design exerts only a minor influence on e-service quality compared to trust, reliability and responsiveness, its importance should not be underestimated and the issue of website design should be considered when measuring e-service quality. According to their view, the websites of e-service providers should be readable, and the user interface in website design should be visually appealing and tidy. Thus, it is proposed that:

H1b: Website design is positively related to user perception of online travel service quality.

Reliability

Reliability refers to the consistency of performance and the dependability of websites (Parasuraman, Zeithaml & Berry 1985, 1988). Reliability represents the ability of a website to fulfil orders correctly, deliver service promptly, and keep personal

information secure (Parasuraman, Zeithaml & Berry 1985, 1988; Lee & Lin 2005). The importance of reliability has been emphasized in online services given that it has been rated as the most salient antecedent of e-service quality in many studies (Fassnacht & Koses 2006; Madu & Madu 2002; Sohn & Tadisina 2008; Yang, Jun & Petterson 2004). Yang et al. (2004) argue that reliability has an effect on perceived service quality and that it is a necessity for broadening a loyal customer base. In the virtual environment, reliability may help users recognize the consistency and credibility of the websites, and trust that the websites are going to perform what they promise to do. Thus, the following hypothesis is proposed:

H1c: Reliability is positively related to user perception of online travel service quality.

System availability

System availability refers to the correct technical function of a website. In the online environment, system availability can assure users of the usability of the online service offered by online service providers, which might be helpful in building up a good image among users. If users are in trouble with using the needed online service system offered by a specific e-service provider, they will switch to some other alternative online service providers immediately (Li & Suomi 2009). Online service providers normally offer their users system-related information (e.g. browser information, system maintenance information) to ensure that their website is up-to-date and that all links are current and available. Zeithaml et al. (2002) indicates that in online settings system availability is positively associated with perceived service quality. Kim et al. (2006) conducted a study in the context of the online retail service, and found that system availability was an antecedent of perceived service quality. They argue that an unavailable website directly leads to lost customers and lost sales, and that online retailers need to monitor their links and system availability (Kim, Kim & Lennon 2006). Thus, it is hypothesized that:

H1d: System availability is positively related to user perception of online travel service quality.

Privacy

Privacy refers to the degree to which a website is safe and customer information is protected. Prior e-service quality research has demonstrated that privacy holds an important position in user perception of e-service quality due to the perceived high risks in the virtual environment of e-service stemming from the possibility of improper use of both the financial and personal data of users. Zeithaml (2002) argue that privacy is an important predictor of online service quality. Kim et al. (2006) conducted an empirical

study in the online retailing context and found that privacy was associated with perceived service quality in online setting (Kim, Kim & Lennon 2006). Therefore, it is argued that:

H1e: Privacy is positively related to user perception of online travel service quality.

Responsiveness

Responsiveness refers to the effective handling of problems and responses via the Internet. In e-services, prompt service should be offered to users via the Internet, such as customer inquiry service, information retrieval and navigation speed to customers, which can make users feel more comfortable during their e-service use and lead to their continued use of e-services without interruption. Users expect to get responses to their inquiries promptly via the Internet (Liao & Cheung 2002). Prior studies have examined the effect of responsiveness on perceived e-service quality and highlighted its importance in perceived e-service quality (Kim, Kim & Lennon 2006; Kim & Stoel 2004; Parasuraman, Zeithaml & Malhotra 2005; Surjadaja, Ghosh & Antony 2003; Yang & Jun 2002). Parasuraman et al. (2005) proposed an E-S-Qual scale based on their empirical study of two online stores (amazon.com and walmart.com) and found that there was a significant positive association between responsiveness and perceived e-service quality. Thus, the following hypothesis is suggested:

H1f: Responsiveness is positively related to user perception of online travel service quality.

Empathy

Empathy is viewed as an important predictor of service quality in traditional service quality studies, focusing on service characteristics (Parasuraman, Zeithaml & Berry 1988). Prior studies on e-service quality consider customer service or customer support for online customers, but not empathy with customers (Wolfinbarger & Gilly 2003; Santos 2003; Field, Heim & Sinha 2004). E-service involves no direct human interaction, but indirect human contact, e.g. e-mail communication and online communication, given that in the online settings most interactive activities in e-services are conducted via the Internet. In traditional offline services, providing customers with personal attention and quick responses is assumed to show the e-service providers' awareness and understanding of customer needs, which represents empathy with customers (Li & Suomi 2009). In the virtual environment of e-service, though there is no face-to-face service encounter, empathy is expected to have an effect on user perception of e-service quality. Madu and Madu (2002) conducted a study to explore the determinants of e-service quality. They argue that empathy is positively associated with

perceived e-service quality and personalized attention should be provided to customer concerns and requests rather than a generic auto reply to customers. Accordingly, it is posited that:

H1g: Empathy is positively related to user perception of online travel service quality.

The hypotheses on e-service quality in this study are summarized in Table 7.

Table 7 Summary of the hypotheses about e-service quality

<i>Hypotheses</i>	<i>Supporting reference</i>
H1a: Perceived ease of use is positively related to user perception of online travel service quality.	Dabholkar 1996; Jun & Cai 2001; Santos 2003; Sohn & Tadisina 2008; Yang, Patterson & Cai 2003; Yoo & Douthu 2001.
H1b: Website design is positively related to user perception of online travel service quality.	Cristoal, Flavian & Guinaliu 2007; Field, Heim & Sinha 2004; Jun & Cai 2001; Lee & Lin 2005; Wolfenbarger & Gilly 2003; Yang & Fang 2004.
H1c: Reliability is positively related to user perception of online travel service quality.	Fassnacht & Koses 2006; Madu & Madu 2002; Sohn & Tadisina 2008; Yang, Jun & Petterson 2004.
H1d: System availability is positively related to user perception of online travel service quality.	Kim, Kim & Lennon 2006; Zeithaml, Parasuraman & Malhotra 2002.
H1e: Privacy is positively related to user perception of online travel service quality.	Kim, Kim & Lennon 2006; Zeithaml, Parasuraman & Malhotra 2002.
H1f: Responsiveness is positively related to user perception of online travel service quality.	Kim, Kim & Lennon 2006; Kim & Stoel 2004; Parasuraman, Zeithaml & Malhotra 2005; Surjadaja, Ghosh & Antony 2003; Yang & Jun 2002.
H1g: Empathy is positively related to user perception of online travel service quality.	Mada & Madu 2002; Parasuraman, Zeithaml & Berry 1988.

5.2.2 Hypotheses about IS continuance intention

Confirmation

Confirmation refers to the discrepancy between an individual's perception of a product or service's performance and his or her expectation levels (Oliver 1980). Confirmation was viewed as a prerequisite of satisfaction in the IS continuance model based on ECT (Bhattacharjee 2001a). Bhattacharjee (2001a) argues that the extent of confirmation of

expectations is positively associated with perceived usefulness in his research on ECT application in IS continuance research (2001a). Bhattacharjee (2001a, 2001b) applied the ECT in two studies to explore the drivers of users' continuance intention to use e-services and found that the level of confirmation had an influence on users' perception of the usefulness in both the online banking service and the B2C e-commerce services (Bhattacharjee 2001a, 2001b). Based on the empirical study and the theoretical support from the Cognitive Dissonance Theory (Festinger 1957), they argue that IS users' confirmation of expectations asserts positive influence on their perception of the usefulness of IS because user perception of the usefulness of IS could be adjusted by users' confirmation experience during the IS usage process, particularly when users are uncertain of what to expect from their IS usage and their initial perceived usefulness is not concrete (Bhattacharjee 2001b). According to the Cognitive Dissonance Theory (Festinger 1957), IS users will experience cognitive dissonance or psychological tension when their perception on the usefulness of IS, which is a salient factor leading to their initial IS acceptance earlier, is disconfirmed during actual IS usage. They may remedy their cognitive dissonance by distorting or modifying their perceptions on the usefulness of IS in order for it to be more consistent with the reality during their actual IS usage. The confirmation of expectations tends to elevate users' positive perception of the usefulness of IS, while disconfirmation will induce a negative perception.

The positive correlation between confirmation and perceived usefulness has also been confirmed in different contexts (Bhattacharjee, Peroles & Sanford 2008; Chen 2007; Lee 2010; Liao, Palvia & Chen 2009; Limayem & Cheung 2008; Lin, Wu & Tsai 2005; Roca, Chiu & Martinez 2006; Roca & Gagne 2008; Thong, Hong & Tam 2006). Prior research on users' continuance intention in the IS domain has empirically validated the positive association between confirmation and perceived usefulness in the context of e-learning, and argued that users' confirmation of their expectations about e-learning improved their perception about the usefulness of e-learning (Lee 2010; Liao, Palvia & Chen 2009; Limayem & Cheung 2008; Roca, Chiu & Martinez 2006; Roca & Gagne 2008;). Thong et al. (2006) tested the relationship between perceived usefulness and confirmation in the context of mobile Internet usage and validated their association with empirical results in their study. Bhattacharjee et al. (2008) conducted a study on the continuance intention to use Document Management System (DMS) in work environments and the results indicated that confirmation had a strong effect on users' perception of the usefulness of DMS in their work. Chen (2007) examined the relationship in the context of virtual communities and Lin et al. (2005) in the context of website usage, and the positive association between confirmation and perceived usefulness was validated empirically in their study. Hence, it is assumed that:

H2: The extent of the confirmation of user expectations about online travel services is positively related to their perceived usefulness of the online travel services.

According to Spreng et al. (1996), satisfaction is defined as “an affective state that is the emotional reaction to a product or a service experience” (Spreng, MacKenzie & Olshavsky 1996). Prior research in marketing literature demonstrates that confirmation has a causal link with satisfaction (Oliver 1980; Oliver & Bearden 1985; Oliver & DeSarbo 1988). Bhattacharjee (2001a) applied the theories in the marketing literature into the IS context, and defined satisfaction as users’ affect with or feeling about their prior IS use. He suggests that IS users’ confirmation of their expectations influences their satisfaction with IS usage. IS users obtain expected benefits through their IS usage experiences and their confirmation of expectations about IS usage, which leads to a positive effect on their satisfaction with IS. The higher an IS user’s confirmation is, the higher their satisfaction is. Prior research conducted by using ECT when exploring the IS continuance intention has empirically validated the association between confirmation and satisfaction (Bhattacharjee 2001b; Bhattacharjee, Perols & Sanford 2008; Chen 2007; Lin, Wu & Tsai 2005; Limayem & Cheung 2007; Susarla, Barua & Whinston 2003). Bhattacharjee (2001b) found that confirmation was a significant determinant of user satisfaction in the context of business-to-consumer e-commerce service. Susarla et al. (2003) states that confirmation is positively associated with satisfaction based on the empirical results in the context of ASP services. The association between confirmation and satisfaction has been further empirically validated by research in the context of website usage by Lin et al. (2005), in the context of virtual communities by Chen (2007), in the context of internet-based learning technologies by Limayem and Cheung (2008) and in the context of systems in the work environments by Bhattacharjee et al. (2008). Hence, it is assumed that:

H3: The extent of the confirmation of user expectations about online travel services is positively related to their satisfaction with the online travel services.

Perceived usefulness

Perceived usefulness refers to the expectancy users have with regard to system performance. Perceived usefulness has been assumed to dominate effort expectancies in predicting IS usage, particularly in the context of post-adoption behavior (Bhattacharjee 2001b; Venkatesh et al. 2003). Prior IS literature has demonstrated that perceived usefulness is the primary factor predicting two of the most widely investigated metrics of information system success - intention and use behavior, in spite of the different research settings and technologies (Venkatesh et al. 2003; Venkatesh, David & Morris 2007). The association between perceived usefulness and intention was originally

derived from TAM in the IS acceptance context. In IS adoption literature, perceived usefulness has been constantly found to be the salient predictor of users' adoption intention and to influence directly the behavioral intention of users consistently over time (Bhattacharjee & Premkumar 2004; Davis, Bagozzi & Warshaw 1989; Kim & Malhotra 2005; Limayem & Hirt 2003; Taylor & Todd 1995; Venkatesh & Davis 2000).

The correlation between perceived usefulness and intention is likely to hold true in IS continuance contexts as well. Davis et al. (1989) specified that users' intention toward their means-end behavior was based largely on the cognitive decision rules to improve performance (Davis, Bagozzi & Warshaw 1989). If IS users believe that continuing to use an IS will be helpful in the achievement of their goals (such as, the technology is useful), they will have the intention to continue using that IS.

Based on the above reasoning, Bhattacharjee (2001a) argue that user perception about the usefulness of IS has a positive impact on users' continuance intention to use IS. His argument has been supported with empirical results from the context of online banking services. Bhattacharjee (2001b) further empirically validated his argument based on his research on the application of ECT in IS continuance in the context of business-to-consumer e-commerce services (Bhattacharjee 2001b) and systems in the work environments (Bhattacharjee, Perols & Sanford 2008). According to Bhattacharjee (2001a, 2001b), the more useful IS users think an IS is, the higher their intention to continue using that IS is.

Based on their empirical study in the context of online shopping, Gefen et al. (2003) empirically validated the positive association between perceived usefulness and continuance intention to purchase online. Roca and Gagne (2008) assessed the effect of perceived usefulness on users' continuance intention to use e-learning and assert that there is a significant association between perceived usefulness and continuance intention.

Prior studies on IS continuance in other contexts further validated the perceived usefulness-continuance intention association (Chen 2007; Khalifa & Liu 2007; Lee 2010; Liao, Palvia & Chen 2009; Limayem & Cheung 2008; Lin, Hu & Tsai 2005; Roca, Chiu & Martinez 2006; Roca & Gagne 2008; Thong, Hong & Tam 2006). In the study by Lin et al. (2005), in the context of website usage, perceived usefulness was found to be associated significantly with the continuance intention to use a website regardless of the extra variable, perceived playfulness, being integrated into the ECT model. They suggest that the usefulness of a website should not be ignored, and all necessary and fundamental capabilities should be provided to users in order to retain users. Kahalifa and Liu (2007) explored the repurchasing intention of users in the context of online shopping using a contingency theory, and argue that perceived

usefulness has significant positive effects on the online repurchasing intention. Limayem and Cheung (2008) empirically assessed the effects of perceived usefulness on user satisfaction in the e-learning context and found that there was significant association between perceived usefulness and users' continuance intention to use e-learning. Thus, it is expected that perceived usefulness will play an important role in predicting continuance intention in the context of online travel services, and it is hypothesized that:

H4: For users the perceived usefulness of online travel services is positively related to their continuance intention to use the online travel services.

The association between perceived usefulness and satisfaction is mainly adapted from ECT. Bhattacharjee (2001a) applied ECT to examine the effects of both cognitive belief (perceived usefulness) and attitude (satisfaction) on users' continuance intention to use online banking services. Based on the empirical results in his study, he suggests that perceived usefulness is a significant determinant of user satisfaction. As Bhattacharjee (2001a) has specified, IS user perception of usefulness at the post-adoption stage can be regarded as perceived performance. In ECT, perceived performance has been assumed to be a significant antecedent of satisfaction (Oliver 1980). Based on the expectancy-confirmation paradigm, user perception on the usefulness of IS is expected to have an impact on their satisfaction with IS (Bhattacharjee 2001a). The positive relationship between perceived usefulness and satisfaction was empirically supported in their further studies on IS continuance in the context of business-to-consumer e-commerce service (Bhattacharjee 2001b) and systems in work environments (Bhattacharjee, Perols & Sanford 2008). As Lin et al. (2005) posits in his study on the continued use of websites, perceived usefulness has a significant positive effect on user satisfaction with websites.

Prior studies on other topics in the IS domain also support the association between perceived usefulness and user satisfaction. Rai et al. (2002) empirically tested the IS success model generated by Seddon (1997), and note that perceived usefulness exerts significant influence on user satisfaction (Rai, Lang & Welker 2002). Devaraj et al. (2002) investigated user satisfaction with e-commerce channels based on three established frameworks (TAM, Transaction Cost Analysis, and Service Quality), and they assert that perceived usefulness is a significant determinant of user satisfaction. Thus, it is proposed that:

H5: For users the perceived usefulness of online travel services is positively related to their satisfaction with the online travel services.

Satisfaction

In the IS continuance model based on ECT (Bhattacharjee 2001a), satisfaction is viewed as an attitude related to IS users' affective reaction to their prior IS use. It is formed through a mental comparison of IS users' expected IS service quality with their perception of IS service quality after their actual IS use (Bhattacharjee 2001a; Oliver 1980). Locke (1976) initially defined satisfaction in the job performance context as *"a pleasurable or positive emotional state resulting from the appraisal of one's job."* (Locke 1976, p. 1300), and later this definition was extended by Oliver (Oliver 1981) to the context of consumption 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). Both definitions accentuate a psychological or affective state related to and resulting from a cognitive appraisal of the expectation performance confirmation. Satisfaction is also argued to be related to individuals' emotions. Chiu et al. (2005) state that satisfaction refers to individuals' feelings of pleasure or disappointment based on comparing their perceptions of the performance of a product or service to their expectation levels.

Prior research in marketing indicates that satisfaction has a positive effect on future intentions to repurchase, and prior studies on IS satisfaction and IS continuance have found a causal link between satisfaction and continued IS usage intention as well (Bhattacharjee 2001a, 2001b; Chiu et al. 2005; Kettinger, Park & Smith 2009; Lee 2010; Oliver 1981; Patterson, Johnson & Spreng 1997; Swan & Trawick 1981). Satisfaction is viewed as the key to building and retaining a loyal base of long-term consumers.

According to ECT, users' IS continuance intention is determined primarily by their satisfaction with their prior IS use. A large body of evidence in the IS domain has shown support for the association between user satisfaction and continuance intention in different contexts (Bhattacharjee 2001a, 2001b; Chiu et al. 2005; Kettinger, Park & Smith 2009; Lee 2010; Oliver 1981; Patterson, Johnson & Spreng 1997; Swan & Trawick 1981). Patterson et al. (1997) validated the positive association between user satisfaction and the repurchase intention in the context of business-to-business professional services. Bhattacharjee (2001a, 2001b) specifies that satisfaction is a salient factor influencing users' continued intention to use IS in the context of online banking services and B2C e-commerce service. Chiu et al. (2005) and Lee (2010) found that satisfaction was the primary determinant of continuance intention in the context of e-learning. Kettinger et al. (2009) assessed the effect of satisfaction on continuance intention in the IS service context and note that satisfaction is the most important predictor of users' continuance intention to use IS service.

