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SERVICE CONVENIENCE AND RELATIONAL EXCHANGE IN ELECTRONIC MEDIATED ENVIRONMENT: AN EMPIRICAL INVESTIGATION

Convenance du service et échange relationnel dans un environnement médiatisé : une recherche empirique

Completed Research Paper

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Abstract

Academic research reflects an increasing concern that conventional knowledge on services management such as location strategy may not adequately inform management on crafting an IT-driven service strategy to succeed in the emerging electronic mediated environment. The focus of this study is to examine, from the consumer perspective, how service convenience affects the long term relational exchange in the electronic mediated environment (EME). Service convenience has been conceptualized as a second order construct with six convenience dimensions reflecting the process of online service consumption. An analytical framework has been developed and tested to validate the comprehensive framework of service convenience and its antecedents and consequences in the electronic mediated environment leading to a long-term exchange relationship. Analysis of data from 374 respondents revealed that service convenience is indeed a multidimensional concept and six convenience dimensions equally contribute to online consumers' overall perceptions of service convenience. Service convenience was also found to serve as an important mediating variable between its antecedents and consequents. This study thus contributes to the development of the service convenience construct in the electronic mediated environment and also informs firms in developing an integrated online convenience strategy to meet customer requirements and expectations for long term exchange relationship building. Suggestions for future research and implications are discussed.

Keywords: Service Convenience, Relational Exchange, Electronic Mediated Environment

Résumé

Les recherches académiques soulignent la préoccupation croissante suivante : la connaissance usuelle sur la gestion de services, telle que la stratégie de localisation, peut mal informer les directions lorsqu'il faut concevoir une stratégie de service basée sur les TIC, et ce afin de réussir dans l'environnement électronique qui émerge. Cette étude examine, suivant la perspective du consommateur, comment la commodité de service affecte l'échange relationnel de long terme dans un environnement électroniquement médiaté (EME).

Introduction

The scale and pace of the service sector have grown dramatically over the last 50 years (Chesbrough and Spohrer, 2006). The services industry accounted for 77.8 percent of the U.S. gross domestic product in 2005 (IBM, 2007). The era of the service economy has arrived. Information technology (IT) has become a major driving force for service innovations, speedy delivery as well as backroom service infrastructure and has offered companies with the capabilities to provide high quality and easily personalized service to satisfy demands from their customers (Rust and Miu, 2006). However, the fast advancement and the large expansion of the information technology in business functions and the high dependence on IT in the service delivery system add significant complexity in managing service innovations in business organizations. This is reflected by the increasing concern in academic research that the traditional knowledge on services management is not readily adaptable to the services strategies in electronic mediated environment (EME) (Lovelock and Gummesson, 2004) since "*the ability to obtain and consume services without interacting with a human provider challenges much of our existing knowledge*" (Brown, 2000, pg.62). By extending previous definition of E-Service (Rust, 2001; Fassnacht and Koese, 2006), we define services in electronic mediated environment as any kind of services that render service convenience via the use of information technology where the customer interacts with an appropriate user interface for service consumption in an EME such as Web site, mobile phone, PDA, iPod Virtual World Environment, etc. in order to gain a consumption experience and pursue desired benefits preferably on a long term basis.

Businesses create value for their customers through performance (Berry et al. 2002). Although the service innovation facilitated by IT provides companies with a more efficient and effective way to sell and deliver their services (Zysman, 2006), it is the consumers, in the end, who receive and consume these services and who ultimately decide about the quality of the service and the future relationship with the service provider. Service convenience is considered one of the most important patronage determinants (Kelly, 1958), a direct and intuitive measure for consumers to evaluate a service provider's performance. Service convenience is one of the most critical considerations to most consumers when making purchase decisions (Berry et al. 2002). Marketing literature has acknowledged that there is a steady increase in consumer demand for service convenience (Yale and Venkatesh, 1986; Berry et al. 2002; Seiders et al. 2007). Therefore, the focus of this study is to examine how the consumer experience, in particular, service convenience affects the long term relational exchange in the electronic mediated environment. Berry et al. (2002) defines service convenience as the nonmonetary costs or expenditures experienced when consumers spend time and effort buying and consuming goods or services.