Satisfaction is an attitude. In IS literature, attitude has been assumed to be a factor influencing IS users' intention (Davis 1989; Karahanna, Straub & Chervany 1999; Taylor & Todd 1995). Obviously, the association between user satisfaction and continuance intention is theoretically supported by the traditional assumption in IS literature that users' attitudes toward IS exert an influence on their continuance intention to use IS. Therefore, the following hypothesis is proposed:

H6: The level of satisfaction of users after their initial use of online travel services is positively related to their continuance intention to use the online travel services.

Perceived ease of use

In TAM, perceived ease of use is expected to have both a direct effect and an indirect effect via perceived usefulness on users' intention to use IS. It is plausible that perceived ease of use can also influence continued IS usage intention (Davis, Bagozzi & Warshaw 1989; Venkatesh & Davis 2000). Karahanna et al. (1999) found that perceived ease of use is displaced by the perceived usefulness of an IS when users gain experience of IS use. Thus, Bhattacharjee (2001a) did not place perceived ease of use into his research model to test the ECT application in IS continuance research. Much research follows the IS continuance model proposed by Bhattacharjee (2001a), and a few studies have been conducted to test the effect of perceived ease of use on the IS continuance intention by use of ECT in the IS domain in order to explore the determinants of the IS continuance intention.

Prior research supports the direct effect of perceived ease of use on the IS continuance intention and has provided empirical results from different contexts to support that argument (Gefen, Karahanna & Straub 2003a; Hong, Kim & Lee 2008; Roca & Gagne 2008; Thong, Hong & Tam 2006). Gefen et al. (2003a) established a model by inputting trust into TAM to explore the determinants of continued IS usage in the context of online shopping for books or CDs. Based on the empirical results of their study, they argue that perceived ease of use is still an important predictor of experienced repeat customers' intended use of online shopping, though its impact is not as strong when compared to that of perceived usefulness and trust.

Thong et al. (2006) extended the IS continuance model based on ECT by incorporating the constructs of perceived ease of use and perceived enjoyment as two additional post-adoption beliefs into it attempting to examine the antecedents of users' continuance intention to use mobile Internet services. They argue that an IS that is perceived as easier to use will facilitate the IS continuance and task performance more than an IS with low ease of use. Their research results based on a sample of 811 existing users of mobile Internet services has empirically validated their argument on the

positive association between perceived ease of use and the continuance intention (Thong et al. 2006). Based on a literature review of IS continuance studies, Hong et al. (2008) argue that perceived ease of use is a predictor of IS continuance together with other two behavioral beliefs – perceived usefulness and perceived enjoyment. Roca and Gagne (2008) proposed an extended TAM model in the context of e-learning service in the workplace environment. Based on their empirical results from 173 responses from the workers of four different work organizations, they state that perceived ease of use has a strong effect on the continuance intention to use e-learning, though its effect is not as strong as that of perceived usefulness and perceived playfulness. Based on prior findings about the relationship between perceived ease of use and IS continuance intention, the following hypothesis is argued:

H7: For users the perception of the ease of use of online travel services is positively related to their continuance intention to use the online travel services.

Additionally, perceived ease of use has been found to have significant effects on perceived usefulness in IS literature (Davis, Bagozzi & Warshaw 1989; Gefen, Karahanna & Straub 2003a; Roca & Gagne 2008; Thong, Hong & Tam 2006; Venkatesh & Davis 2000). The correlation between perceived ease of use and perceived usefulness originates from TAM, and has been tested in the literature of the IS domain in a large amount of studies. Prior studies on IS continuance have also validated the relationship between perceived ease of use and perceived usefulness in different contexts, e.g. e-commerce services, mobile services and so on (Gefen, Karahanna & Straub 2003a; Roca & Gagne 2008; Thong, Hong & Tam 2006). The degree of perceived ease of use was found to be still positively associated with the degree of perceived usefulness in the IS continuance context, which is consistent with prior research on the association between perceived ease of use and perceived usefulness in the technology acceptance context (Davis, Bagozzi & Warshaw 1989; Gefen, Karahanna & Straub 2003a; Roca & Gagne 2008; Thong, Hong & Tam 2006; Venkatesh & Davis 2000). Thus, it is hypothesized that:

H8: For users the extent of the perceived ease of use of online travel services is positively related to the extent of the perceived usefulness for the online travel services.

In prior IS literature, perceived ease of use has been demonstrated to be a key antecedent of perceived service quality, which has led to user satisfaction with their prior IS use. In addition, perceived ease of use is viewed as one of the major cognitive beliefs shaping user attitude towards IS use (Davis, Bagozzi & Warshaw 1989; Karahanna, Straub & Chervany 1999). In the IS continuance model based on ECT

(Bhattacharjee 2001a), satisfaction is defined as an attitude. Thus, perceived ease of use is expected to exert a positive influence on user satisfaction, and it is argued that:

H9: For users the perception of the ease of use of online travel services is positively related to their satisfaction with the online travel services.

Perceived service quality

In general, the dominant and most salient consequence of service quality is satisfaction (Cronin & Taylor 1992; Robinson 1999; Cronin, Band & Hult 2000). According to Cronin et al. (2000), the influence service quality exerts on user satisfaction is derived from the Appraisal Response Theory (Bagozzi 1992). In the Appraisal Response Theory, Bagozzi (1992) argue that observations of external stimuli are processed cognitively and lead to an overall affective reaction. Thus, quality service is assumed to improve user satisfaction. Empirical research in the IS domain shows that service quality determines user satisfaction in different settings (Anderson & Sullivan 1993; Cenfetelli, Benbasat & Al-Natour 2008; Spreng & Mackoy 1996). Cenfetelli et al. (2008) view satisfaction as individuals' affective reaction to the cognitive appraisal of service quality performance. They tested the impact of service quality on user satisfaction in the context of business-to-consumer e-commerce service, and found that if a user perceives that he or she has been well served by business-to-consumer websites, he or she will be more satisfied with websites in general. Consistent with prior research linking service quality with satisfaction, it is suggested that:

H10: The perceived service quality of online travel services is positively related to user satisfaction with the online travel services.

Bhattacharjee (2001a) pointed out that continuance intention refers to an individual's intention to continue using a service in the post-acceptance stage. Based on their empirical results in the business-to-consumer e-commerce context, Cenfetelli et al. (2008) argue that service quality influences users' continuance intention to use business-to-consumer e-commerce service and that this is mediated by user satisfaction (Cenfetelli, Benbasat & Al-Natour 2008). In service literature, service quality is shown to be an important outcome due to its potential to exert an influence on customers' future behavior (Cronin & Taylor 1992; Zeithaml, Berry & Parasuraman 1996). Zeithaml et al. (1996) further note that service quality is a factor predicting customers' intention to repeat a behavior (Zeithaml, Berry & Parasuraman 1996). Based on these reasoning, Hu et al. (2009) argue that service quality positively influences users' continuance intention to use IS. They assessed the correlation between service quality and continuance intention in the online tax context, and empirically validated their

argument. They found that the better the overall perception a user has of service quality, the more likely it is that that user would like to use the online service in the future. In order to further explore the effect of service quality on users' continuance intention to use the online travel service, it is hypothesized that:

H11: The perceived service quality of online travel services is positively related to users' continuance intention to use the online travel services.

The perceived e-service quality of the online travel services is expected to have an influence on user perception of the usefulness of online travel services. Perceived usefulness is related to e-service users' expectancy of the service performance. Prior literature shows evidence that external variables, such as system characteristics, have a positive influence on user perception of the usefulness of IS (Ajzen & Fishbein 1980; Davis, Bagozzi & Warshaw 1989). E-service quality is related to e-service users' overall judgment of e-service performance based on both system characteristics and service characteristics. System characteristics are closely related to system quality, which is an important part of e-service quality. Thus, perceived service quality might have a positive influence on a user's perception of the usefulness of e-services, and it is assumed that:

H12: The perceived service quality of online travel services is positively related to user perception of the usefulness of the online travel services.

As mentioned, confirmation is defined as the discrepancy between user perceptions of the performance of a product/service and their level of expectation (Oliver 1980). In e-service, perceived e-service quality refers to e-service user perceptions of the e-service performance. Thus, user perception of e-service quality is expected to exert a positive influence on the confirmation of expectations in e-service usage. When e-service users make a high level judgement about the overall e-service quality, their confirmation level will also be high. Thus, it is hypothesized that:

H13: The perceived service quality of online travel services is positively related to the confirmation of user expectations regarding online travel services.

The hypotheses about IS continuance intention in this study are summarized in Table 8.

Table 8 Summary of the hypotheses about IS continuance intention

<i>Hypotheses</i>	<i>Supporting reference</i>
H2: The extent of the confirmation of user expectations about online travel services is positively related to their perceived usefulness of the online travel services.	Bhattacharjee 2001a, 2001b; Bhattacharjee, Peroles & Sanford 2008; Lin, Wu & Tsai 2005; Roca & Gagne 2008.
H3: The extent of the confirmation of user expectations about online travel services is positively related to their satisfaction with the online travel services.	Bhattacharjee 2001b; Bhattacharjee, Perols & Sanford 2008; Lin, Wu & Tsai 2005; Limayem & Cheung 2007.
H4: For users the perceived usefulness of online travel services is positively related to their continuance intention to use the online travel services.	Bhattacharjee 2001a, 2001b; Bhattacharjee, Peroles & Sanford 2008; Khalifa & Liu 2007; Lin, Hu & Tsai 2005.
H5: For users the perceived usefulness of online travel services is positively related to their satisfaction with the online travel services.	Bhattacharjee 2001a, 2001b; Devaraj et al. 2002; Lin et al. 2005; Rai et al. 2002.
H6: The level of satisfaction of users after their initial use of online travel services is positively related to their continuance intention to use the online travel services.	Bhattacharjee 2001a, 2001b; Davis, Bagozzi & Warshaw 1989; Oliver 1981; Swan & Trawick 1981.
H7: For users the perception of the ease of use of online travel services is positively related to their continuance intention to use the online travel services.	Davis, Bagozzi & Warshaw 1989; Gefen, Karahanna & Straub 2003a; Roca & Gagne 2008; Thong et al. 2006.
H8: For users the extent of the perceived ease of use of online travel services is positively related to the extent of the perceived usefulness for the online travel services.	Davis, Bagozzi & Warshaw 1989; Gefen, Karahanna & Straub 2003a; Roca & Gagne 2008; Venkatesh & Davis 2000.
H9: For users the perception of the ease of use of online travel services is positively related to their satisfaction with the online travel services.	Bhattacharjee 2001a; Davis, Bagozzi & Warshaw 1989; Karahanna, Straub & Chervany 1999.
H10: The perceived service quality of online travel services is positively related to user satisfaction with the online travel services.	Anderson & Sullivan 1993; Cenfetelli et al. 2008; Cronin et al. 2000.
H11: The perceived service quality of online travel services is positively related to users' continuance intention to use the online travel services.	Bhattacharjee 2001a; Cenfetelli et al. 2008; Zeithaml, Berry & Parasuraman 1996.
H12: The perceived service quality of online travel services is positively related to user perception of the usefulness of the online travel services.	Ajzen & Fishbein 1980; Davis, Bagozzi & Warshaw 1989.
H13: The perceived service quality of online travel services is positively related to the confirmation of user expectations regarding online travel services.	Oliver 1980.

6 RESEARCH STRATEGY AND METHODOLOGY

This chapter presents a detailed account of the research philosophy, research strategy and methodology of this study. First, it discusses the philosophical background of this study with an introduction of its research philosophy in relation to other philosophies and places this research in the positivist paradigm. Second, it introduces the research strategy utilized in the pursuit of the research goals by introducing the survey research approach and the survey research strategies. Third, the data collection in this study is illustrated by describing the questionnaire, the measurements of the research model, the research sample, the data collection and the main data analysis methods. Finally, the validity and reliability of this study are discussed. This chapter aims at explicating the research approach choice and presenting the reasons for its use.

6.1 Approaches to information systems research

In the past 30 years, many scientific philosophies have been used in IS research, including positivist, interpretivist, criticism, and action research, revealing the rich diversity of research methodologies in IS research (Baskerville & Myers 2004; Chen & Hirschheim 2004; Mingers 2004a; Richardson & Robinson 2007; Smith 2006).

The two major research philosophies are positivist and interpretivist. Positivism is a scientific philosophy with a long and rich tradition, and it has a particular strong association with the physical and natural sciences (Hirschheim & Klein 1989). Positivistic research makes the epistemological assumption that reality is stable, observable and objective (Hirschheim & Klein 1989). Thus, in positivism the phenomena are isolated and the observations are repeatable. Positivist theory has developed both deductive-nomological and hypothetico-deductive models to test the empirical validity of theories, and the hypothetico-deductive model is usually employed in IS research.

In contrast, the epistemological assumption of interpretive research is that reality is subjective and can only be studied through subjective interpretations of intervention in reality. It is related to hermeneutics, ethnography, and some forms of case research. Interpretivists seek to understand and analyse subjective interpretations and their consequences. Their understanding and analysis are affected by the researchers

themselves as they interact with the subject (Orlikowski & Baroudi 1991). Although in interpretivist philosophy, the key is to study the phenomena in its natural environment, the acknowledgement or the subjective understanding held by the researchers is seen as unavoidably affecting the phenomena they study (Hirschheim & Klein 1989; Mingers 2004a).

The impact of the positivist assumption is most prevalent in IS literature and research. The literature on IS demonstrates that positivist approaches have dominated the field of IS research (Alavi & Carlson 1992; Chen & Hirschheim 2004; Orlikowski & Baroudi 1991). Alavi and Carlson (1992) reviewed 908 IS research articles published from 1968 to 1988 and found that the dominant research perspective employed in almost all the empirical studies was positivist in approach. Based on a survey of 155 published IS research articles between 1985 and 1988, Orlikowski and Baroudi (1991) concluded that the positivist paradigm is the dominant research approach in IS literature (96.8%), whereas there was little attention paid to the interpretive paradigm (3.2%) and few empirical research was conducted using a critical paradigm. Later, Chen and Hirschheim (2004) examined 1893 pieces of empirical IS research between 1991 and 2001, and also arrived at the conclusion that positivist research still dominated 81% of the empirical research in the IS domain published from 1991 to 2001.

Recently critical realism has been introduced as a new philosophy for IS research (Mingers 2004b). Mingers (2004b) criticised the philosophies of both positivism and interpretivism by discussing the problems within the two paradigms, and proposed critical realism as an underpinning philosophy, especially given that critical realism may have the potential to overcome both sets of difficulties (Mingers 2004b). Smith (2006) also discussed the standard account of the paradigms of positivism and interpretivism and concluded that they suffered from persistent theory-practice inconsistencies and made a call for the consideration of the underlying ontological premises of IS research and proposed critical relativism as the correct paradigm to resolve the theory-practice contradictions. Richardson and Robinson (2007) conducted a survey to investigate critical research in the IS domain. They took Chen and Hirschheim's survey (2004) as their starting point and indicated that there was a growth in IS research that adopted a critical perspective aiming at filling the gap left by the absence of the critical paradigm in Chen and Hirschheim's analysis (2004). A number of IS researchers have started to apply nonpositivist approaches in IS research. Action research in IS is also regarded as a research approach within the IS field (Baskerville & Myers 2004).

In IS research, the question of which research methods are most appropriate has been a focus of concern for some time. There are paradigm debates in the IS field and the three main schools of thought on the research paradigms and philosophies in IS field are isolationist, imperialist and pluralist. Isolationists argue that research should develop

separately within each paradigm because of the distinctively different paradigms within each discipline (Burrell & Morgan 1979). Imperialists intend to accept the dominance of one particular paradigm in the IS domain and usually positivism is viewed as being dominant in IS research (Benbasat & Weber 1996). Pluralists, as a new school of thought, accept a diversity of paradigms and research methods in IS research (Robey 1996).

Though critical and critical realism has been already been proposed as one of IS research paradigms, the paradigm wars in IS are mainly between positivism and interpretivism (Mingers 2004a; Weber 2004; Smith 2006). The monism between positivism and interpretivism has resulted in criticism. Mingers (2001) argued that employing combined research methods from different paradigms could make the research result richer and more reliable. Thus, rather than advocating a single paradigm in IS research, a plurality of paradigms within the IS discipline as a whole is considered preferable (Mingers 2001). Weber (2004) claimed that *“the difference between positivism and interpretivism, if indeed any exists, are shallow rather than deep”* (Weber 2004, p. x). *“Contrary to the current rhetoric, I believe deep similarities rather than deep difference underline them”* (Weber 2004, p. iv). Both of them are research paradigms in the IS field and have allowed research to arrive at its goals, even though they have different ontological backgrounds.

Based on the above paradigm discussion, it seems that a diversity of research methods and paradigms within the IS discipline should be an important issue to be considered in IS research, and receive more attention (Robey 1996; Mingers 2001). The discussion on the debates is beyond the research purpose of this dissertation. The researcher believes that all research methods are valuable if deployed appropriately, and that research can include elements of different paradigms, if managed carefully. The selection of a research approach in the IS field depends on the research questions and the objectives of the researchers. Given the richness and complexity of the real world, different research methodologies can be employed in different research contexts in the IS field. In addition, researchers should have a good understanding of the differences between the various paradigms in order to help make decisions regarding the methodological choice of their research and to increase the rigorousness of IS research.

In this study, the employed research approaches can be characterized as traditional approaches reflecting a positivist orientation. Although there are debates on the monism and dichotomy between positivism and interpretivism, and the pluralism of the methodologies in the IS field, in this study the hypothetico-deductive model of scientific explanation are used as background assumptions.

6.2 Research strategy

6.2.1 *Quantitative survey research approach*

In this study a quantitative positivist research approach was employed as the underpinning philosophy and methodology to guide the empirical study. The general aim of this study is to find out what factors explain users' continuance intention to use e-services from an individual perspective. Obviously, it is an endeavour to explain what is and fits to the typical research objective of positivist science. As mentioned by Baskerville (1999), quantitative research usually puts more emphasis on a positivistic paradigm.

In quantitative research, numerical analysis is typically used to illustrate the relationships among factors in the phenomenon studied. Furthermore, when a statistical or numerical approach is employed in research to collect and analyse data, the criteria for categorizing the research methods is often seen as quantitative but can also be qualitative. In survey research the main research method usually takes a quantitative research approach (Chen & Hirschheim 2004).

In this study, the empirical research on IS continuance intention, as reported in this dissertation, has been conducted according to a survey research strategy. Pinsonneault and Kraemer (1993) argue that survey research is conducted to advance scientific knowledge, which is different from a survey. They note that many data collection and measurement processes can be regarded as surveys, such as opinion surveys, marketing surveys, and political polls. Survey research involves the investigation of a phenomenon in various natural settings. In survey research, a specific model is used to test the expected relationships against the observations of the phenomenon with defined independent and dependent variables (Pinsonneault & Kraemer 1993). In another words, survey research is a method for testing the validity of a theory based on observations.