Previous literature in marketing and traditional service research has identified service as an intangible form of goods that possesses several unique characteristics—intangibility, heterogeneity, inseparability, and perishability (Parket, 1960; Lovelock and Gummesson, 2004). These characteristics are present in all kinds of services consumed in the traditional face-to-face environment. Two broad perspectives have developed in research related to IT-enabled services. On the technical side, the semantics and service oriented architecture are concerned with how to convert service into formalizable, computable and codifable processes (Zysman, 2006). On the behavioral side, various aspects such as service quality, service relationship, and service profitability are reflected in the economic, market, and service research (Oliver, 1980; Zeithaml et al. 1996, Reinartz, 2005; Rust and Miu, 2006). Among these studies, service convenience has been given insufficient attention. Several early attempts either treated service convenience as a general construct or a compounding concept with other constructs (Baty and Lee, 1995; Bhatnagar et al. 2000; Heijden et al. 2003). However, there is relatively little or no research in the extant information systems (IS) literature providing an analytical framework that addresses the comprehensive view of service convenience and its antecedents and consequents in the electronic mediated environment. Development of a long term exchange relationship by providing services through the electronic mediated environment is vital for any business to compete in the service-based economy. Given the importance of providing services through electronic mediated environment (Lovelock and Gummesson, 2004; Brown, 2000) and the gap in existing knowledge, we investigate the following research question: *What are the determinants and consequences of service convenience in developing an exchange relationship in the electronic mediated environment?*

This paper contributes to the current literature in three significant ways. First, our study attempts to fill a void by introducing the online service convenience concept to IS research. Since service convenience is intuitively and logically a critical success factor to engender the online consumers' satisfactory experience, a rigorous development and validation of this construct should prove beneficial. Second, our study attempts to establish and test the antecedents and outcomes of online service convenience from the consumers' perspective. This comprehensive framework will provide a complete nomological network for future research to investigate online service

convenience strategies in different settings or different services so that systematic knowledge can be accumulated. Third, the focus from the consumers' perspective, in this study, can help translate the findings for management to craft integrated online service strategy, specifically, service convenience strategy that can be fueled by technologies.

In the next section, we present a review of the current research on services and service convenience in the electronic mediated environment. We base our review on the literature from information systems, marketing, consumer behavior, and service research. We then present our hypotheses, research methodology, analysis of results and implications. We finally summarize with limitations and directions for further research.

Conceptualization of Service Convenience in Electronic Mediated Environment

The concept of convenience has been discussed in the marketing literature since the early part of the last century. The original idea was proposed by Copeland (1923) who suggested a classification of consumer products in which convenience goods were defined as "*intensively distributed products that require minimal time and physical and metal efforts to purchase*"(Yale and Venkatesh, 1986; Berry et al. 2002). Later, Holton (1958) defined convenience goods as those consumer goods which the consumers usually purchase frequently, immediately, and with a minimum of effort. Several similar conceptualization of convenience can also be found in the early marketing literature (Becklin, 1963; Jolson and Proia, 1976; Murphy and Enis, 1986). Certain definition only considers convenience as one category in product classification. Most of these studies only focused on convenience goods or convenience foods (Brown, 1990).There is no consideration of convenience as an attribute of a product, especially for a service.

Several early endeavors have been devoted to conceptualizing convenience as an important attribute for both products and services. Kelly (1958, p.32) introduced the convenience cost concept in the consumer purchasing study and indicated that "*convenience costs are incurred through the expenditure of time, physical and nervous energy, and money required to overcome the frictions of space and time, and to obtain possession of goods and services*". Similar discussions of consumers' time and effort costs in purchasing a product or service have been developed to incorporate convenience as an attribute to reduce the nonmonetary price of goods or service (Kotler and Zaltman, 1971, Etgar, 1978; Nickols and Fox, 1983).