As Floyd and Fowler (Floyd & Fowler 2002; Fowler 2009) state, survey research provides information from a defined population and the collected data in survey research is assumed to be independent of the environment. Survey research has three distinct characteristics as stated by Gable (1994): i) designing and producing quantitative descriptions of some aspects of the study population; ii) collecting the data via structured and pre-defined questions; and iii) Collecting data from a fraction of the population, which is conducted in such a way as able to generalize the findings to whole populations.

In IS research, survey research has been extensively used among various research methods (Benbasat, Goldstein & Mead 1987; Chen & Hirschheim 2004; Darke, Shanks

& Broadbent 1998; Klein & Myers 1999; Lee 1989; Palvia et al. 2003). Prior IS research literature shows that survey research has been one of the most popular research methods for studying human behavior and the use of IS, and the survey research approach is most beneficial when the research questions concern ‘what’ and ‘how’ questions. As Pinsonneault and Kraemer (1993) pointed out, survey research is most appropriate when:

- The central questions of interest about the phenomena are “what is happening?”, and “how and why is it happening?” Survey research is especially well-suited for answering questions about what, how much and how many, and to a greater extent than is commonly understood, questions about how and why.
- Control of the independent and dependent variables is not possible or not desirable.
- The phenomena of interest must be studied in its natural setting.
- The phenomena of interest are occurring now or occurred in the recent past.

The main research objective of this study is to identify the salient determinants of individual IS users’ continuance intention to use e-services and to understand how these determinants influence users’ continuance intention. The research question is a typical “what” and “how” question. Thus, survey research can be seen as an appropriate research method to arrive at the research purpose of this study. It is possible to test the research model and the proposed relationships between the variables in the research model based on the numerical data and the statistical analysis of collected data by means of survey research.

Survey research can be used for different purposes, such as for exploration, description, and explanation. Exploration survey research aims at becoming more familiar with a research topic and finding preliminary concepts. Its focus is to determine what concepts are going to be measures in the research and how to measure them best. The purpose of descriptive survey research is to discover what situations, events, opinions or attitudes are occurring in a population. It simply examines the distribution of some phenomena in a population or among subsets of a population. Explanation survey research tests theory and causal relations. It is interested in both the causal relationships between variables that are theoretically grounded and how and why the variables are expected to be correlated. Therefore, explanation survey research not only establishes the existence of a causal relationship, but also investigates why the relationship exists (Pinsonneault & Kraemer 1993).

The purpose of this study can be seen to be both explanation and exploration. The study is an explanation survey research given that the proposed hypotheses and research model to be tested in this study is built upon both theory and previous empirical findings in IS research. The theory underpinning this study is mainly the Expectation-

Confirmation Theory (ECT), and the constructs in ECT and the antecedents of e-service quality have already been tested in prior studies. In addition, in this study the effect of e-service quality on users' continuance intention to use e-services can be defined as having an exploratory purpose, since e-service quality has not been tested as a variable in ECT for explaining IS continuance intention in IS literature.

Survey research is the dominant research method in IS research with its advantages for facilitating large amounts of collected data with relatively little effort, and supporting the broad generalization of the results found and providing a high level of control regarding sample subjects. However, the limitations of survey research should be noted when evaluating this study. According to Kraemer and Dutton (1991), survey research is: i) unable to yield cumulative knowledge; ii) atheoretical; and iii) ill-suited to addressing the subtleties of information technology in complex settings.

6.2.2 Survey research strategy

This study aims at exploring the determinants of users' continuance intention to use e-services. In order to address the research question and test the hypotheses, the following three important issues should be fixed in research design: research design, determining the unit of analysis, and sampling.

A cross-sectional research was conducted in this study, which is one of the most common and well-known study designs. Research design can be distinguished as either cross-sectional or longitudinal, depending upon whether explicit attention is excluded or included in the time dimension. In cross-sectional research, data are usually collected to help answer research questions of interest at one point in time by using a selected sample that represents the population of interest at that time, and allows findings to be generalized from the sample to the population at the point in time the survey was conducted (Pinsonneault & Kraemer 1993). Cross-sectional research design has been argued to limit causal inferences due to its data collecting at one point in time and difficulties in establishing temporal priority. Compared to cross-sectional research, in the classic longitudinal research design, data is usually collected for at least two points in time. Longitudinal research is assumed to be appropriate in research focusing on change, development or process (Pinsonneault & Kraemer 1993). In this study, the variables are usually connected with users' attitudes toward e-services or feelings about e-services after their e-service use, which can be evaluated at one point in time based on the previous complex process of e-service usage. Temporal order and temporal order causalities are not of great importance in this study. Thus, the cross-sectional research method is appropriate for this study.

In this study individual travelers are selected as the unit of analysis as long as this study aims at examining the factors influencing individual travelers' continuance intention to use the online travel services. Thus, in this study an individual traveler is closely related to the research questions and hypotheses, and data should be collected from individual travelers in order to understand their perception of online travel services and their attitude regarding the continuance usage of the online travel services. According to Pinsonneault and Kraemer (1993), an individual, group, department or organization; or a system can be the unit(s) of analysis of research, and the unit(s) of analysis can also be an application, or application portfolio; or a project, or any of the phases of a development project. In a piece of research, more than one unit of analysis can be examined, such as the individual, the work group, and the organization in one single research. The main point in determining the unit of analysis is that the unit of analysis can be anything related to the research questions and hypotheses.

As Pinsonneault and Kraemer (1993) argue, it is not only important to determine the unit of analysis, but also the sample selected to represent the unit of analysis of interest. The sampling of this study is individual travelers in China. The empirical sample used is the customers of an online travel service provider in China. China is becoming the third biggest travel destination country in the world, and travel is becoming popular in China. Travel organizations are trying to attract and keep Chinese travelers as their customers by inducing loyalty. The researcher has already conducted some research on users' adoption of the online travel services in China before, which gave a better understanding of online travel service usage in China, and helped further study on the continuance intention to use online travel services, which is valuable for practitioners and researchers alike. Thus, Chinese travelers become the sample of this study.

Sampling is concerned with selecting individuals or entities in a population in order to generalize findings about the phenomena of interest from the selected sample to the population being sampled. In sampling the most critical issue is to choose the sample frame which not only constitutes a representative subgroup of the population, but also adequately represents the unit of analysis in the research. A normal, random selection of respondents from the sample frame can meet the requirements of sampling in research.

For this study, individual customers from a Chinese travel agency have been selected as the sample. Several considerations led to the choice of this Chinese travel agency. This travel agency has run its business in the travel industry for more than 20 years. It began to offer online travel services to customers in 2002. Compared to other Chinese travel service organizations, it applied its online travel service earlier. In addition, this travel agency has achieved success in its online travel service application. Currently, it focuses mainly on its online travel services, though traditional offline travel services are maintained at the same time. Another reason for choosing this travel agency is the

availability of a population for the sampling frame for the study. This travel agency can offer a population size of 20000 customers in their database of individual customers, which is important for generating a sufficiently large sample for this study.

The travel agency allocated a member of staff from their customer service office to assist with the data collection. We planned to select 1500 customers from the customer database as our sample for this study. According to the research plan, 1500 individual customers were randomly selected from the 20000 customers. The sampling was selected randomly with the help of a computer and without any settings for the selected sampling, such as age, gender, occupation and so on.

6.3 Data collection and analysis

6.3.1 Questionnaire

As the respondents of the questionnaire are Chinese, we decided to conduct the survey in Chinese for ease of understanding. We first developed the questionnaire in English, which was later translated into Chinese by a professional translator at a translation company and also the researcher, because Chinese is the mother tongue of the researcher. In order to ensure the accuracy of the translation of the questionnaire in Chinese, we analyzed the translated Chinese version of the questionnaire independently and finally agreed on a final version for the survey. In addition, in order to confirm the translation equivalence of the survey, the final version of the questionnaire in Chinese was then translated back into English by another professional translator in another translation company, and the versions were compared.

The questionnaire was designed in order to collect quantitative data for this study, and a pilot test was conducted using the survey instrument to assess the validity and reliability of the instrument before the questionnaire was distributed to the chosen samples of this research. To establish content validity, the initial questionnaire was distributed to a sample of 15 randomly selected international Chinese students studying in Finland. They are international students at the universities in Turku, and they have used online travel services recently. In fact, using online travel services has been quite popular among international Chinese students in Turku. Eleven of the 15 individuals responded to the questionnaire with valuable feedback and their comments pertained to clarifying sentences and using appropriate words. The pilot study helped ensure that the final questionnaire would be well understood by respondents and not result in misunderstandings.

The final questionnaire comprises three parts: the motivation letter, questions on the demographic information of respondents, and questions on the research constructs in this study.

The questionnaire starts with a motivation letter encouraging and motivating the respondents to participate in the survey. In addition, some advice and notes on how to fill in the questionnaire are mentioned in the motivation letter as well. See Appendix 1 and Appendix 2.

Then the respondents are asked to answer the questions regarding their demographic information, e.g. age, gender and education. The respondents are also asked to report their Internet experience, such as the duration and frequency of their Internet usage. They are asked to say whether they have used online travel services before. This allows us to determine whether the respondent is an existing user or potential user of the online travel services. As this study aims to investigate IS continuance usage behavior, only those respondents who were existing users of online travel services were included in the data analysis.

The questions on the constructs of the research model are presented after the basic background questions. The initial questionnaire includes 12 variables: perceived ease of use, website design, reliability, system availability, privacy, responsiveness, empathy, e-service quality, perceived usefulness, confirmation, satisfaction, and continuance intention. Each construct is illustrated with two to five items. In total, the respondents are asked to answer 12-variable questions with 36 items aimed at examining the factors influencing the respondents' perception of the online travel service quality and their continuance intention to use the online travel services. The items for measuring the 12 constructs in this study were built based on prior instruments developed in IS literature. The customers are asked to indicate their opinions on the antecedents of the perceived online travel service quality and the predictors of their continued intention to use online travel services, which are based on their previous experience of using online travel services. A five-point Likert-scale ranging from strongly disagree (1) to strongly agree (5) is used to measure each item.

6.3.2 Measurement

In this study, twelve constructs and thirty-six items are tested in the research model. The scale used in the current study was mainly developed from previous research on both IS continuance and service quality with some modifications and rewording to meet the requirement of the specific research context of this study. Table 9 presents the constructs and items used in this study.

Table 9 The operationalization of the measurements

Construct	Item	Source
PEOU	PEOU1 It is easy to look for travel information. PEOU2 It is easy to move around the website. PEOU3 It is easy to complete the purchase. PEOU4 It is easy to do what I want to do, for example searching for information, making an order.	Davis 1989; Davis, Bagozzi & Warshaw 1989.
WD	WD1 The pages load quickly. WD2 The online transaction process is quick and easy.	Wolfinbarger & Gilly 2003.
REL	REL1 The online travel service company is always truthful about its offering. REL2 The online service is always correct. REL3 The online travel service company always keeps its service promises. REL4 The online travel service company always keeps its promotion promises.	Parasuraman, Zeithaml & Malhotra 2005.
SA	SA1 The system is always available for business. SA2 The system does not crash. SA3 The system runs smoothly in the transaction process.	Parasuraman, Zeithaml & Malhotra 2005.
PRI	PRI1 It protects information about customers' online shopping behavior. PRI2 It does not share customer's information with others. PRI3 It protects customers' credit card information.	Parasuraman, Zeithaml & Malhotra 2005.
RES	RES1 It has adequate response time. RES2 It has prompt service. RES3 Its responses are timely.	Yang, Jun & Peterson 2004.
EMP	EMP1 It addresses complaints in a friendly way. EMP2 It is consistently courteous.	Parasuraman, Zeithaml & Berry 1988.
PSQ	PSQ1 Based on my previous online booking experience, I feel the online travel service quality is good. PSQ2 The online service quality is better than I expected.	Yang, Jun & Peterson 2004.
PU	PU1 It is possible to get cheaper prices using online travel services. PU2 Online travel services are convenient. PU3 Using online travel services can save me time. PU4 For me online travel services are useful.	Bhattacharjee 2001a.
CON	CON1 The service encounter was better than I expected. CON2 Most of my expectations about using an online travel service were confirmed. CON3 On the whole, my last online travel service encounter experience was positive.	Bhattacharjee 2001a.
SAT	SAT1 I am satisfied with my last experience of online travel service booking. SAT2 I am very pleased with my last experience of an online travel service. SAT3 I think I made a right decision when using the online travel service I selected.	Oliver 1980; Spreng, MacKenzie & Olshavsky 1996.
CI	CI1 I intend to use the service in the future. CI2 I intend to use the service more in the future. CI3 I intend to use similar competing online travel services rather than any other alternatives, such as traditional travel agencies.	Bhattacharjee 2001a; Bhattacharjee, Perols & Sanford 2008.

6.3.3 Data collection

Surveys enable a researcher to obtain data about practices, situations or views at one point in time with data collected from real world environments through both questionnaires and interviews. A quantitative questionnaire is employed in this study to collect empirical data. The sample for this study was any customer who had online travel service using experience, such as searching for travel information online, booking flight tickets on the websites of travel agencies or airlines and booking hotels online. We selected the population of individual online travel service users in China as the sample for this study. In order to identify users with online travel service using experience, the database of a Chinese travel agency was used to draw up a sample framework of respondents 18 years of age or older.

For the survey, first 1500 members were selected from the database of the Chinese travel agency, and subsequently 1500 questionnaires were mailed to the randomly selected Chinese travelers by mail in October, 2007. An invitation to participate in the survey and return a stamped addressed envelope with the official address of the travel agency were delivered together with the questionnaire. The potential respondents were required to respond to the questionnaire in one month and to send their response back to the travel agency with the return envelope by mail. In the first two weeks after the delivery of the questionnaire, 321 responses were received, and in the following two weeks another 272 responses arrived at the travel agency. In total, 593 responses were collected in this study.

After the data collection, all the 593 responses were checked to see how the respondents fitted into the research field. 50 respondents were not included in the sample because they indicated that they had never used online travel services before. Finally, 543 responses were used as valid data for this research.

6.3.4 Data analysis

In this study structure equation modeling (SEM) has been used as the main method for analyzing the research model and hypotheses. SEM assesses the proposed structural model by testing the assumed causation among a set of dependent and independent constructs in the research model, and evaluates the measurement model in the same analysis by testing the loadings of observed items or measurements on their expected latent constructs. SEM conducts the analysis of both the measurement model and the structural model at the same time, which enables the measurement errors of the observed measurements to be analyzed as an integral part of the research model and the

factor analysis to be combined with the testing of the hypotheses in one operation (Gefen, Straub & Boudreau 2000). SEM has been widely used in behavioral science research and IS research. It has been demonstrated to be rigorous in validating instruments and testing linkages between constructs in IS research (Hair et al. 1998; Gefen, Straub & Boudreau 2000).

In this study the research model and hypotheses were analyzed by means of Smart Partial Least Squares (PLS) 2.0. After the data collection, all the questionnaire data are ordered first via the statistical software, SPSS 14.0, and then transferred to PLS for further analysis to obtain estimates for both the measurements and the structural parameters in the proposed structural equation model in this study (Chin, Marcolin & Newsted 2003). SPSS was used to make the descriptive statistics of the sample in this study.

PLS, as a second major SEM technique, has enjoyed increasing popularity in IS research in recent years because of its ability to model latent constructs under the condition of non-normality when the theoretical framework is not fully crystallized (Chin 1998). PLS is designed to explain variance in linear regression, and is more suited for predictive applications and theory building, in contrast to covariance-based SEM. In addition, PLS is best used for exploratory research and, if necessary, for confirmatory research as well (Gefen & Straub 2005; Straub, Boudreau & Gefen 2004). Though PLS modeling is suitable for relatively small sample sizes, the guideline for a sample size in PLS is that the sample should have at least ten times more data-points than the number of items in the most complex constructs in the model (Barclay, Higgins & Thompson 1995). The variables in this study are latent and the research model is non-normal. Thus, PLS is the right tool for conducting the analysis in this study. In addition, there are a total of 36 items in the research model, and therefore the sample of 543 responses satisfies the sample size requirement for PLS.

PLS was first used to examine the measurement model by conducting factor analysis via Confirmatory Factor Analysis (CFA). PLS uses algorithms to estimate its coefficients, which indicate the relative strength of the statistical relationships, and the significance level of their t-values are estimated by utilizing a bootstrap technique in PLS. In addition, the cross-loadings are calculated as the correlation of each standardized item with its factor scores on the constructs based on the calculation in order to assess the confirmatory factor analysis in PLS.

When the factor analysis is completed, the SEM tool is used to test the structure model with PLS in order to test the relationships between the various latent variables in the research model. An iterative set of factor analyses are combined with path analyses by PLS, and then a bootstrap approach is applied to estimate the significance (t-values) of the paths in the research model.

6.4 Reliability and validity

Instrument validity is important in maintaining rigorousness in IS research (Boudreau, Gefen & Straub 2001; Gefen & Straub 2005; Gefen, Straub & Boudreau 2000; Straub 1989; Straub, Boudreau & Gefen 2004). Straub (1989) and Straub et al. (2004) argued that if research data was gathered on instruments that lack solid validation, even those on which research findings and interpretations were based, then the very scientific basis of the profession were threatened. Validities should be considered in IS research, and instrument validation is both a prior and primary validation for empirical research in the IS domain. Prior studies on validation in IS research assert that there is a quest for validation in IS research via fundamental validation principles in research practice (Boudreau, Gefen & Straub 2001; Gefen & Straub 2005; Gefen, Straub & Boudreau 2000; Straub 1989; Straub, Boudreau & Gefen 2004). The purpose of the validation of the instrument in research is to ensure that the research instrument selected is useful in the quest for scientific truth.

Clearly, the specific ways of assessing research quality are associated with the research methods used in research. In order to rigorously validate the quantitative research instrument used in this study, it adopts the guidelines regarding instrument validation principles as recommended by Straub (1989), Gefen et al. (2000), Boudreau et al. (2001), Boudreau et al. (2004) and Gefen and Straub (2005), including content validity, construct validity and reliability.

Content validity refers to the degree to which items in a research instrument reflect the content universe into which the instrument will be generalized (Cronbach 1971; Rogers 1995). According to Straub (1989) and Boudreau et al. (2001), content validity is generally built up via literature reviews and expert judges or panels. Content validity is desirable in instruments for ensuring that constructs are drawn from the theoretical essence of what they propose to measure (Straub, Boudreau & Gefen 2004). The constructs used in this study are derived from the literature review of the IS discipline and that has provided a strong theoretical base. The 12 constructs in the instrument are based on the literature review of both e-service quality and IS continuance. In addition, as mentioned in chapter 6.3.1, a pilot study of the instrument was conducted in order to maintain the content validity of the instrument. This follows Straub (1989), who recommended that a pre-test and a pilot study should be used in research for establishing content validity.