More recently, convenience has been acknowledged as a multidimensional construct in the marketing and consumer research literature (Seiders et al. 2000; Berry et al. 2002; Seiders et al. 2007). Yale and Venkatesh (1986) suggest that convenience captures five dimensions including spatial dimension, psychological dimension, sociological dimension, philosophical dimension, and situational dimension. They further developed conventional classes of consumer perceived convenience which are time utilization, accessibility, portability, appropriateness, handiness, and avoidance of unpleasantness. Brown (1990) identified five dimensions of a convenience construct by applying economic utility theory and indicated that consumers desire convenience in terms of time, place, acquisition, use, and execution. In the shopping context, Seiders et al. (2000) indicated retail convenience means the ease and speed of shopping, and suggested four main ways to improve convenience in consumers' entire shopping experience: access, search, procession, and transaction. Based upon prior theories and research on time and efforts expenditure and consumer psychological cost, Berry et al. (2002) proposed five dimension of service convenience: decision convenience, access convenience, transaction convenience, benefit convenience, and post-benefit convenience. Later, Seiders (2007) developed the SERVCON scale and empirically validated the service convenience construct in the context of traditional service consumption. From these studies, we observe that convenience has been defined as a construct that refers to the consumers' expenditure of minimal time and effort in service consumption. A significant portion of past studies focused only on the time saving aspect. Others comingled and mixed concepts related to convenience goods and services. Since none of these studies investigated relational exchange and service convenience in the electronic mediated environment, we develop and present a multi-dimensional conceptualization of service convenience in this study along with a nomological network of its antecedents and consequents including relational exchange.

Moreover, the notion of service convenience is an unexplored area in the electronic mediated environment and in the IS literature. We define service convenience in the electronic mediated environment as consumers' perceptions of time and effort in relation to buying or consuming a service in an electronic mediated environment. Typically, time and effort are nonmonetary types of costs that consumers must incur in the process of using or receiving services in the electronic mediated environment. These types of costs are inherent in any electronic mediated service consumption although the degree may vary. Time and effort are opportunity costs that essentially prevent consumers from participating in other forms of activities (Bivens and Volker, 1986; Berry et al. 2002). Here, we adopt Seiders

et al. (2000), Berry et al. (2002), and Seiders et al. (2007) conceptualization of service convenience, with its six dimensions, which incorporates extensive integration of past research, and a robust and solid theoretical foundation.

In the electronic mediated environment, the traditional brick and mortar concerns about service convenience may not all be that relevant. For example, the location convenience or staff support becomes irrelevant. However, IT-based support such as reputation systems or one-stop payment functions provides appealing convenience to consumers. Drawn from the extant literature and the technology-based service innovation, we identify six dimensions of service convenience (Berry et al. 2002) for the electronic mediated environment (EME) (see Figure 1) as consisting of (1) service decision convenience, (2) service access convenience, (3) service search convenience, (4) service transaction convenience, (5) service benefit convenience and (6) service post-benefit convenience.

Service Decision Convenience in the EME relates to the time and effort expenditures required in deciding how to obtain or purchase an electronic mediated service. For example, online reputation systems provide reviews of online products or sellers that would reduce consumers' time and effort to compare different options before the purchase decision is made. *Service Access Convenience in the EME* relates to consumers' perceived time and effort expenditures to initiate service delivery. This type of convenience could be seen in an online banking system where consumers would highly depend on the information availability and accessibility since there is minimal assistance from employees. *Service Search Convenience in the EME* refers to the speed and ease with which consumers could identify and select the products or services in the EME. For example, online classification systems (craigslist, angie's list) reduce consumer search depth which may involve certain time and effort expenditures. *Service Transaction Convenience in the EME* primarily involves expenditures of time and effort as they relate to the execution or fulfillment of a transaction. For instance, an online one-stop payment function reduces consumers' time and effort in repetitively filling a number of online forms. *Service Benefit Convenience in the EME* relates to consumers' time and effort expenditures related to experiencing the services' core benefits. Typically, it means the favorable return on consumers' investment (time, effort, and other resources). *Service Post-Benefit Convenience in the EME* involves the consumers' perceived time and effort expenditures as a post-purchase experience when reinitiating contact with a firm after the benefit stage of the services. Generally, this convenience is difficult to achieve in EME since it is generally not always easy to contact a 'live person' in the context of online service provider on a real time basis. Some service providers have begun to provide 24*7 customer support with instant messaging in order to improve consumer post-purchase experiences.

Research in academic literature has repeatedly identified service convenience as a multi-dimensional construct and some have alluded to an emergent second order factor model to parsimoniously capture this important construct (Brown ,1990; Seiders et al. 2000; Berry et al. 2002;Yale and Venkatesh, 1986). In our research, we propose an
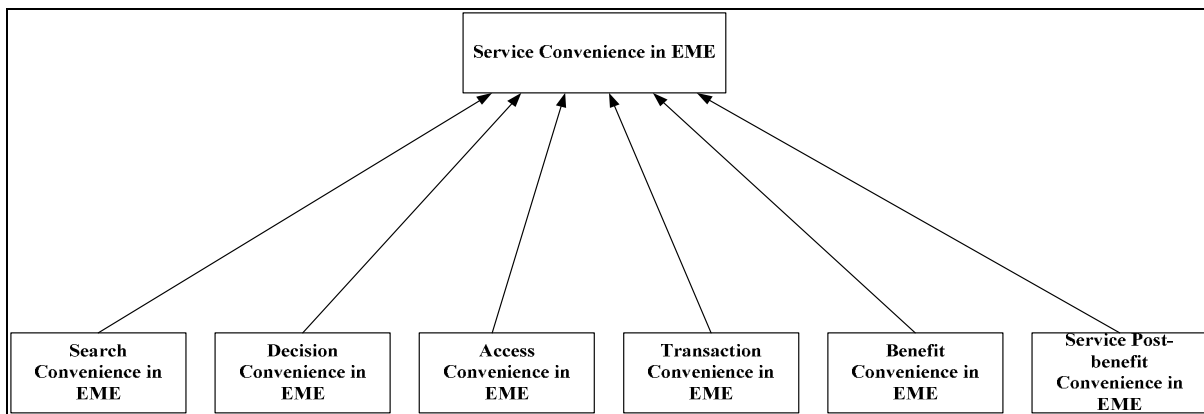
Figure 1: Service Convenience dimensions

emergent second order factor model for service convenience in EME (see Figure 1) where the first-order factors such as Search Convenience in EME, Decision Convenience in EME, Access Convenience in EME, Transaction Convenience in EME, Benefit Convenience in EME and Service Post-Benefit Convenience in EME are all latent formative factors. This allows us to model the six latent dimensions under a unitary representation. In this conceptualization, it is assumed that these formative first order factors 'cause' the second order factor (Chin, 1998) - and in our research it is the service convenience in EME construct. Formative second order model provides a coherent and parsimonious representation of this multi-dimensional phenomenon in explaining exchange

relationship development between consumers and service providers in EME (Pavlou et al. 2008). In our research, we conceptualize that this second order service convenience construct plays a mediating role in the context of exchange relationship development between the consumers and service providers.

Antecedents of Service Convenience in Electronic Mediated Environment

Services are essentially "*value jointly created through the interaction of providers and clients*" (www.ibm.com). Services in the electronic mediated environment possess all of the characteristics of traditional services. With extending previous definition of E-Service (Rust, 2001; Fassnacht and Koese, 2006), we define the services in the electronic mediated environment as any kind of services that incorporate service convenience via electronic devices where the consumer interacts with an appropriate user interface for service consumption in an electronic mediated environment such as a Web site, mobile phone, PDA, iPod, Virtual World Environment, etc. in order to gain a consumption experience and pursue desired benefits preferably on a long term basis. This definition implies three important characteristics of the electronic mediated services. First, it captures a broad sense of electronic services including all types of electronic medium; second, the core offering of technology based self-service must be considered by service provider to deliver the benefits that consumers seek (Fassnacht and Koese, 2006; Dabholkar, 1996); third, it adds two important dimensions to the existing definition of e-service: Tele-immersion and experiential consumption. In this study, we propose two categories of service characteristics in electronic mediated environment: technology use and service quality.

Technology Use

Meuter et al. (2000, pg.21) pointed out that "Technology is a key adjunct to service system design". Online technology provides consumers with more options to choose the mode of service—traditional employee service or self-service (Berry et al. 2002). Therefore, this choice should improve consumers' convenience perceptions of using or buying services. Besides, the advances in electronic devices make it possible for consumers to shop and use a service online anytime and anywhere. Technology Acceptance Model (TAM) has been widely adopted in the MIS literature (Davis, 1989, Venkatesh et al. 2003; Tan et al. 2007) in conceptualizing information technology use. In this study, we have incorporated two major constructs from TAM: perceived ease of use and perceived usefulness.

Perceived ease of use

Perceived ease of use refers to "the degree to which the prospective user expects the target system to be free of effort"(Davis, 1989, p.320). This internal belief is tied to an individual's assessment of the mental effort involved in using a system (Davis 1989). A certain service may be viewed as convenient because it makes the consumption activities easier to perform (Yale and Venkatesh, 1986). In the electronic mediated environment, a single application may serve many functions, thus easing the whole consumption process.