Construct validity belongs to the issue of the operationalization of measurement between constructs (Straub, Boudreau & Gefen 2004). Construct validity refers to the extent to which a measurement measures the concepts that it is supposed to measure. It focuses on whether the selected items work together and whether they can be

considered as an intellectual whole to reflect the essence of the represented construct, but not the substance of the items (Boudreau, Gefen & Straub 2001; Straub 1989; Zaltman, Duncan & Holbek 1973). Construct validity can be established by ruling out the possibility that latent constructs are being captured by the choices in the measurement instrumentation. Convergent and discriminant validation can be used as criteria for construct validity.

Convergent validity refers to the extent to which the measurements used to reflect constructs that are assumed to be theoretically associated are, in actual fact, also related in reality. Convergent validity can be assessed by inspecting the estimates of the factor loadings of the measurements on the respective constructs (Chin 1998; Hulland 1999; Tenenhaus et al. 2005), the composite reliability (CR) and the average variance extracted (AVE) in a research instrument.

In this study, the test results show that most of the factor loadings of the measurement items in the research model exceed 0.7, except for four whose results are acceptable as they have a cut-off value between 0.5 and 0.7 (Hulland 1999; Hair et al. 2006) (See Appendix 5). In this study the values of composite reliability (CR) (Churchill 1979) and average extracted variance (AVE) (Fornell & Larcker 1981) satisfy the threshold value of 0.7 and 0.5 respectively (see Appendix 5), which indicates a good internal consistency and the reliability of the research instrument, supporting the convergent validity of the data (Chin 1998; Hulland 1999; Teneuhaus et al. 2005).

Testing discriminant validity involves checking whether the measurements reflect the construct in question or reflect another related construct in the research. Discriminant validity can be verified by testing the estimates of the square root of the average variance extracted for each construct. If the variances of the square root of the average variance extracted for each construct are higher than any correlation between this construct and any other construct, the discriminant validity is supported (Fornell & Larcker 1981). The test results in this study show that each construct in the proposed research model shares a greater variance with its own reflective construct than with any other construct in the research model (See Table 10). The test results indicate that each construct in the research model is more closely associated with its own measurements than with those of any other construct. Thus, the discriminant validity in this study is supported (Fornell & Larcker 1981).

Table 10 The correlations between the constructs

	PEOU	WD	REL	SA	PRI	RES	EMP	PSQ	PU	CON	SAT	CI
PEOU	0.748											
WD	-0.031	0.832										
REL	0.012	0.160	0.803									
SA	0.264	0.087	0.450	0.809								
PRI	0.357	0.142	0.314	0.453	0.799							
RES	0.293	0.069	0.460	0.456	0.253	0.760						
EMP	0.429	0.157	0.361	0.590	0.528	0.474	0.947					
PSQ	0.414	-0.031	0.212	0.420	0.210	0.175	0.333	0.915				
PU	0.507	-0.038	0.008	0.176	0.093	0.189	0.201	0.095	0.714			
CON	0.149	0.031	0.138	0.125	0.192	0.236	0.120	0.298	0.134	0.794		
SAT	0.448	-0.127	-0.091	0.231	0.203	0.225	0.333	0.345	0.175	0.228	0.781	
CI	0.346	-0.072	-0.168	0.230	0.164	0.228	0.345	0.475	0.431	0.321	0.510	0.857

Note: The bold items on the diagonal represent the square roots of the extracted variance (AVE), and off-diagonal elements are the correlation estimates.

Following Chin (1998), the cross-loading method was further used to assess the discriminant validity of the measures employed in this study. Appendix 6 reports the loadings and cross-loadings of all the measurements in the proposed research model. Searching down the columns, all the item loadings in their corresponding columns are all higher than the loadings of the items used to measure the other constructs, whereas, searching across the rows, all item loadings are higher for their corresponding constructs than for any other, both of which satisfy the two criteria for discriminant validity suggested by Chin (1998, p. 321):

“If an indicator loads higher with other Latent Variables (LVs) than the one it is intended to measure, the researcher may wish to reconsider its appropriateness because it is unclear which construct or constructs it is actually reflecting. Furthermore, we should expect each block of indicators to load higher for its respective LV than indicators for other LVs.”

While construct validity is an issue of measurement between constructs, reliability is an issue of measurement within a construct (Straub, Boudreau & Gefen 2004). Reliability can also be defined as the extent to which measures are free of random error. As Rogers (1995) pointed out, reliability is a statement about measurement accuracy, such as the extent to which an instrument produces consistent or error-free results. The focus of reliability is that the instrument items selected for a given construct should

converge together in an error-free operationalization of that construct (Boudreau, Gefen & Straub 2001). Internal consistency testing is often used to assess reliability by calculating the Cronbach's alphas of the constructs. The measures in this study were tested for internal consistency by means of Cronbach's alpha. According to Hair et al. (1998), construct reliability will be supported if the value for Cronbach's alpha is above 0.70 (Hair et al. 1998). De Vellis (2003) pointed out that Cronbach's alpha above 0.65 can also be accepted. The Cronbach's alpha values of the constructs in the research model range from 0.657 to 0.886. In fact, all the Cronbach's alphas of the constructs in this study were at a good level (over 0.70) (Hair et al. 1998), except two which had a satisfactory level (over 0.65) (De Vellis 2003). The test results demonstrate good internal consistency and suggest the measures in this study are reliable (Fornell & Larcker 1981).

7 EMPIRICAL RESULTS OF THE RESEARCH

This chapter presents the empirical results of this study. First the descriptive statistics of the sample are presented based on the discussion on the demographic information of the respondents and their experience of Internet usage and online travel service usage. Then, the research model is tested with PLS in order to examine the predictive power of the proposed research model. In addition, the hypotheses proposed in the research model are tested as well. Finally, a further analysis is conducted using PLS in order to understand the influence the antecedents of e-service quality exert on the continuance intention to use IS. This chapter aims at presenting the empirical results of the proposed research model against the hypotheses presented in Chapter 5.

7.1 Descriptive statistics of the sample

In this study, 1500 questionnaires were mailed to potential respondents, and 593 out of the 1500 individuals replied. From the 593 responses, 50 respondents indicated that they had little or no experience of online travel service using, and they were removed from the study. The remaining 543 valid responses form the basis for this study. The 36.2% response rate can be considered acceptable since generally the response rate for questionnaires in information systems domains is between 8 and 15%. In order to check for possible non-response bias, the early and late respondents in the study were verified. Those, who replied before or after the first two weeks, were verified following the procedure suggested by Armstrong and Overton (1997). The results indicate no differences between these two groups. The comparison between the two groups was conducted based on their sample attributes, such as gender, age, duration of Internet use, Internet usage per week, online travel service booking experience.

We further verified that the respondent demographics were consistent with current Internet users in China. The age profile of the respondents represents most age groups with the majority (90%) being in the 18 to 45 age range and 61.9% of the respondents are male. The sample is considered to represent Internet users in China given that Internet users in China are mainly individuals in the age group between 18 and 45 years old (CNNIC 2009). The demographic information of the respondents is shown in Table 11.

Table 11 The demographic information of the respondents

<i>Demographic profile</i>	<i>Category</i>	<i>Frequency</i>	<i>Percentage (%)</i>
Gender	Male	336	61.9
	Female	207	38.1
	Total	543	100.0
Age	18-25	172	31.6
	26-35	165	30.4
	36-45	152	28.0
	46-55	34	6.3
	56-65	20	3.7
	Over 65	0	0
	Total	543	100.0
Education	High school or vocational school level	0	0
	College student	104	19.2
	Bachelor's level	287	52.9
	Master's level	114	21.0
	Ph.D level	38	7.0
	Total	543	100.0

In order to understand the current state of Internet usage in the tourism industry in China, the respondents were asked to indicate their Internet usage and online travel service using experience. All of the respondents had used the Internet for more than 2 years. Of the respondents, 84.9% had used the Internet for more than 3 years and 15.1% had used the Internet more than 2 years. In addition, 66.3% of the respondents indicated that they used the Internet for more than 10 hours per week on average, 21.9% of them answered that they used the Internet 5 to 10 hours per week on average and 11.8% used it for less than 5 hours per week on average. Moreover, more than half of them (57.3%) stated that they had used online travel services more than 5 times in the past, and 42.7% had used it less than 5 times (See Table 12). The respondents can be regarded as good sample for this study because of their long familiarity with and high frequency of Internet usage and their frequent use of online travel services.

Table 12 Internet usage and online travel service use

	<i>Category</i>	<i>Frequency</i>	<i>Percentage (%)</i>
Duration of Internet usage	0-3 months	0	0
	3-6 months	0	0
	6-12 months	0	0
	1-2 years	0	0
	2-3 years	82	15.1
	More than 3 years	461	84.9
	Total	543	100.0
Frequency of Internet usage (hours per week)	Less than 5 hours	64	11.8
	5 to 10 hours	119	21.9
	More than 10 hours	360	66.3
	Total	543	100.0
Online travel service using experience	1-5 times	232	42.7
	More than 5 times	311	57.3
	Total	543	100.0

The differences in Internet usage and online travel service usage between different age and gender groups were examined in this study. The results indicate that there are significant differences in the frequency of Internet usage and online travel service usage between different age groups. The Chi-Square test shows the results have a p-value of 0.001 and 0.001 respectively. Among the respondents, those between 18 and 45 years old are also the Internet users with the highest frequency of Internet usage and more experience of using online travel services, while older people have quite low frequencies of Internet usage and less online travel service using experience (see Table 13 and Appendix 7). It was found that there were no significant differences in the duration of Internet usage between the different age groups since the Chi-Square test results indicate a p-value of 0.287. The percentages of each age group in each Internet usage group (duration of Internet usage) are presented in Table 14.

Table 13 Crosstab of age and Internet usage duration

<i>Age</i>	<i>More than 2 years</i>		<i>More than 3 years</i>		<i>Total</i>	
	<i>Frequency</i>	<i>Percentage</i>	<i>Frequency</i>	<i>Percentage</i>	<i>Frequency</i>	<i>Percentage</i>
18-25	33	6.08	139	25.60	172	31.68
26-35	26	4.79	139	25.60	165	30.39
36-45	18	3.31	134	24.68	152	27.99
46-55	3	0.55	31	5.71	34	6.26
56-65	2	0.37	18	3.31	20	3.68
Total	82	15.10	461	84.9	543	100

Table 14 Crosstab of age and frequency of Internet usage

<i>Age</i>	<i>1-5 times</i>		<i>More than 5 times</i>		<i>Total</i>	
	<i>Frequency</i>	<i>Percentage</i>	<i>Frequency</i>	<i>Percentage</i>	<i>Frequency</i>	<i>Percentage</i>
18-25	54	9.95	118	21.73	172	31.68
26-35	81	14.92	84	15.47	165	30.39
36-45	79	14.55	73	13.44	152	27.99
46-55	17	3.13	17	3.13	34	6.26
56-65	1	0.18	19	3.50	20	3.68
Total	232	42.73	311	57.27	543	100

When viewing the difference between Internet usage and online travel service experience among different genders, the results in this study indicate that there are no significant differences in both Internet usage and online travel service usage between the different gender groups. The Chi-Square test shows the results have a p-value of 0.365 (duration of the Internet usage), 0.177 (frequency of the Internet usage), and 0.888 (online travel service usage). The percentages of each group in relation to Internet usage and online travel service usage are presented in Table 15, Table 16 and Appendix 8.

Table 15 Crosstab of gender and the duration of Internet usage

<i>Gender</i>	<i>More than 2 years</i>		<i>More than 3 years</i>		<i>Total</i>	
	<i>Frequency</i>	<i>Percentage</i>	<i>Frequency</i>	<i>Percentage</i>	<i>Frequency</i>	<i>Percentage</i>
Male	55	10.1	281	51.7	336	61.9
Female	27	5.0	180	33.2	207	38.1
Total	82	15.1	461	84.9	543	100

Table 16 Crosstab of gender and the frequency of Internet usage

<i>Gender</i>	<i>1-5 times</i>		<i>More than 5 times</i>		<i>Total</i>	
	<i>Frequency</i>	<i>Percentage</i>	<i>Frequency</i>	<i>Percentage</i>	<i>Frequency</i>	<i>Percentage</i>
Male	146	26.9	190	35.0	336	61.9
Female	86	15.8	121	22.3	207	38.1
Total	232	42.7	311	57.3	543	100

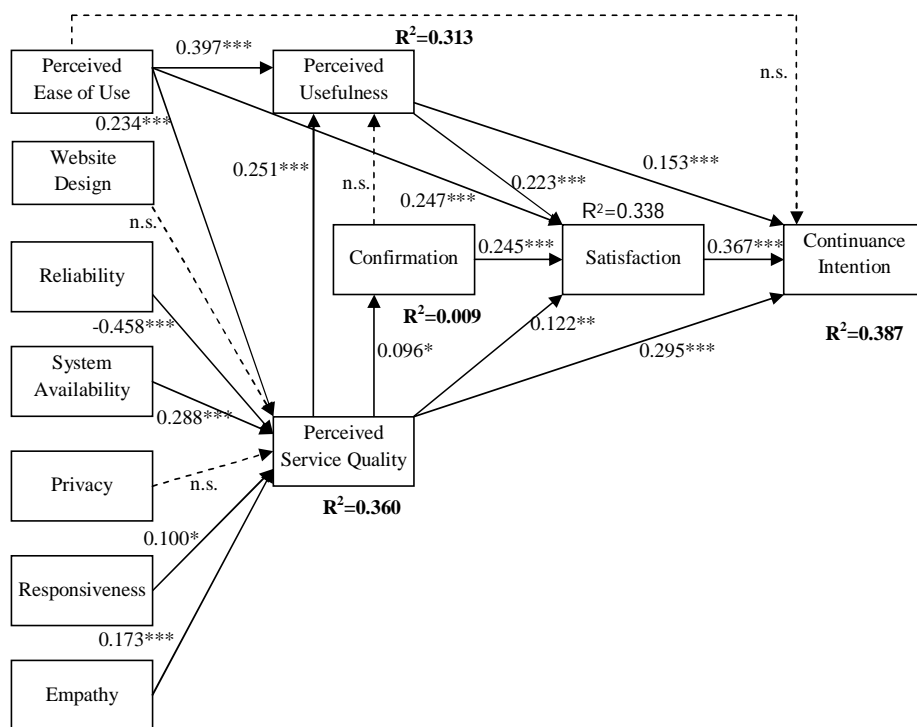
The differences in online travel service usage between different Internet user groups were also examined in this study. The results indicate that there is no significant difference in online travel service usage between Internet user groups that have different usage durations and this is shown by a Chi-Square test result p-value of 0.634. The percentages of each group in the online travel service usage are presented in Appendix

9. In this study significant differences were found in online travel service usage between the Internet user groups that have different frequencies. The Chi-Square test shows the results have a p-value of 0.002. Among the respondents, those with a high frequency of Internet usage also use online travel services more, and those with a less frequent Internet usage form a smaller percentage of the online travel service users. Appendix 10 shows the percentages of each group with regard to online travel service usage.

7.2 Empirical results of the research model

The proposed research model was tested using the structural equation model, and a bootstrapping procedure in PLS was used to test the effects and the statistical significance of the parameters in the structural model. The statistical significance of all the structural parameter estimates was examined to determine the validity of the hypothesized paths proposed in this study.

This study introduces service-quality-based antecedents into the IS continuance model based on ECT (Bhattacharjee 2001a) in order to examine IS continuance on the individual level, thus expanding our understanding of the IS continuance phenomenon from the perspective of individuals. This study discusses how perceived service quality addresses some known limitations of the ECT model in predicting IS continuance. It was found that the perceived service quality determines continuance intention together with perceived usefulness and user satisfaction in the online travel service context, and that it influences user perception on perceived usefulness, confirmation and satisfaction as well. Further, this study provides arguments linking the antecedents of service quality and perceived service quality to the continuance intention. Figure 14 presents the results including path coefficients and variances.



Note: ***: p-value<0.001, **: p-value<0.01, and *: p-value<0.05, n.s. = Not significant

Figure 14 Structural analysis of the research model

H1a-H1g relate to the associations between the seven antecedents of online travel service quality and overall online travel service quality. The empirical results in this study provide significant support for some of the hypotheses related to perceived service quality proposed in this study. Perceived ease of use, reliability, system availability, responsiveness and empathy are supported as being positively related to user perception of online travel service quality, while website design and privacy are not supported as being related to it.

The analytical results show that perceived ease of use ($\beta=0.234$, $t=5.941$, $p<0.001$) in online travel services positively affects user perception of overall online travel service quality, providing support for H1a. Reliability ($\beta=-0.458$, $t=5.637$, $p<0.001$) significantly and positively affects user perception of overall online travel service quality, supporting H1c. Moreover, system availability ($\beta=0.288$, $t=5.595$, $p<0.001$) has a positive impact on the user perception of overall online travel service quality, indicating hypothesis H1d is supported. Furthermore, responsiveness ($\beta=0.100$, $t=2.220$, $p<0.05$) is positively associated with user perception of overall online travel service

quality, so H1f is supported. For the H1g test, empathy ($\beta=0.173$, $t=3.601$, $p<0.001$) shows a strong positive relationship with the overall online travel service quality, and it is supported as well.

However, H1b and H1e are not supported according to the analytical results, indicating that website design ($\beta=-0.013$, $t=0.235$, $p>0.05$) and privacy ($\beta=0.018$, $t=0.396$, $p>0.05$) are not significantly related to overall online travel service quality.

Thus, in this study, perceived ease of use, reliability, system availability, responsiveness and empathy were found to have positive effects on user perception of online travel service quality. These factors account for 36% of the variance in the perceived service quality of online travel services. Table 17 lists a summary of the structural parameter estimates and the test results of the hypotheses as related to online travel service quality.

Table 17 The test results of the hypotheses about e-service quality

<i>Hypotheses</i>	<i>Path</i>	<i>Structural coefficient</i>	<i>t-value</i>	<i>Results</i>
H1a	Perceived Ease of Use → Perceived Service Quality	0.234***	5.941	Supported
H1b	Website Design → Perceived Service Quality	-0.013	0.235	Not supported
H1c	Reliability → Perceived Service Quality	-0.458***	5.637	Supported
H1d	System Availability → Perceived Service Quality	0.288***	5.595	Supported
H1e	Privacy → Perceived Service Quality	0.018	0.386	Not supported
H1f	Responsiveness → Perceived Service Quality	0.100*	2.220	Supported
H1g	Empathy → Perceived Service Quality	0.173***	3.601	Supported

H2-H13 relate to the relationships between the post-adoption cognitive beliefs (perceived ease of use, perceived usefulness and perceived service quality) and attitude (satisfaction) in relation to users' continuance intention in the online travel service context. All of the associations are significant except for H2 (CON to PU) and H7 (PEOU to CI).