> **Hypothesis 1:** *Perceived ease of use is positively associated with service convenience in the electronic mediated environment*

Perceived usefulness

Perceived usefulness refers to a "prospective user's subjective probability that using a specific application will increase his or her … performance" (Davis, 1989, p.320). Consumers perceive the benefits of online technology since this technology can often streamline service performance by automating manual processes that are slower and more error prone (Berry et al. 2002). Additionally, online technology also improves the service consumption process by providing more uniformity and less complexity compared with equivalent manual processes (Yale and Venkatesh, 1986). In addition, the electronic mediated environment provides consumers with a more efficient platform to reinitiate contact with a firm after the benefit stage of the service. For example, consumers can apply various communications methods using various electronic devices to obtain post-purchase services in real time.

> **Hypothesis 2:** *Perceived usefulness is positively associated with service convenience in the electronic mediated environment*

Service Quality

Electronic service quality is a well-established concept in prior service and MIS literature (Zeithaml et al. 2000; Loiacono et al. 2002; Parasuraman et al. 2005; Fassnancht and Koese, 2006; Collier and Bienstock, 2006; Tan et al. 2007). The service quality in the electronic mediated environment is defined as the extent to which the electronic device facilitates efficient and effective consumer activities at service encounters (Parasuraman et al. 1985; Zeithaml

et al. 2000). On the basis of prior service quality theories and electronic commerce studies, Tan et al. (2007) claimed that conceptualization of service should include considerations of both service content and delivery.
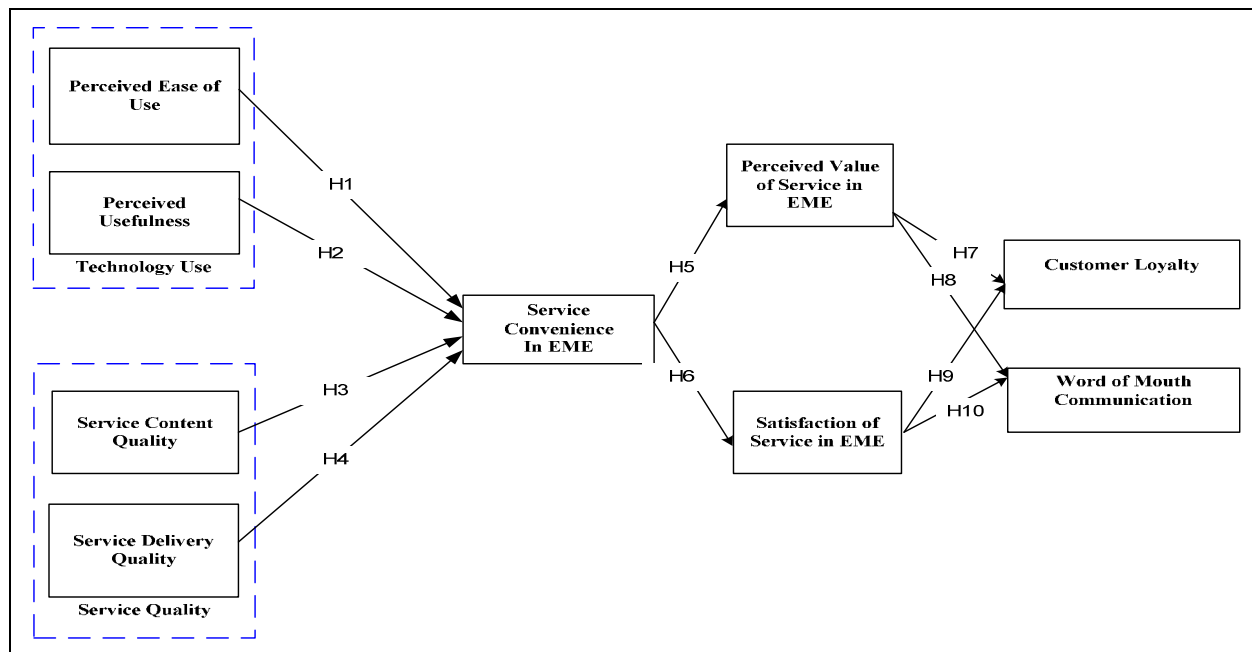
Figure 2 Proposed Research Model of Service Convenience in EME and its Antecedents and Consequences Related to the Development of Long Term Exchange Relationship

Furthermore, they empirically investigated these two sub-dimensions of service quality in the context of e-government services.