The results indicate that the confirmation of expectations about online travel services is positively associated with user satisfaction ($\beta=0.245$, $t=5.634$, $p<0.001$) with online travel services, supporting H3 in this study. Unexpectedly, the confirmation of expectations does not influence perceived usefulness ($\beta=0.035$, $t=1.311$, $p>0.05$)

significantly. Thus, H2 is not supported in this study. The perceived usefulness of online travel services has a positive influence on user satisfaction with online travel services ($\beta=0.223$, $t=4.837$, $p<0.001$) and users' continuance intention ($\beta=0.153$, $t=3.297$, $p<0.001$) to use the online travel service used, providing support for H5 and H4. The test results of the association between user satisfaction and the continuance intention indicate that user satisfaction exerts a strong positive influence on users' continuance intention to use online travel services ($\beta=0.367$, $t=7.643$, $p<0.001$). Thus, H6 is supported.

The results also show that perceived ease of use in the online travel services is positively related to user perception of the usefulness of online travel services ($\beta=0.397$, $t=10.657$, $p<0.001$) and user satisfaction ($\beta=0.247$, $t=5.798$, $p<0.001$), strongly supporting H8 and H9. However, against expectations, the relationship between perceived ease of use and users' continuance intention to use online travel services is not significant ($\beta=-0.010$, $t=0.202$, $p>0.05$). Thus, H7 is not supported in this study.

Furthermore, the perceived service quality of online travel services was found to be positively related to user satisfaction ($\beta=0.122$, $t=2.643$, $p<0.01$), users' continuance intention to use online travel services ($\beta=0.295$, $t=5.747$, $p<0.001$), user perception of perceived usefulness ($\beta=0.251$, $t=7.139$, $p<0.001$), and the confirmation of user expectations ($\beta=0.096$, $t=2.260$, $p<0.05$), supporting H10, H11, H12 and H13.

Table 18 lists the structural parameter estimates and the test results of the hypotheses related to users' continuance intention to use online travel services.

Table 18 The test results of the hypotheses about IS continuance

<i>Hypotheses</i>	<i>Path</i>	<i>Structural coefficient</i>	<i>t-value</i>	<i>Results</i>
H2	Confirmation → Perceived Usefulness	0.035	1.311	Not Supported
H3	Confirmation → Satisfaction	0.245***	5.634	Supported
H4	Perceived Usefulness → Continuance Intention	0.153***	3.297	Supported
H5	Perceived Usefulness → Satisfaction	0.223***	4.837	Supported
H6	Satisfaction → Continuance Intention	0.367***	7.643	Supported
H7	Perceived Ease of Use → Continuance Intention	-0.010	0.202	Not supported
H8	Perceived Ease of Use → Perceived Usefulness	0.397***	10.657	Supported
H9	Perceived ease of use → Satisfaction	0.247***	5.798	Supported
H10	Perceived Service Quality → Satisfaction	0.122**	2.643	Supported
H11	Perceived Service Quality → Continuance Intention	0.295***	5.747	Supported
H12	Perceived Service Quality → Perceived Usefulness	0.251***	7.139	Supported
H13	Perceived Service Quality → Confirmation	0.096*	2.260	Supported

As shown in Figure 11, perceived ease of use, reliability, system availability, responsiveness and empathy account for 36% of the variance in perceived service quality, and perceived ease of use and perceived service quality account for 31.3% of the variance in perceived usefulness. Perceived ease of use, perceived usefulness, confirmation and perceived service quality explain 33.8% of the variance in user satisfaction. Perceived service quality accounts for 0.9% of the variance in confirmation. In total, the proposed model interprets 38.7% of the variance in users' continuance intention to use online travel services.

7.3 Post hoc analysis

As discussed in Chapter 7.2, perceived ease of use, reliability, system availability, responsiveness and empathy are the antecedents of online travel service quality, and

website design and privacy are not. Perceived service quality is a stronger driver of continuance intention than perceived usefulness, although its impact on continuance intention is not as strong as that of user satisfaction. In order to provide a richer picture of the relationship between perceived service quality and continuance intention, a post hoc analysis was conducted using PLS to investigate how the antecedents of service quality influence continuance intention. Table 19 presents the results of the analysis for predicting continuance intention using each antecedent of perceived service quality in this study. The results show that reliability, system availability, responsiveness and empathy are significantly related to continuance intention. The results suggest that reliability, system availability and empathy are the three most important antecedents of perceived service quality, and also exert a strong influence on continuance intention, while responsiveness is another determinant of e-service quality which has a marginal impact on continuance intention.

Table 19 The connections between the antecedents of e-service quality and the continuance intention

	Continuance intention
R ²	0.470
Perceived ease of use	0.061(t=1.540)
Website design	0.052(t=0.700)
Reliability	-0.336***(t=4.725)
System availability	0.230***(t=4.023)
Privacy	0.020(t=0.403)
Responsiveness	0.087**(t=2.532)
Empathy	0.162***(t=3.510)

Note: ***: p -value<0.001, and **: p -value<0.01.

8 DISCUSSION

This chapter presents further discussion on the empirical results of this study. First the results of the antecedents of IS continuance are discussed by means of a comparison of the different effects of perceived ease of use, perceived usefulness, perceived service quality and satisfaction in relation to IS continuance intention. Then, the results on the determinants of user satisfaction are presented. Next, the results of the antecedents of perceived online travel service quality are discussed. Finally, there is a summary of the research findings in the current study.

8.1 The determinants of IS continuance intention

Overall, most of the hypothesized links in the proposed research model were found to be significant, strongly supporting the expanded IS continuance model in this study and also the IS continuance model based on ECT proposed by Bhattacharjee (2001a). The proposed research model expands our understanding of the phenomenon of IS continuance at the individual level by virtue of the inclusion of perceived service quality as a predictor variable of continuance intention compared to earlier IS continuance research.

The results of the study indicate that the determinants of IS users' continuance intention are different from their initial IS adoption. In this study, perceived usefulness, perceived service quality and user satisfaction were found to be significant determinants of users' continuance intention to use online travel services. Unexpectedly, perceived ease of use has little impact on users' continuance intention.

User satisfaction ($\beta=0.367$, $t=7.643$, $p<0.001$) with their prior online travel service was found to be the strongest predictor of users' continuance intention to use online travel services. This finding supports the contention in ECT that user satisfaction is the strongest predictor of users' continuance intention to use IS, and it is also consistent with prior IS continuance research based on ECT (Roca, Chiu & Martinez 2006; Thong, Hong & Tam 2006; Roca & Gagne 2008; Liao, Palvia & Chen 2009). A recent study by Liao et al. (2009) found that user satisfaction was the most critical factor influencing users' continuance intention to use e-learning. In the study by Thong et al. (2006), the saliency of user satisfaction on IS users' continuance intention was found to be much

stronger than perceived ease of use, perceived usefulness and perceived enjoyment. These findings from prior studies demonstrate that the inclusion of the variable of user satisfaction in theoretical models to predict IS continuance was strongly warranted. The higher the user satisfaction is found to be, the higher the level of the continuance intention to use online travel services is.

As expected, perceived usefulness ($\beta=0.153$, $t=3.297$, $p<0.001$) was found to have a significant effect on users' continuance intention to use online travel services. Compared to the effect of user satisfaction, its influence is weaker. This finding is consistent with the results of prior studies on IS adoption found in IS continuance literature. As Bhattacharjee (2001a) observes, perceived usefulness is a predictor of IS continuance intention, but its influence on continuance intention is weak.

In ECT, user satisfaction is reviewed as an affective attitude of IS users, which is formed based on IS users' confirmation, the dissonance between IS users' expectation and perceived performance (Oliver 1980). The construct of user satisfaction takes into account both the pre- and post-adoption beliefs of IS users, whereas perceived usefulness is highly related to IS users' outcome expectations about IS usage.

In the post-adoption stage, online travel service users like to make their subsequent adoption decisions on both their expectations and their perception of their actual online travel service performance, rather than solely on their expectations of the online travel services based on their online travel service using experience. Though perceived usefulness has been viewed to be enough to convince users to initially adopt an IS, it may not be enough to determine their subsequent IS adoption behavior after their initial IS usage (Liao, Palvia & Chen 2009). Before the actual usage of online travel services, users have no experience of using an online travel service. They mainly make their decision on their expectancy about the outcome of using the online travel services. An example of the phenomenon is that in TAM perceived usefulness has been posited to be a primary factor determining IS acceptance rather than attitude (Davis, Bagozzi & Warshaw 1989; Taylor & Todd 1995). In the post-adoption stage, the usefulness and the performance of the online travel services is approved during the actual experience of using an online travel service. Thus, the perceived usefulness of the online travel service will be taken for granted, and its saliency in determining users' continuance intention to use online travel services will be decreased accordingly.

However, in the post-adoption stage, users will form their attitudes based on the dissonance between their expectations and the performance of the online travel services, which will increase their saliency in shaping the continuance intention compared to the weak influence of attitude on users' adoption decision in the initial adoption stage. According to Fazio and Zanna (1981), in the post-adoption stage, user satisfaction (attitude) with IS usage is largely based on IS users' first-hand experience of their actual

IS usage. It is more realistic, unbiased, and less susceptible to change compared to their pre-acceptance attitude to IS. In the initial adoption stage, IS users' attitudes are formed solely based on their cognitive beliefs (e.g., perceived usefulness and perceived ease of use) and second-hand information, such as recommendations from friends or relatives, popular media, or other sources. They might be inaccurate, uncertain and biased. Thus, in the initial IS adoption stage, IS users downplay their uncertain attitudes in their acceptance decisions in order to accommodate the uncertainty of their IS adoption decision. However they heighten their satisfaction in their continuance decisions given that experience has made them more certain. Thus, user satisfaction is increasing its saliency in determining the continuance intention of an IS user in the post-adoption stage. Wixom and Todd (2005) conducted research to investigate IS continuance by incorporating user satisfaction as an additional variable in TAM to explore IS continuance. In their study, they highlighted the importance of user satisfaction in determining IS continuance. Based on their study results they argue that user satisfaction is a salient motivator for IS users' continuance intention.

As Bhattacharjee (2001a) indicates the effect of perceived usefulness is a robust and salient predictor of IS usage across temporal stages of IS, both in acceptance and continuance contexts. However, the magnitude of its effect seemed to decrease over time relative to that of affective reaction. The decreasing influence of perceived usefulness and the increasing saliency of user satisfaction in the post-adoption of IS usage provide enough explanation why user satisfaction is the strongest predictor of users' continuance intention to use the online travel services and perceived usefulness is solely a significant predictor of continuance intention. It can also explain an example of the phenomenon that though some users feel that an online travel service is really useful, but they discontinue using the online travel service after they have used it mainly due to their dissatisfaction with their prior online travel service usage.

Perceived usefulness has been demonstrated to be a strong salient predictor of IS usage intention for IS built for instrumental purposes. It may not apply equally to IS over time for different instrumental purposes. As Bhattacharjee and Premkumar (2004) indicate, IS user perception of usefulness, which has been demonstrated to be the most salient belief driving IS usage, tends to fluctuate over time across both technological and usage contexts. A possible explanation for the finding on the effect of perceived usefulness on the IS continuance intention may be due to the IS examined in this study. As Kwon and Zmud (1987) state there is a call for IS adoption research to take into account the influence of context. The purpose for users to adopt online travel services is mainly task-achievement oriented, not work-oriented activities. With the move from being a novelty to a routine method in the use of online travel services, the usefulness of the online travel services can be said to have already been largely approved due to

users' repeated use of the online travel services. This is also supported by the fact that there is a large population of online travel service users in the world. In the post-adoption stage, online travel service users focus more on how they can successfully complete their task and find satisfaction with online travel services in their continuous adoption of online travel services, rather than on how useful online travel services are. Therefore, it is understandable as to why perceived usefulness is solely a significant predictor for determining users' continuance intention to use online travel services, and why user satisfaction is the strongest predictor. As Zhang and Li (2005) noted, IS users' affective dimension might also have an impact on their IS adoption decision, and it should not be underestimated when predicting IS continuance. This study supports their view and further empirically validated the positive association between user satisfaction and the IS continuance intention. The findings in this study indicate that user satisfaction with their IS usage can eventually help increase users' continuance intention to use IS during the post-adoption stage.

One unexpected finding is, the effect of perceived ease of use ($\beta = -0.010$, $t = 0.202$, $p > 0.05$) on the continuance intention to use online travel services is not significant. This finding further supports results in prior IS adoption research by presenting empirical evidence that the impact of perceived ease of use reduces over time as IS users became familiar with an IS after their repeated adoption of IS (Davis, Bagozzi & Warshaw 1989). In addition, it can be attributed to the context of the study i.e., online travel services are one of the most successful e-commerce sectors on the Internet. Further, in this study the majority of the sample in the survey have used the Internet for more than two years and have used online travel services more than five times. Among them, perceived ease of use tends to be less important in shaping their subsequent adoption behavior (Venkatesh et al. 2003). It is easy for online travel service users to use online travel services due to their prior use experience and their Internet skills.

In this study perceived ease of use was found to be a salient predictor of perceived usefulness and user satisfaction, which, in turn, determine users' continuance intention. Thus, it can be concluded that perceived ease of use has a significant indirect impact on users' continuance intention to use online travel services, though it has no significant direct influence on users' continuance intention.

With the adoption of a new IS and/or change in the features of a known IS, an IS user's perception of the usefulness of online travel service changes. There is an inevitable necessity to include other constructs into the IS continuance research frameworks from different research perspectives rather than the variables in the IS adoption research frameworks. In this study, perceived service quality from the service quality research stream was incorporated into the IS continuance model in order to

elaborate contingent factors which might have a potential influence on the IS continuance intention.

As expected, perceived e-service quality ($\beta=0.297$, $t=5.702$, $p<0.001$) was found to be a significant predictor of users' continuance intention to use online travel services. It has a stronger influence on the continuance intention than that of perceived usefulness. This result is consistent with prior findings in marketing literature that service quality is an important potential factor influencing the future behavior of consumers, and it is a predictor of the intention to repeat behavior (Cronin & Taylor 1992; Zeithaml, Berry & Parasuraman 1996). It also validates the association between service quality and continuance intention in the IS setting. According to Hu et al. (2009), perceived service quality has a positive effect on users' intention to continue using online tax services. Their study results were consistent with the hypothesis and further empirically validated the correlation between perceived service quality and the continuance intention to use IS in the context of online tax services. Perceived online travel quality is formed based on users' actual experience of online travel service performance, which has gained approval through actual usage. Thus, online travel service quality can offer accurate information to users about the level of quality of an online travel service, and influence their subsequent behavior. If online travel service quality is good, the online travel service users will continue using it, otherwise not. The study results indicate that perceived service quality is an additional significant predictor in determining IS continuance intention together with user satisfaction and perceived usefulness. As Wixom and Todd (2005) note, both perceived service quality (post-adoption belief) and user satisfaction (attitude) should be integrated into IS adoption research.

The post hoc analysis provides some fresh insights into the relationships between the antecedents of perceived service quality and continuance intention. Reliability, system availability, responsiveness and empathy were found to be closely associated with continuance intention. Reliability and system availability have a stronger influence on IS users' continuance intention to use online travel services compared to those of responsiveness and empathy. Reliability and system availability focus on the system characteristics of online travel services, closely associated with IS users' possibility to use online travel services to achieve their aims, for example, booking a flight ticket successfully. Furthermore, responsiveness and empathy focus on the service attributes of online travel services, which do not have a great effect on the task-oriented activities of online travel service users, but might influence users' feelings about using online travel services. All of them are highly involved in the online travel service performance process. The results indicate that in the post-adoption stage, online travel service performance is an important predictor in determining users' continuance intention to use online travel services. This finding is in consistent with another finding of this study;

perceived service quality is a significant predictor determining users' continuance intention to use online travel services.

8.2 The determinants of satisfaction

The results in this study show that perceived ease of use, perceived service quality, confirmation and perceived usefulness have positive effects on user satisfaction toward online travel service usage. Perceived ease of use ($\beta=0.247$, $t=5.798$, $p<0.001$), perceived usefulness ($\beta=0.223$, $t=4.837$, $p<0.001$) and the confirmation of expectations ($\beta=0.245$, $t=5.634$, $p<0.001$) were found to have strong saliency in predicting user satisfaction with online travel services, whereas the perceived service quality of online travel services ($\beta=0.122$, $t=2.643$, $p<0.01$) is a significant predictor of user satisfaction, its influence on user satisfaction is not as strong as that of perceived ease of use, confirmation and perceived usefulness.

In this study, both perceived ease of use and confirmation were found to be the primary predictors of user satisfaction given that they both have a strong influence on user satisfaction and the effects are almost the same. The finding is not consistent with the prior finding of Bhattacharjee (2001a) that confirmation was the primary determinant of user satisfaction. In addition, though the effect of perceived usefulness on user satisfaction is not as strong as that of perceived ease of use and confirmation, perceived ease of use, perceived usefulness and confirmation can be viewed as the three salient predictors determining user satisfaction due to the small effect differences the three variables exert on user satisfaction.

Bhattacharjee (2001b) argues that users' initial expectations about IS usage might change after their actual IS usage, and their revised expectations, in turn, might exert significant influence on their subsequent cognitive processes, such as their satisfaction with IS usage. In the current study, perceived usefulness and perceived ease of use are two post-adoption beliefs referring to online travel service users' expectancy of their online travel service usage. In brief, users' cognitions about the ease of use and the usefulness of online travel services change over time during their use of online travel services. In the post-adoption stage, users' revised cognitions about the two beliefs (perceived ease of use and perceived usefulness) influence their attitude (user satisfaction) toward their use of online travel services. This result is consistent with prior studies on IS adoption research based on TAM that found users' beliefs, such as perceived usefulness, were positively related to their attitude toward IS usage (Davis, Bagozzi & Warshaw 1989; Taylor & Todd 1995).

Confirmation was also found to be a predictor providing a strong saliency for user satisfaction. As mentioned earlier, the construct of confirmation involves both pre- and post-adoption behavior. IS users' cognitions about their confirmation of expectations influence their attitude, especially user satisfaction given that user satisfaction refers to IS users' affective reaction to their IS usage and is highly involved in both their expectations of and the performance of IS. The higher the level of confirmation, the more satisfied the online travel service users are.