Service Content Quality

Applying content and delivery concepts in our study, we define *service content quality* as the extent to which complete, accurate, and timely content is provided to online consumers during the interaction process with the user interface in the electronic mediated environment. The content as well as the store layout and design influence consumer's efficient online "movement" (Baker et al. 1994) and affect their time and effort expenditures in finding their desired merchandise or service (Seiders et al. 2000). As the above definition implies, the high level of service content quality would reduce consumers' time and energy costs in the entire process of service consumption in the electronic mediated environment.

> **Hypothesis 3:** *Service content quality is positively associated with service convenience in the electronic mediated environment*

Service Delivery Quality

Service delivery quality is defined as the manner in which IT mediated service functionalities are made accessible to the consumers via the service providers' website as a delivery channel. On the consumers' side, online services delivered via electronic devices have increased convenience in terms of time, place and use (Brown, 1990). For example, consumers can pay their bills online at home at midnight and not have to depend upon anyone to be on the other end. Therefore, service delivery quality pertains to the consumer-website interaction during the process when the consumer looks for information, selects from available options or carries out transactions as part of service consumption (Fassnancht and Koese, 2006).

> **Hypothesis 4:** *Service delivery quality is positively associated with service convenience in the electronic mediated environment*

Consequences of Service Convenience

Today services are delivered in recognition that consumers' experience is formed across all moments of contact with the firm (Sousa and Voss, 2006). The time and effort expenditures in the six service convenience dimensions are involved in the experiential process when the consumer interacts with the service provider in the electronic mediated environment. Exchange relationships are developed through the process of consumers spending their time and effort in the consumption of certain value added services (Rust and Kannan, 2003) provided by the service providers. Such exchange relationships are guided by high order mental constructs such as customer perceived value and satisfaction (Garbarino and Johnson, 2006).

Perceived Value

Customer value consists of subjective hierarchical preferences based on an individual's situation-specific comparisons of one object with another. According to Holbrook (2006) "*Such interactive relativistic preferences shape the essence of the consumption value in the sense that products perform services that provide the relevant value-creating experiences… From this perspective, all products are services…*" (pg.715). Customer value serves as the foundation for all effective marketing activity. Consumer perceived value is often involved in consumers' evaluations of the service which assess the ratio of perceived benefits to perceived costs (Zeithaml, 1998). Prior research has also confirmed that consumers' convenience perceptions and service evaluations are influenced by high time and energy costs (Bitner, 1990; Berry et al. 2002). Consumer waiting time research suggests that there is tight relationship between consumers' evaluation of the service and their waiting time in an electronic mediated environment, for example, download delay is closely related to the consumer's evaluation of electronic service retailer (Rose and Straub, 2001; Rose et al. 2005). As one major component of service evaluation, we believe that there is positive relationship between consumers' perceived value and service convenience.

> ***Hypothesis5:*** *Service convenience will positively influence consumers' perceived value of service in the electronic mediated environment*

Satisfaction

Oliver (1992) defines service satisfaction as the consumer's post-purchase evaluation and effective response to overall consumption experience. Researchers have identified that consumers' satisfaction is highly correlated with the overall convenience which would exert a positive influence on consumers' future purchasing behavior. Berry et al. (2002) summarized previous work on consumers waiting time (Carmon et al. 1995; Kumar et al. 1997; Bitner, 1990) and pointed out that consumers' convenience perceptions and their effects on service satisfactions are significantly affected by time and energy cost. Szmanski and Hise(2000) suggest that online shopping promoted widely as a convenient avenue for shopping, since buying online can economize on time and effort in locating merchants, finding items, and procuring offerings (Balasubramanian, 1997). Therefore, benefits of buying and using online services are likely to be manifested in more positive perceptions of convenience and satisfaction.