Perceived service quality was found to be another predictor of user satisfaction for online travel services. Perceived service quality has been generally regarded as a predictor of user satisfaction in prior research. Users' observations of external stimuli (the online travel service) are processed cognitively and lead to their overall affective reaction (user satisfaction) (Bagozzi 1992). Online travel service users make observations about online travel service quality during their online travel service usage and form their cognition about the quality of an online travel service, which will lead to their overall satisfaction with that online travel service. In short, better service quality will lead to a higher level of satisfaction.

The larger effect size of perceived ease of use, perceived usefulness and confirmation on user satisfaction suggests that online travel service users view both the instrumentality of the online travel services and realizing their expectations on the online travel service as being salient in forming their satisfaction about online travel services. The perceived service quality of an online travel service is also related to the instrumentality of the online travel service since perceived service quality includes the dimensions of both the system characteristics (e.g. instrumentality) and the service characteristics of online travel services. Combined with the earlier finding that user satisfaction was the primary determinant of users' continuance intention to use online travel services, these results confirm that both post-adoption beliefs and the confirmation of their expectations are salient in forming their levels of satisfaction with online travel services.

In addition, some correlations between the three post-adoption beliefs and confirmation were found in this study. Perceived service quality was found to have an influence on both perceived usefulness and confirmation. Interestingly, confirmation was found to have no significant influence on perceived usefulness in contrast to the previous research results in ECT that view confirmation as a predictor of perceived usefulness (Bhattacharjee 2001a; Thong, Hong & Tam 2006). It can be assumed that online travel service users have rather clear and concrete expectations of the perceived usefulness of online travel services before their use of online travel services. Therefore, confirmation exerts no influence on their perception of the usefulness of the online

travel service in their online travel service usage process. That finding indicates that confirmation might not necessarily be a major predictor of post-adoption beliefs.

8.3 The antecedents of e-service quality

One goal of this study is to decompose users' perceived e-service quality since perceived e-service quality is viewed to be critical in ensuring IS success in the online setting (Yang, Jun & Peterson 2004). This study developed the determinants of e-service quality in the online travel service context based on prior studies of the instruments for measuring e-service quality. The results in this study specified five key factors which have an impact on user perception of e-service quality, namely perceived ease of use, reliability, system availability, responsiveness and empathy.

First, the results show that reliability has the strongest saliency in predicting user perception of the online travel service quality ($\beta = -0.458$, $t = 5.637$, $p < 0.001$). This result is consistent with the findings of prior studies (Yang, Jun & Peterson 2004; Fassnacht & Koses 2006). Yang et al. (2004) found that reliability was the most salient factor for predicting perceived service quality in the business-to-customer e-commerce service context. Online customers considered reliability to be the foremost antecedent for achieving high levels of service quality. This is consistent with findings in prior studies in the traditional service quality context (Parasuraman, Zeithaml & Berry 1985, 1988; Bitner 1990). Additionally, offering true and accurate information about websites and always keeping their promises to online travel service users should also help online travel service providers build up trust in users' minds and improve the confidence of users. The results indicate that high reliability in the online travel service helps ensure good service quality.

Second, system availability is a significant and critical predictor of online travel service quality, which exerts a strong effect on user perception of overall e-service quality ($\beta = 0.288$, $t = 5.595$, $p < 0.001$). Other studies also found system availability to be an effective antecedent of overall e-service quality (Kim, Kim & Lennon 2006). Kim et al. (2006) found system availability to be a determinant of the overall service quality of online retailers. Therefore, for online travel service providers improving the dimension of the system availability of their online travel services can help offer quality services to online travel service users and enhance user satisfaction, e.g. by offering up-to-date information about their browser's requirements, system maintenance, monitoring system running and so on. The malfunction of an online website may result in customers having a poor experience of online travel service booking and thus becoming dissatisfied with that online travel service and online travel services in general.

Third, perceived ease of use is also a significant and important facet of e-service quality, and has a strong influence on user perception of service quality in the online travel service context though its effect ($\beta=0.234$, $t=5.941$, $p<0.001$) is not as strong as that of reliability and system availability. This finding is consistent with prior research results. Sohn and Tadisina (2008) also found that perceived ease of use was a predictor of overall e-service quality in the context of online financial services. Perceived ease of use is related to how easy it is for users to use online travel services. The result indicates that the ease of use of online travel services will lead online travel service users to feel better about service quality. Thus, the results of the study suggest that there is a need for online travel service providers to place an extra emphasis on the design of their online service function and their service process pertaining to the facet of perceived ease of use.

Fourth, in contrast to expectations, empathy was found to be a significant determinant of overall service quality in online travel services. It influences user perception of overall online travel service quality strongly ($\beta=0.173$, $t=3.601$, $p<0.001$), although compared to the effects of reliability, system availability and perceived ease of use on overall online travel service quality its effect is weaker. This result is consistent with the prior findings of Parasuraman et al. (1985, 1988) in the traditional service context and Madu and Madu (2002) in the e-service context. Parasuraman et al (1985, 1988) found that empathy was an important predictor of traditional service quality and identified it as one of the five key drivers of overall service quality in the context of traditional service. Few studies have explored the effect of empathy in the e-service context. This might be due to the perception that empathy is not as important for online services as it is in traditional services, since there is no human contact in the online service encounter process. Thus, empathy was ignored in prior research. Madu and Madu (2002) attempted to explore the impact of empathy on overall e-service quality in the e-service context and found that empathy was a predictor of user perceptions of overall e-service quality. The finding on empathy in this study shows that although there is no human contact in the online service process, empathy should be expressed to online travel service users in virtual communication during the online travel service process, e.g. email communication, online electronic responses to customers' requirements or bookings.

Responsiveness was found to have only a minor effect on user perception of overall online travel service quality in this study ($\beta=0.100$, $t=2.220$, $p<0.05$). That finding might be caused by the fact that nowadays online travel service providers have normally already realized the importance of prompt responses to their users and the dimension of responsiveness has been improved to meet user requirements. Though responsiveness has a significant influence on customers' perception of e-service quality, the influence is

not as strong as the influence of reliability, system availability, perceived ease of use and empathy. However, its importance in predicting overall e-service quality should not be underestimated. Offering prompt online travel services to users is what online travel service providers should do in order to improve user perception of their online travel service quality and increase satisfaction with it.

However, perhaps most surprisingly, the study results indicates that privacy ($\beta=0.018$, $t=0.386$, $p>0.05$) and website design ($\beta=-0.013$, $t=0.235$, $p>0.05$) do not have a significant influence on customer perception of online travel service quality, in contrast to previous research findings on the measurement of e-service quality.

The proliferation of online travel services and the wide application of the Internet might provide an explanation as to why website design is not a significant predictor of online travel service quality. Online travel service users normally use the websites as their access to online travel services. During the initial stages of an online travel service application, website design is an important factor to be considered when evaluating online travel service quality. The websites of online travel service providers can be viewed as a gateway to companies in the virtual environment, which might influence a user's impression of the online travel service's quality. Another consideration is that online travel service users might not have enough skills in Internet usage and be incapable of using a website correctly.

Thus, website design was assumed to be an important predictor of online travel service quality during the initial stages of online travel service applications. Support for this observation is that website design has been demonstrated to be a predictor determining e-service quality in the earlier research on e-service quality (Jun & Cai 2001; Yang & Jun 2002; Wolfinbarger & Gilly 2003). Once an online travel service provider has recognized the importance of website design, they put effort into improving their website quality aimed at enhancing service quality to customers. With the proliferation of online travel services, the quality of website design may have already been improved to a satisfactory level for all users. In another words, online travel service users have already been satisfied by the overall quality of website design compared to the other dimensions of online travel service quality. In addition, their user skills have also improved due to experience and the high frequency of Internet usage. In this study, all the respondents had used the Internet for more than two years. Thus, they should be skilled in Internet use. For them, website design was not an issue in relation to online travel services any more.

Privacy was an important factor of e-service quality when e-service appeared and was still in its infancy. However with the popularity of online travel service in the world, privacy doesn't receive e-service users' attention any more. This might be partly due to the growing maturity of the virtual business environment. In addition, online

travel service users are normally assured of the security of their financial and personal data during their online travel service usage.

Though privacy and website design are not significant determinants of online travel service quality, they should still be considered in online travel services. Online travel service users should be assured of the privacy of online travel services through website design cues and communication. In addition, for online travel service organizations, providing online travel services to users and ensuring a high level of service quality involves much more than creating an excellent website for users. Online travel service providers should design their websites to be as easy as possible for users to use.

This study found that perceived ease of use, reliability, system availability, responsiveness and empathy are the five key determinants of the overall service quality of online travel services. As above discussed, e-service quality was a strong predictor of user satisfaction and influences users' continuance intention to use online travel services directly and via user satisfaction as well. Thus, improving the overall service quality of an online travel service according to the five key dimensions of e-service quality will also help to increase user satisfaction with online travel services and indirectly help to positively affect the continuance intention to use online travel services.

8.4 Summary of the research findings

Based on the study results, the expanded ECT model explained 38.7% of the variance in the continuance intention to use online travel services. The ECT model used in IS reveals that the variance of the continuance intention varied from 41% to 62%. Thus, the results in this study show that the expanded IS continuance model in this study is a good model for testing users' continuance intention in the context of online travel services.

In this study, some research findings are predicted based on the empirical results and the above discussion. First, perceived usefulness, user satisfaction and perceived service quality are the key factors predicting users' continuance intention to use online travel services. User satisfaction is the primary predictor of the continuance intention to use online travel services, followed by perceived service quality and perceived usefulness. These findings are based on the significant empirical support provided for the following hypotheses:

H4: For users the perceived usefulness of online travel services is positively related to their continuance intention to use the online travel services.

H6: The level of satisfaction of users after their initial use of online travel services is positively related to their continuance intention to use the online travel services.

H11: The perceived service quality of online travel services is positively related to users' continuance intention to use the online travel services.

Second, perceived ease of use, perceived usefulness, perceived service quality and confirmation are all relevant determinants of user satisfaction with online travel services. Perceived ease of use, perceived usefulness and confirmation exert quite similar strong influences on user satisfaction, whereas perceived service quality has only a marginal impact on user satisfaction. These findings are based on the significant empirical evidence of the following hypotheses:

H3: The extent of the confirmation of user expectations about online travel services is positively related to their satisfaction with the online travel services.

H5: For users the perceived usefulness of online travel services is positively related to their satisfaction with the online travel services.

H9: For users the perception of the ease of use of online travel services is positively related to their satisfaction with the online travel services.

H10: The perceived service quality of online travel services is positively related to user satisfaction with the online travel services.

Third, perceived ease of use, reliability, system availability, responsiveness and empathy are the relevant antecedents of perceived online travel service quality. Reliability is highly ranked as the primary predictor of perceived online travel service quality, followed by system reliability, perceived ease of use, empathy and responsiveness in that order. These findings provide significant empirical support for the following hypotheses:

H1a: Perceived ease of use is positively related to user perception of online travel service quality.

H1c: Reliability is positively related to user perception of online travel service quality.

H1d: System availability is positively related to user perception of online travel service quality.

H1f: Responsiveness is positively related to user perception of online travel service quality.

H1g: Empathy is positively related to user perception of online travel service quality.

Next, in this study, perceived ease of use, perceived usefulness, perceived service quality and confirmation, are found to be correlated. Perceived ease of use is a critical predictor of perceived usefulness in the online travel service context, and perceived service quality is positively related to perceived usefulness and the confirmation of expectations about online travel services. These findings provide empirical support for the following hypotheses:

H8: For users the extent of the perceived ease of use of online travel services is positively related to the extent of the perceived usefulness for the online travel services.

H12: The perceived service quality of online travel services is positively related to user perception of the usefulness of the online travel services.

H13: The perceived service quality of online travel services is positively related to confirmation of user expectations regarding the online travel services.

Furthermore, in this study perceived ease of use is found not to have a significant effect on users' continuance intention to use online travel services, confirmation has no influence on the perceived usefulness of online travel services, and privacy and website design are not significant antecedents of perceived online travel service quality. Thus the following hypotheses are not supported by this study.

H1b: Website design is positively related to user perception of online travel service quality.

H1e: Privacy is positively related to user perception of online travel service quality.

H2: The extent of the confirmation of user expectations about online travel services is positively related to their perceived usefulness of the online travel services.

H7: For users the perception of the ease of use of online travel services is positively related to their continuance intention to use the online travel services.

9 CONCLUSIONS

Given the empirical support for the proposed research model, this research has makes both theoretical and practical contributions to IS research. This chapter presents the contributions to and implications for research and practice. First, the theoretical contributions to both the research streams of IS continuance and e-service quality are presented, followed by a discussion of the contributions to and implications for practice, especially for online travel service providers. Then, the limitations of the current study are discussed, and the suggestions for future research directions are put forward as well. The purpose of this chapter is not only to summarize the research achievements in research and practice, but also to assess the research process by discussing its limitations and highlighting future research directions.

9.1 Contributions to and implications for research

The results of the current study are strongly supportive of the extended IS continuance model proposed in this study. It offers both theoretical contributions to and implications for IS continuance research and e-service quality research.

9.1.1 *Contribution to IS continuance research*

From the perspective of IS continuance research, this study adds to the body of IS continuance research based on the ECT. One basic strength of this research is that the research incorporated perceived service quality as a predictor variable of IS continuance intention into the IS continuance model from the service quality perspective, but not from the adoption research frameworks.

First, this research makes important contributions to IS continuance research. It addresses the limitations of ECT in predicting IS continuance by introducing perceived service quality as an additional predictor of IS continuance intention in the ECT framework. There are arguments in both IS literature and marketing literature on the predictive ability of user satisfaction on continuance intention though it has been seen as the salient predictor of continuance intention. In this study, the strong effect of perceived service quality on continuance intention was observed and supported with

empirical evidence, though its effect on continuance intention is not as strong as on that of user satisfaction. User satisfaction is based on users' confirmation of IS use through their prior experience of using it, and perceived usefulness and perceived service quality are associated with IS users' expectations regarding their use of IS. In TAM, only user expectancy about IS use was explored, and TAM was seen as not explaining IS discontinuance, whereas, ECT emphasizes expectation confirmation based on both user expectations of IS and the performance of IS in their prior IS use experience, and it is argued that it does not guarantee the continuance intention.

Recalling the limitations of both TAM and ECT in fully explaining IS continuance, perceived service quality, as an additional variable to both the two behavioral expectations in TAM and user satisfaction, may partly address the limitations because of its strong influence on continuance intention in the synthesized research model. Thus, it implies that in the post-adoption stage, both user beliefs in IS use and the performance of IS in the pre-and post-adoption stages will influence users' IS continuance intention. When IS users are satisfied with their prior IS use, and they think that IS use will be useful and the service quality will be good in their IS use, they will have a high level of continuance intention to use an IS. Even if they are not satisfied, because of their perception of the high level of IS usefulness and the service quality of IS use, they will still have a high level of continuance intention. However, if they are not satisfied, and they think the service quality will be poor in the future, they will have a lower intention to continue to use IS, even if they perceive that IS would have a high level of usefulness in the future.

This research also suggests that user satisfaction, as a transient attitude, may influence IS users' continuance intention in the short term compared to the long term influence of post-adoption beliefs on continuance intention given that they are enduring predictors of IS continuance. Further, given the empirical evidence in the post hoc analysis of this research, the attribute of both the technical (reliability and system availability) and service attributes (responsiveness and empathy) exert an influence on users' continuance intention to use IS. IS users are more likely to consider technical support in their e-service process when making their IS continuance decision, rather than the service attributes of the e-service process. However, some basic attributes of e-services, mainly technical attributes, have no influence on users' continuance intention to use e-services, such as perceived ease of use, website design and privacy. This provides further explanation for the mechanism relating to how perceived service quality influences the continuance intention. In the following, Section 9.1.2, this will be further discussed.

This study provides a good explanation of how change in the two post-adoption beliefs influences continuance intention compared to prior research results in online

settings. Most of the research on IS continuance focused on exploring the impact of post-adoption beliefs on the IS continuance intention, in which perceived usefulness was found to be the salient determinant of intention. In this study perceived usefulness was found to have a smaller influence on the continuance intention than user satisfaction and service quality, and its impact was determined to be of medium strength. That finding contradicts the results of prior IS research with regard to adoption behavior that found that perceived usefulness was the salient predictor of intention. The focus on IS continuance intention can be said to have shifted from post-adoption beliefs to user satisfaction (attitude). The finding suggests that constructs other than perceived usefulness, e.g. service quality and satisfaction, are much more important in explaining the continuance intention in online service settings. In general, and in online travel services in particular, travelers are driven rather strongly by their satisfaction with IS rather than just the characteristics of the technology.

This study also contributes to the development and initial validation of the IS continuance model based on ECT in the online settings, which provides a rather comprehensive understanding of IS user decision processes that are involved in IS continuance. This study is one of the first works to posit and demonstrate the important roles of post-adoption beliefs, user satisfaction and perceived e-service quality in predicting the continuance intention to use IS together in online settings. According to the results of this study, perceived usefulness, user satisfaction and perceived service quality contribute to explaining users' continuance intention to use IS in online settings.

Prior IS research, especially post-adoption studies based on ECT, has consistently shown that both perceived usefulness and user satisfaction are salient facets for predicting users' continuance intention to use IS (e.g., Bhattacharjee 2001a; Venkatesh et al. 2003). Prior research on service quality has examined the association between service quality and behavioral intention and found service quality to be positively related to intention (e.g., Boulding et al. 1993). While some of the research findings in this study are consistent with prior research on both IS continuance and e-service quality, the significant advance in this study is the integration of both research streams. Perceived service quality is a cognitive belief derived from prior IS use. Generally, user satisfaction is the dominant consequence of service quality. In addition, perceived service quality influences users' subsequent IS use via both user satisfaction (attitude) and intention constructs, which reflects the belief-attitude-intention causality in the IS domain.

In this study, the IS continuance model based on ECT (Bhattacharjee 2001a) was largely supported. Users' post-adoption cognitive beliefs, such as perceived ease of use, perceived usefulness and perceived service quality, were found to determine user satisfaction together with confirmation, which, in turn, shapes users' continuance

intention together with the two post-adoption beliefs of perceived usefulness and perceived service quality. In this study, attitude, e.g. user satisfaction, was found to increase its saliency in predicting users' continuance intention and have a stronger predictive power than cognitive beliefs (e.g. perceived usefulness, perceived service quality). The findings imply that attitude is a primary and salient predictor in determining users' continuance intention to use IS in the post-adoption stage.

In the initial IS adoption stage, IS adoption intention was assumed to be also shaped by attitude and cognitive beliefs. However, users' cognitive beliefs, such as perceived usefulness, perceived ease of use, are posited to be the primary determinant of IS adoption decisions, whereas attitude exerts only a weak influence on the adoption intention. The study findings prove that the variables and mechanisms used to explain IS continuance are different from those in the initial IS adoption stage. In IS literature there has been debate about the effects of attitude (user satisfaction) on continuance intention. Wixom and Todd (2005) integrated user satisfaction, such as information and system satisfaction, into TAM to explore IS continuance intention and found that attitude influenced users' IS usage intention through the mediating of cognitive beliefs, e.g. perceived ease of use, perceived usefulness. Chea and Luo (2008) argued that both users' attitude and cognition had an influence on their post-adoption behavior in IS usage, and that affect and cognition were interlinked. IS users are not only technology users, but also service consumers. They may consider both their cognition and affective benefits, e.g. user satisfaction, in their IS usage (Kim, Chan & Kupta 2007). Drawing upon the findings of this study and prior research it would seem that, in the post-adoption stage, attitude should be considered as an important predictor of users' IS continuance intentions, and that this influence can even be more salient than cognitive beliefs.

Regarding user satisfaction, prior IS research has highlighted the evaluative judgment of IS usage based on ECT (Bhattacharjee 2001a; Limayem & Cheung 2008). User satisfaction is viewed as an attitude, but it is also distinct from attitude. User satisfaction is an attitude based on IS usage experience and the confirmation of expectation in IS usage (Liao, Palvia & Chen 2009). Thus, it is concluded that online travel service users focus more on the confirmation of their expectations when forming their continuance intention to use online travel services rather than on their post-adoption beliefs.

The results of the study also challenge some of the tenets of the IS continuance model (Bhattacharjee 2001a). In the IS continuance model, confirmation is assumed to shape users' attitude (user satisfaction) toward their use of online travel services with perceived usefulness and its influence on it. However, in this study confirmation was found to have no significant influence on perceived usefulness. In addition, users'

post-adoption beliefs (perceived ease of use, perceived usefulness and perceived service quality) are also salient determinants of user satisfaction (attitude). It implies that in the post-adoption stage, confirmation is not the sole focus for shaping IS users' attitudes as indicated in ECT. Users' cognitions about their post-adoption expectations (perceived ease of use and perceived usefulness) and the performance (perceived service quality) are also central to determining an IS user's attitude when balanced against confirmation. Thus, it can be concluded that in the post-adoption stage, confirmation is not the focus for predicting IS continuance, IS user expectations and IS performance are also increasing in importance in relation to predicting IS continuance. In this study the significant influences of perceived service equality and the five antecedents of service quality on the continuance intention also present evidence for this conclusion.

Furthermore, this study also expands the theoretical contribution of ECT within IS continuance research, and provides additional empirical evidence. The context of online travel services has never been explored in IS continuance research with ECT. However, this study has been built on the limited research available about IS continuance, and also extended the generalizability of ECT to the broader IS adoption context. Generalizability has been the focus of IS research in the intention and behavioral research streams, yet a greater and richer treatment of context within IS research is needed.

9.1.2 Contribution to e-service quality research

The contribution of this study to the field of e-service quality research is related to the attempt to explain that the service-related dimensions of e-service quality are strong predictors of user perceptions of e-service quality together with the dimensions of the technical characteristics. Both technical characteristics and service-related determinants of service quality are the focus of prior service quality research. It has been argued that the dimensions of system characteristics are salient determinants of e-service quality in general.

Only a small amount of research has been conducted to investigate the dimensions of service-related characteristics, and the dimensions of service-related characteristics were found not to be significant in explaining perceived e-service quality, or though they were significant, the influence was really very weak. In the current study service-related dimensions of e-service quality were found to have strong saliency regarding user perception of e-service quality. Empathy, the service-related dimension of traditional service quality, was found to be a strong predictor of perceived e-service quality, though its impact was not as strong as that of reliability, system availability and

perceived ease of use. This is consistent with the finding on the strong saliency of perceived service quality and user satisfaction with regard to the continuance intention in this study. The findings suggest that not only do the dimensions of technology characteristics have strong saliency in predicting service quality, but also that the dimensions of service-related characteristics have strong effects on user perceptions of online service.

Thus, it can be concluded that in the e-service setting, service attributes are increasing their saliency in predicting service quality. This is partly due to the impossibility of replicating such services in the competition for business. Hence, service attributes might also become superiorities in the competition for business. Though technical attributes should retain their saliency in determining e-service quality, some of their characteristics have already lost their importance in determining e-service quality. Technical attributes, such as website design and privacy, are easy for competitors to replicate.

9.2 Contributions to and implications for practice

The results of this study offer some important implications for practice as well.

First, the results highlight the importance of satisfaction (attitude) in predicting the continuance intention to use online travel services from expectation confirmation perspectives. The research results also indicate that online travel service performance is important in predicting IS continuance intention.

The dominant effect of satisfaction presents online travel service providers with potential fruitful avenues for affecting their users' continuance intention to use online travel services. The research results suggest that having satisfied users is an antidote against IS discontinuance for online travel service providers. It is evident that online travel service users will discontinue using an online travel service, if they are not satisfied with it, even if it is useful. Conversely they will continue using an online travel service when they satisfied with it, even though it is not as useful as they expected.

Thus, in order to retain online travel service users online travel service providers should devote themselves to making online travel service users happy with the online services they encounter by focusing on the improvement of the performance of their online travel services. In addition, IS user expectations about online travel service use will be adjusted over time during their use of the online travel services. Furthermore, their expectations will become concrete and clear through the frequent use of online travel services.

Online travel service providers should devise strategies that will help increase user satisfaction with their online travel service. As a result, the online travel service providers will be able to retain existing users and hopefully increase their IS usage. It is evident that the role that satisfaction plays in determining the success of the online travel service providers in the marketplace will become increasingly important.

The results also highlight the importance of empathy in determining online travel service quality though its effect is not as strong as that of the other dimensions of reliability, system availability and perceived ease of use. While prior research indicated the importance of reliability, system availability and perceived ease of use in online services, this study extended that to include empathy in the context of promoting online travel services. Online travel service providers should highlight empathy in their online service process by having strategies to demonstrate their empathy with their online travel service users during their virtual communication and customer service, which will help promote their online travel service quality. It might also be helpful in achieving advantages in the online travel service market based on the fact that currently empathy has not attracted the attention of online travel service providers to any great extent.

The current research provides valuable information about online travel service providers in China and on how to retain online travel service customers. Nowadays, retaining customers is becoming the main goal for online service providers in the fierce competition for customers in the virtual marketplace. For online travel service providers, the results offer guidance on how to make the right strategies for retaining their customers.

9.3 Research limitations and future research suggestions

This study has offered some valuable insights into studies on both IS continuance and e-service quality, but involves limitations that need to be acknowledged. These limitations are related to the generalizability of the study results, and the methodology employed in the current study.

Generalizing the statistical results from a research sample to a population is one of the main purposes of academic research. The research sample in the current study consisted of 543 Chinese travelers in China. It is possible to generalize the research results to the population in the online travel service sector in China, but it should be noted that this current study was conducted only with respondents from China and care should be exercised when considering generalizing the results to the online travel service sector in an international context due to the fact that there are some differences between Chinese travelers and travelers in other countries.

The results of this study can be generalized to the online travel service sector, but it is hard to generalize the results outside of the online travel service sector. Online travel services are information-rich, which makes them a good fit with online business compared to other sectors. Thus, it is recommended that the study be replicated in different nations to get an international sample and further generalize the research model for the online travel service industry in an international context. In addition, given that the current research focuses on services provided by the online travel service providers' websites, an important question remains regarding the impact of the context on the current research results. Obviously, one study is not sufficient to conclude that perceived usefulness is not the primary antecedent predicting users' continuance intention, which suggests that further research should be conducted to examine the IS continuance relationships found in this study in other contexts. To expand the expanded ECT model of this study to IS continuance research in other contexts would also further validate the research model empirically and achieve the goal of the generalizability of the research results based on the research model.

Methodological limitations are related to the cross-sectional study method in this study and its limitations on the study of the change in IS users' behavior. The current study is mainly a cross-sectional study. User behavior is dynamic and changes over time due to changes in cognitions and attitudes after the initial usage of an IS. A cross-sectional study cannot predict the temporal change in users' post-adoption beliefs about and attitudes to IS after their initial usage of IS. Nor can it predict how IS users' behavior will change with their changes in beliefs and attitudes. Conducting a longitudinal research may provide some fresh insights into how changes in IS users' cognitions and attitudes influence their usage behavior.

Another opportunity for further research is the continuing development of enhancements to the expanded ECT as well as a comparison of ECT with other adoption models in the IS domain. Research on the two areas bears much promise in helping understand the phenomenon of continuing or discontinuing IS usage and IS success. In fact, IS user beliefs, attitudes and intentions, which are argued to shape IS adoption behavior in prior IS literature, change during the adoption stages of an IS, for example, they move from initial IS acceptance to continued usage. It might be an interesting and potentially fruitful area for future research to explore these complex and dynamic motivators for IS continuance since the research area has received little attention in the IS domain, and longitudinal research may provide more insight into the behavioral development of users with regard to IS usage.

Finally, future research can also examine the post-adoption behavior of IS users by utilizing the ECT framework to research such issues as continuance usage, word of

mouth, repurchasing and complaints, and for exploring the relationship between user satisfaction, continuance intention and post-adoption behavior.

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APPENDICES

APPENDIX 1 QUESTIONNAIRE IN ENGLISH

Thank you for taking the time to complete the survey. The survey will take about 15 minutes. The responses from this survey will be used in a research in e-commerce. All collected material will be used confidentially so that individual respondents will not be tracked.

Note: the five-Likert scale in the survey is as the following:

1 = strongly disagree

2 = disagree

3 = no decision on agree or disagree

4 = agree

5 = strongly agree

1. What is your age?

- (1) 18-25 years
- (2) 26-35 years
- (3) 36-45 years
- (4) 46-55 years
- (5) 56-65 years
- (6) Over 65 years

2. What is your gender?

- (1) Male
- (2) Female

4. What is your education background?

- (1) High school or vocational school level
- (2) College student
- (3) Bachelor's level
- (4) Master's level
- (5) Ph.D level

35. How long have you used the Internet?

- (1) 0-3 months
- (2) 3-6 months

- (3) 6-12 months
- (4) 1-2 year
- (5) 2-3 years
- (6) More than 3 years

5. How often do you use the Internet during a week?

- (1) Not at all
- (2) Less than 5 hours
- (3) 5 to 10 hours
- (4) More than 10 hours

8. Have you used online travel services before?

- (1) Never and have no intention to do so
- (2) Not yet, but I have an interest in it
- (3) Yes, 1-5 times
- (4) Yes, more than 5 times

12. Consider your last online travel service using experience, please comment on the following statements on the perceived ease of use of online travel services.

12.1 It is easy to look for travel information.	1	2	3	4	5
12.2 It is easy to move around the website.	1	2	3	4	5
12.2 It is easy to complete the purchase.	1	2	3	4	5
12.4 It is easy to do what I want to do, for example searching for information, making an order.	1	2	3	4	5

13. Consider your last online travel service using experience, please comment on the following statements on the perceived usefulness of online travel services.

13.1 It is possible to get cheaper prices using online travel services.	1	2	3	4	5
13.2 Online travel services are convenient.	1	2	3	4	5
13.3 Using online travel services can save me time.	1	2	3	4	5
13.4 For me online travel services are useful.	1	2	3	4	5

14. Consider your last online travel service using experience, please comment on the following statements on the website design in online travel services.

14.1 The pages load quickly.	1	2	3	4	5
14.2 The online transaction process is quick and easy.	1	2	3	4	5

15. Consider your last online travel service using experience, please comment on the following statements on the reliability in online travel services.

15.1 The online travel service company is always truthful about its offering.

1 2 3 4 5

15.2 The online service is always correct.

1 2 3 4 5

15.3 The online travel service company always keeps its service promise.

1 2 3 4 5

15.4 The online travel service company always keeps its promotion promise.

1 2 3 4 5

16. Consider your last online travel service using experience, please comment on the following statements on the system availability in online travel services.

16.1 The system is always available for business.

1 2 3 4 5

16.2 The system does not crash.

1 2 3 4 5

16.3 The system runs smoothly in the transaction process.

1 2 3 4 5

17. Consider your last online travel service using experience, please comment on the following statements on the privacy in online travel services.

17.1 It protects information about customers' online shopping behavior.

1 2 3 4 5

17.2 It does not share customer information with others.

1 2 3 4 5

17.3 It protects customer credit card information.

1 2 3 4 5

18. Consider your last online travel service using experience, please comment on the following statements on the responsiveness in online travel services.

18.1 It has adequate responsive time.

1 2 3 4 5

18.2 It has prompt service.

1 2 3 4 5

18.3 Its responses are timely.

1 2 3 4 5

20. Consider your last online travel service using experience, please comment on the following statements on the empathy in online travel services.

20.1 They address complaints in a friendly way.

1 2 3 4 5

20.2 They are consistently courteous.

1 2 3 4 5

21. Consider your last online travel service using experience, please comment on the following statements on the confirmation of expectations in online travel services.

21.1 The service encounter was better than I expected.

1 2 3 4 5

21.2 Most of my expectations regarding the use of online travel services were confirmed. 1 2 3 4 5

21.3 On the whole, my last online travel service encounter experience was positive. 1 2 3 4 5

23. Based on your last online travel service using experience, please consider your satisfaction with that online travel service and comment on the following.

23.1 I am satisfied with my last experience of online travel service use. 1 2 3 4 5

23.2 I am very pleased with my last experience of online travel service use. 1 2 3 4 5

23.3 I think I made the right decision when using the online travel service I selected. 1 2 3 4 5

24. Based on your last online travel service experience, please consider the service quality of its online travel service and comment on the following.

24.1 Based on my previous experience of using online travel services, I feel the online travel service quality is good. 1 2 3 4 5

24.2 The online travel service quality was better than I expected. 1 2 3 4 5

26. Based on your last experience of using an online travel service, please consider your future intentions regarding online travel services and comment on the following.

26.1 I intend to use the service also in the future. 1 2 3 4 5

26.2 I intend to use the service more in the future. 1 2 3 4 5

26.3 I intend to use similar competing online travel services rather than any other alternatives, such as traditional travel agencies. 1 2 3 4 5

APPENDIX 2 QUESTIONNAIRE IN CHINESE

电子旅游问卷调查

感谢您的参与，并完成调查问卷。填写问卷大约需要15分钟。问卷结果只会用于电子商务方面的研究，对答卷人个人不会跟踪调查。

请注意：在此问卷中采用了5级分制，具体表示如下：

1=强烈反对，

2=反对，

3=中立，

4=赞成，

5=强烈赞成。

1. 您的年龄:

(1) 18-25岁

(2) 26-35岁

(3) 36-45岁

(4) 46-55岁

(5) 56-65岁

(6) 65岁以上

2. 您的性别:

(1) 男

(2) 女

4. 您的受教育程度:

(1) 高中或职业学校毕业

(2) 大学生

(3) 本科

(4) 硕士

(5) 博士

35. 您已经使用互联网多长时间了?

(1) 0-3个月

(2) 3-6个月

(3) 6-12月

- (4) 1-2年
- (5) 2-3年
- (6) 超过3年

5. 您每周平均使用互联网多长时间？

- (1) 从不上网
- (2) 少于5小时
- (3) 5-10小时
- (4) 10小时以上

8. 你是否使用过电子旅游服务？

- (1) 从来没有，不感兴趣
- (2) 没有，但有兴趣
- (3) 是的，有过1-5次
- (4) 是的，5次以上

12. 请根据您上次使用电子旅游的经历对电子旅游服务的易用性做出评价。

12.1 容易找到旅游信息。	1	2	3	4	5
12.2 网站浏览方便。	1	2	3	4	5
12.3 完成旅游服务产品的订购交易容易。	1	2	3	4	5
12.4 我能很方便的做我想做的事情，比如查询旅游信息，订购旅游服务。	1	2	3	4	5

13. 请根据您上次使用电子旅游的经历对电子旅游服务的有用性做出评价。

13.1 使用电子旅游服务，我能获得较便宜的价格。	1	2	3	4	5
13.2 电子旅游服务的使用非常方便。	1	2	3	4	5
13.3 电子旅游服务节约了我的时间。	1	2	3	4	5
13.4 对我来说，电子旅游服务很有用。	1	2	3	4	5

14. 请根据您上次使用电子旅游的经历对电子旅游服务的网站设计做出评价。

14.1 页面载入快。	1	2	3	4	5
14.2 电子交易过程快而且容易。	1	2	3	4	5

15. 请根据您上次使用电子旅游的经历对电子旅游服务的可靠性做出评价。

15.1 公司产品或服务真实。	1	2	3	4	5
15.2 电子服务不会出错。	1	2	3	4	5
15.3 服务信守承诺。	1	2	3	4	5
15.4 促销信守承诺。	1	2	3	4	5

16. 请根据您上次使用电子旅游的经历对电子旅游服务的系统可用性进行评价。					
16.1 商业系统始终正常运行。	1	2	3	4	5
16.2 系统不会崩溃。	1	2	3	4	5
16.3 在交易过程中,系统运行良好。	1	2	3	4	5
17. 请根据您上次使用电子旅游的经历对电子旅游服务的隐私权做出评价。					
17.1 保护用户电子购物习惯的信息。	1	2	3	4	5
17.2 不与他人分享顾客信息。	1	2	3	4	5
17.3 保护顾客的信用卡信息。	1	2	3	4	5
18. 请根据您上次使用电子旅游的经历对电子旅游服务的反应度做出评价。					
18.1 有足够的回应时间。	1	2	3	4	5
18.2 服务迅速。	1	2	3	4	5
18.3 服务中反应及时。	1	2	3	4	5
20. 请根据您上次使用电子旅游的经历对电子旅游服务的同理度做出评价。					
20.1 在处理投诉时态度友好。	1	2	3	4	5
20.2 一直对客户保持礼貌。	1	2	3	4	5
21. 请根据您上次使用电子旅游的经历对电子旅游服务的确认度做出评价。					
21.1 订购服务比我预想的要好。	1	2	3	4	5
21.2 我对所选用服务的大部分期望都已达到。	1	2	3	4	5
21.3 我上一次网上订购旅游服务的经历是正面的。	1	2	3	4	5
23. 请根据您上次使用电子旅游的经历对电子旅游服务的满意度做出评价。					
23.1 我对电子旅游服务十分满意。	1	2	3	4	5
23.2 我十分高兴使用了电子旅游服务。	1	2	3	4	5
23.1 我认为我上次使用电子旅游服务是一个正确的决定。	1	2	3	4	5
24. 请根据您上次使用电子旅游的经历对电子旅游服务的质量做出评价。					
24.1 从我上次使用电子旅游服务的经历来看,我认为电子旅游服务质量好。	1	2	3	4	5
24.2 我上一次使用的电子旅游服务的服务水平比我预想的好。	1	2	3	4	5
26. 请根据您上次使用电子旅游的经历对您以后使用电子旅游的趋势做出评价。					
26.1 我将来还会用电子旅游服务。	1	2	3	4	5
26.2 我将来可能会更多的使用电子旅游服务。	1	2	3	4	5

26.3 我可能会使用其他竞争者提供的电子旅游服务，而不是通过其他渠道订购旅游服务，例如传统的旅行社。

1 2 3 4 5

APPENDIX 3 REVIEW OF IS CONTINUANCE ARTICLES IN MAJOR IS JOURNALS

<i>Author(s)</i>	<i>Research Context</i>	<i>Theoretical framework</i>	<i>Research findings</i>
Bhattacharjee (2001a)	Online banking	ECT.	Users' intention to continue using IS is determined by their satisfaction with prior IS use and perceived usefulness of the continued IS use.
Devaraj et al. (2002)	B2C e-commerce	TAM, Transaction cost theory (Williamson 1975, 1977), and SERVQUAL.	Consumer beliefs together with the dimensions of service quality determine consumer satisfaction and their preferences in the e-commerce environment.
Koufaris (2002)	Web-based store	TAM and flow theory (Csikszentmihalyi 1975, 1977)	Perceived enjoyment of the online shopping experience and the perceived usefulness of the website determine a consumer's intention to return to certain websites to purchase goods.
Gefen et al. (2003)	Electronic vendor (e-vendor)	TAM and trust.	Users' continued intention to use online vendors is influenced by both their trust in the online vendor and technological aspects of the website interface offered by the online vendor.
Bhattacharjee & Premkumar (2004)	Computer based training system usage and software usage	ECT.	Perceived usefulness and attitude determine IS users' IS continuance intention. But user perception of the usefulness of IS and their attitude to IS use tend to change over time in various technological and usage contexts, and such change tends to be more prevalent in the initial IS usage stage than in the post-adoption stage.
Wixom & Todd (2005)	Data warehousing software	User satisfaction and TAM.	Both information and system satisfaction are external variables to traditional TAM beliefs about usage behavior, which, in turn, determines a user's IS continuance intention together with attitude. Quality and satisfaction play critical mediating roles between the antecedents of information and system quality and beliefs about IS use.
Otim & Grover	Web-based services	Service quality.	Pre-purchase services have a limited effect on customer loyalty,

(2006)	(Computer purchasing)		transaction-related services have a positive impact on customer loyalty, and post-purchase services exert a positive influence on customer loyalty. Post-purchase services are the focus of web-based stores in shaping user satisfaction and the continuance intention to use web-based stores.
Limayem et al. (2007)	WWW usage	ECT.	User satisfaction and perceived usefulness shape users' continuance intention to use IS, which, in turn, determines continued IS usage. Habit moderates the relationship between IS continuance intention and behavior.
Hsieh et al. (2008)	The Free Internet TV	TPB.	User attitude toward IS use exerts a stronger influence on continuance intention than subjective norms.
Kamis et al. (2008)	Decision support system	Cognitive Fit Theory (Vessey 1991).	Perceived usefulness, perceived enjoyment and perceived control determine a user's intention to return to IS use.
Wang (2008)	E-commerce	DeLone & McLean's (2003) updated IS success model.	Both the perceived value of and user satisfaction with IS use influence users' continued intention to use IS, and the perceived value of and user satisfaction with IS use are influenced by information quality, system quality and service quality.
Cenfetelli et al. (2008)	B2C e-commerce service	TRA.	Support service functions influence customer perceptions and continued usage of B2C websites, augmenting prior predictions based solely on service quality. Both what services are offered and how services are offered are important predictors of customer perceptions and behavior.
Kim et al. (2009)	B2C retailer	TRA and ECT.	Trust influences the repurchase intention of consumers directly and indirectly in combination with perceived benefits and perceived risks. Trust has a longer term effect on the loyalty of online consumers via satisfaction. Trust plays crucial and multiple roles in the online transaction process.
Lee et al. (2009)	Mobile data services	Two-factor theory (Herzberg et al. 1959)	Information quality is a motivator for increased mobile data service usage, but system quality is not. Information quality exerts a stronger

			effect on mobile data service usage in the motive for utilitarian rather than hedonic behavior.
Kim & Son (2009)	Portal (Websites)	Dual model of post-adoption behavior.	Both dedication- and constraint-based mechanisms determine the post-adoption behavior of online consumers simultaneously, yet differentially. Research should interplay the dedication- and constraint-based mechanisms in examining the complex nature of post-adoption behavior.
Guinea & Markus (2009)	General IS usage	Underpinning IS continuance theories.	Continued IS use should focus more on behavior and action rather than on intentions or decisions since continued IS use may be more automatic and less intentional. Automatic IS using modes can not only lead to repeated IS usage behavior, but also create new IS adoption.
Qureshi et al. (2009)	Online vendor	Trust	Vendor-specific factors (such as perceived reputation, perceived capability of order fulfillment, perceived website quality) are not enough to determine the online repurchase intentions of consumers. Trust in online vendors plays a key mediating role between vendor-specific factors and the repurchase intention.
Deng et al. (2010)	Mobile Internet services	ECT	IS user experience conceptualized as cognitive absorption may influence user satisfaction with IS and the continuance intention to use IS.
Venkatesh & Goyal (2010)	Internal electronic human resource information system.	ECT	Both positive and negative disconfirmations of expectations on usefulness exert a negative effect on users' continued intention to use a system, although the effect of negative disconfirmation is stronger. Confirmation will lead to higher levels of behavioral intention.
Recker (2010)	Process modeling grammar	TAM and ECT	The research results are consistent with both TAM and ECT. Perceived ease of use, perceived usefulness and satisfaction determine users' continued intention to use process modeling grammar. In addition, the difference factors of the grammar users, such as modeling experience,

			modeling background and perceived grammar familiarity, have an impact on their continued use of process modeling grammar via beliefs and satisfaction.
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APPENDIX 4 REVIEW OF THE MAIN STUDIES ON THE DIMENSIONS OF E-SERVICE QUALITY

<i>Author(s)</i>	<i>Research context</i>	<i>Research methods</i>	<i>Key dimensions of service quality</i>
Yoo & Douthu (2001)	Web retail site	Survey	Ease of use, aesthetic design, processing speed, and security.
Cox & Dale (2001)	E-commerce service	Literature review	Website appearance, communication, accessibility, credibility, understanding and availability.
Jun & Cai (2001)	Internet banking service	Content analysis, Interview	Website design, information, ease of use, access, courtesy, responsiveness, and reliability.
Zeithaml et al. (2002)	Online service	Literature review	Security, communication, reliability, responsiveness and delivery.
Madu & Madu (2002)	Virtual business operation	Literature review	Performance, features, structure, aesthetics, reliability, service ability, security and system integrity, trust, responsiveness, service differentiation and customization, web store police, reputation, assurance and empathy.
Yang and Jun (2002)	Online retailing service	Survey	Website design, security, reliability, responsiveness, accessibility and customization.
Wolfenbarger & Gilly (2003)	Online retailing service	Survey	Website design, reliability, security, and customer service.
Surjadaja et al. (2003)	E-service	Literature review	Security, interaction, responsiveness, information, reliability, delivery, and customization.
Santos (2003)	E-service in e-commerce	Qualitative research, interview	Ease of use, appearance, linkage, structure, content, efficiency, reliability, communication, security, incentive and customer support.
Yang et al. (2003)	Internet retailing service	Content analysis, qualitative study, interview	Responsiveness, credibility, ease of use, reliability, convenience, communication, access, competence, courtesy, personalization, collaboration, security and aesthetics.
Yang et al. (2004)	Online banking services	Content analysis, interview qualitative research	Reliability, responsiveness, competence, ease of use, security and product portfolio.
Field et al. (2004)	E-service	Theoretical study based on literature	Website design, reliability, security, and customer service.

		review	
Kim & Stoel (2004)	Online apparel website	Survey	Web appearance, entertainment, information, transaction capability, responsiveness and trust.
Yang & Fang (2004)	Online securities brokerage services	Content analysis, qualitative study	Responsiveness, reliability, credibility, competence, access, courtesy, communication, information, responsiveness and website design.
Gounaris et al. (2005)	Online retailing service	Survey	Website design, information, trust, responsiveness and reputation.
Parasuraman et al. (2005)	E-service	Survey	Efficiency, availability, fulfillment, privacy, responsiveness, compensation and contact.
Lee & Lin (2005)	Online retailing service	Survey	Website design, reliability, responsiveness, trust and personalization.
Kim et al. (2006)	Online retailing service	Content analysis	Efficiency, fulfillment, system availability, privacy, responsiveness, compensation, contact, information and graphic style.
Fassnacht & Koese (2006)	Homepage service, sports coverage service, and online shop	Survey	Graphic quality, layout, attractiveness of selection, information, ease of use, technical quality, reliability, functional benefit and emotional benefit.
Cristobal et al. (2007)	Online service	Personal interview and semi-structured questionnaire	Website design, customer service, assurance and order management.
Sohn & Tadisina (2008)	Online financial service	Survey	Trust, speed of delivery, reliability, ease of use, customized communication, website content and functionality

APPENDIX 5 PSYCHOMETRIC PROPERTIES OF THE MEASURES

<i>Construct</i>	<i>Item</i>	<i>Loading</i>	<i>St. Error</i>	<i>t-value</i>
EOU				
CR =0.832 AVE =0.562 α =0.732	EOU1	0.845	0.017	48.467
	EOU2	0.858	0.013	64.350
	EOU3	0.511	0.047	10.745
	EOU4	0.731	0.052	13.957
WD				
CR =0.818 AVE =0.698 α =0.657	WD1	0.954	0.363	2.636
	WD2	0.700	0.338	2.054
REL				
CR =0.879 AVE =0.649 α =0.877	REL1	0.861	0.107	8.050
	REL2	0.937	0.074	12.575
	REL3	0.700	0.172	4.049
	REL4	0.700	0.154	4.502
SA				
CR =0.849 AVE =0.654 α =0.763	SA1	0.926	0.023	38.917
	SA2	0.763	0.041	18.533
	SA3	0.722	0.055	12.978
PRI				
CR =0.838 AVE =0.638 α =0.765	PRI1	0.768	0.083	9.231
	PRI2	0.932	0.034	27.120
	PRI3	0.672	0.126	5.333
RES				
CR =0.800 AVE =0.575 α =0.708	RES1	0.544	0.154	3.527
	RES2	0.940	0.068	13.761
	RES3	0.738	0.108	6.805
EMP				
CR =0.946 AVE =0.897 α =0.886	EMP1	0.957	0.004	211.821
	EMP2	0.937	0.008	118.118
ESQ				
CR =0.911 AVE =0.838 α =0.807	ESQ1	0.908	0.011	77.077
	ESQ2	0.922	0.009	97.503
PU				
CR =0.803 AVE =0.510 α =0.680	PU1	0.800	0.020	39.188
	PU2	0.757	0.033	22.668
	PU3	0.720	0.027	26.594
	PU4	0.553	0.053	10.410
CON				
CR =0.840 AVE =0.638 α =0.729	CON1	0.700	0.053	12.986
	CON2	0.871	0.024	36.039
	CON3	0.817	0.036	22.674
ES				
CR =0.826 AVE =0.613 α =0.700	ES1	0.769	0.029	26.517
	ES2	0.800	0.023	34.843
	ES3	0.780	0.023	33.821
CI				
CR =0.893	CI1	0.866	0.012	70.026

AVE =0.735 α =0.820	CI2	0.862	0.016	52.000
	CI3	0.843	0.016	50.467

APPENDIX 6 LOADINGS AND CROSS-LOADINGS FOR THE MEASURES IN THE RESEARCH MODEL

Items	EOU	WD	REL	SA	PRI	RES	EMP	ESQ	PU	CON	ES	CI
EOU1	0.845	-0.072	-0.111	0.105	0.263	0.192	0.288	0.463	0.407	0.131	0.408	0.246
EOU2	0.858	-0.056	-0.081	0.269	0.284	0.180	0.418	0.454	0.454	0.145	0.312	0.344
EOU3	0.511	0.021	0.252	0.284	0.199	0.321	0.301	-0.007	0.332	0.088	0.250	0.242
EOU4	0.731	0.054	0.123	0.185	0.335	0.266	0.284	0.172	0.320	0.061	0.375	0.200
WD1	-0.045	0.954	0.078	0.057	0.100	0.041	0.101	-0.032	-0.033	0.020	-0.114	-0.088
WD2	0.015	0.700	0.292	0.124	0.188	0.107	0.228	-0.012	-0.039	0.062	-0.109	-0.003
REL1	0.149	0.118	0.861	0.383	0.369	0.481	0.387	-0.015	0.064	0.102	0.016	-0.064
REL2	-0.073	0.164	0.937	0.431	0.250	0.371	0.281	-0.214	-0.042	0.144	-0.172	-0.225
REL3	0.082	0.148	0.700	0.561	0.442	0.431	0.443	0.029	-0.004	0.088	-0.007	0.001
REL4	-0.029	0.145	0.700	0.455	0.223	0.384	0.386	-0.038	0.056	0.143	0.025	0.002
SA1	0.387	0.062	0.258	0.926	0.472	0.365	0.551	0.342	0.210	0.188	0.260	0.282
SA2	-0.014	0.131	0.585	0.763	0.333	0.362	0.409	0.123	-0.001	0.202	-0.017	0.013
SA3	0.067	0.054	0.480	0.722	0.303	0.445	0.449	0.157	0.131	0.194	0.219	0.355
PRI1	0.261	0.213	0.310	0.380	0.768	0.252	0.486	0.118	0.048	0.291	0.095	0.148
PRI2	0.348	0.084	0.216	0.400	0.932	0.171	0.417	0.241	0.125	0.112	0.191	0.118
PRI3	0.200	0.088	0.393	0.437	0.672	0.348	0.525	0.054	-0.048	0.181	0.242	0.217
RES1	0.036	0.012	0.291	0.261	0.001	0.544	0.105	0.035	0.145	0.057	0.030	0.067
RES2	0.315	0.070	0.451	0.420	0.283	0.940	0.479	0.195	0.193	0.242	0.256	0.240
RES3	0.190	0.049	0.269	0.342	0.143	0.738	0.339	0.077	0.090	0.156	0.168	0.132

EMPI	0.358	0.134	0.322	0.583	0.451	0.436	0.957	0.343	0.192	0.127	0.265	0.366
EMP2	0.465	0.168	0.361	0.532	0.563	0.468	0.937	0.284	0.190	0.124	0.263	0.279
ESQ1	0.384	-0.002	-0.176	0.300	0.262	0.136	0.317	0.908	0.297	0.085	0.298	0.449
ESQ2	0.379	-0.053	-0.215	0.237	0.124	0.183	0.293	0.922	0.458	0.090	0.334	0.422
PU1	0.496	0.070	-0.123	0.133	0.158	0.084	0.276	0.426	0.800	0.099	0.376	0.377
PU2	0.362	-0.066	0.093	0.169	0.039	0.198	0.069	0.216	0.757	0.126	0.361	0.260
PU3	0.239	-0.112	0.064	0.100	0.092	0.140	0.141	0.221	0.720	0.053	0.260	0.373
PU4	0.243	-0.045	0.050	0.060	-0.098	0.148	0.016	0.298	0.553	0.115	0.211	0.151
CON1	-0.014	-0.074	-0.004	0.170	0.021	0.033	-0.080	0.065	-0.007	0.700	0.190	0.041
CON2	0.207	0.035	0.184	0.223	0.240	0.281	0.190	0.088	0.195	0.871	0.331	0.132
CON3	0.091	0.082	0.092	0.148	0.137	0.153	0.093	0.071	0.046	0.817	0.256	0.036
ES1	0.322	-0.131	-0.169	0.191	0.084	0.203	0.179	0.334	0.412	0.355	0.769	0.428
ES2	0.384	-0.096	-0.059	0.150	0.152	0.154	0.233	0.194	0.335	0.099	0.800	0.403
ES3	0.351	-0.068	0.033	0.177	0.258	0.218	0.254	0.239	0.249	0.284	0.780	0.356
CI1	0.400	-0.086	-0.052	0.294	0.224	0.268	0.315	0.445	0.412	0.138	0.414	0.866
CI2	0.245	-0.050	-0.082	0.234	0.163	0.186	0.342	0.317	0.322	0.087	0.464	0.862
CI3	0.238	-0.050	-0.296	0.224	0.037	0.134	0.233	0.451	0.349	0.040	0.435	0.843

APPENDIX 7 CROSTAB OF AGE AND FREQUENCY OF INTERNET USAGE

Age	Less than 5 hours		5 to 10 hours		More than 10 hours		Total	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
18-25	23	4.2	15	2.8	134	24.6	172	31.6
26-35	23	4.2	33	6.1	109	20.1	165	30.4
36-45	17	3.2	39	7.1	96	17.7	152	28.0
46-55	1	0.2	13	2.4	20	3.7	34	6.3
56-65	0	0	19	3.5	1	0.2	20	3.7
Total	64	11.8	119	21.9	360	66.3	543	100

APPENDIX 8 CROSSTAB OF GENDER AND FREQUENCY OF INTERNET USAGE

Gender	Less than 5 hours		5 to 10 hours		More than 10 hours		Total	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
Male	38	7.0	75	13.8	223	41.1	336	61.9
Female	26	4.8	44	8.1	137	25.2	207	38.1
Total	64	11.8	119	21.9	360	66.3	543	100

APPENDIX 9 CROSTAB OF ONLINE TRAVEL SERVICE BOOKING EXPERIENCE AND INTERNET USAGE DURATION

Online travel service booking experience	More than 2 years		More than 3 years		Total	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
1-5 times	37	6.8	195	35.9	232	42.7
More than 5 times	45	8.3	266	49.0	311	57.3
Total	82	15.1	461	84.9	543	100

APPENDIX 10 CROSTAB OF ONLINE TRAVEL SERVICE BOOKING EXPERIENCE AND FREQUENCY OF INTERNET USAGE

Online travel service booking experience	Less than 5 hours		5 to 10 hours		More than 10 hours		Total	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
1-5 times	35	6.4	24	4.4	173	31.9	232	42.7
More than 5 times	29	5.4	95	17.5	187	34.4	311	57.3
Total	64	11.8	119	21.9	360	66.3	543	100

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