> ***Hypothesis 6:*** *Service convenience will positively influence consumers' service satisfaction in the electronic mediated environment*

Loyalty

Perceived value and satisfaction involved in service evaluations are believed to summarize consumers' knowledge and judgment with respect to a particular service provider and guide subsequent actions and loyalty on the part of the consumer (Garbarino and Johnson, 2006). Prior literature confirmed that perceived value and satisfaction are important determinants of consumer loyalty in the online environment (Lin and Wang, 2006; Gefen, 2002). Accordingly, in order to develop long-term mutual relationships, managers must make great efforts to improve the convenience of their services in the electronic environment from the first encounter, through purchasing, to delivery and beyond, as this can influence the service retention (customer loyalty) and service growth (word of mouth communication) (Bolton et al. 2000).

> ***Hypothesis 7:*** *Consumers' perceived value will positively influence their loyalty in the electronic mediated environment.*
> ***Hypothesis 8:*** *Consumers' satisfaction will positively influence their loyalty in the electronic mediated environment.*

Word of Mouth Communication

Word of mouth communication has been recognized as an essential component and outcome of successful long-term relationships. This construct essentially represents the value of the existing customers who spread good words about the company and its products and services (Anderson, 1998; Richins, 1983). Word of mouth communication has been found to be an important outcome of exchange relationship between service providers and consumers (Richins, 1983; Srinivasan et al. 2002; Harrison-Walker, 2001). Loyal customers always refer new customers to suppliers. In the online environment, "word-of-mouse" spread even faster than "word of mouth" since online customers can, for example, use e-mail to broadcast a recommendation for a favorite service provider to dozens of friends and family members (Reichheld and Schefter, 2000) quickly and with very little effort. In this study, we have included word of mouth communication as an outcome of the relational exchange between the consumers and service providers.

> *Hypothesis 9: Consumers' perceived value will positively influence their word-of-mouth communication in the electronic mediated environment.*
> *Hypothesis 10: Consumers' satisfaction will positively influence their word-of-mouth communication in the electronic mediated environment.*

Research methodology

Measurement Development

This study applied the survey methodology in assessing the proposed comprehensive research model (Figure 2). The development of the survey instrument followed Moore and Benbasat (1991) and Straub (1989). Most of the measurement items for the principal constructs were adapted from existing measures and modified to fit the context of this research.

The measures for each of the service convenience dimensions were adapted from prior service convenience studies in the marketing literature with some modifications (Seiders et al. 2000, Berry et al. 2002; Seiders et al. 2007). Berry et al. (2002) conceptually proposed items for five service convenience dimensions except service search convenience dimension in our proposed model. Seiders et al. (2007) later empirically validated the items for these five convenience dimensions and examined their antecedents and influences in the traditional service context. Items for service search convenience were adapted from Seiders et al. (2000) in which convenience strategy was investigated in the retail context.

Measures for the perceived ease of use and perceived usefulness constructs were obtained from existing empirical research (Gefen et al. 2004). The service content quality and service delivery quality measures were adapted from the Tan et al. (2007) study. Minor modifications have been made to fit our research context. The measurement of relational exchange constructs were generated from existing marketing literature to capture consumer's evaluation of service (perceived value and satisfaction) and their orientations for a long-term relationship development (loyalty and word-of-mouth communication). All items were measured using a five-point Likert-type scale (1 = "Strongly disagree" to 5 = "Strongly agree").

Data Collection

All measurements items followed a refinement procedure with several pretests. We first interviewed 27 business school students to get their understandings of service and service convenience in the electronic mediated environment. The subjects were also asked to provide a list of five services they used most frequently in the electronic environment over the past six months. This step helped us capture consumers' comprehension and assessment of service in the electronic mediated environment. Furthermore, the results out of this procedure are incorporated in our survey development in which the respondents were asked to identify one online service provider that they used most frequently in the last six months. Based on their experiences of using service from this specific service provider, the subjects were asked to indicate their perceptions of each item provided in the survey. The services included electronic banking service, mortgage provider service, online music buying service, and online car insurance service provider. We found no statistical difference between these different types of services.

The survey instrument was first tested on two business school Professors (experts in IS research related to ecommerce and e-services) and three IS Ph.D. students. The aim of this pre-test was to examine the feasibility of the instrument and gain qualitative feedback from the respondents. Later, a larger scale pilot study was conducted using 90 business school students to test and further refine the instrument. We removed items which failed in reliability tests and highly cross-loaded on multiple constructs. Three hundred and seventy four business school students

(undergraduate and graduate), who are also service consumers in the electronic mediated environment, participated in the full study. Among those who participated in the study, 185 respondents were male (49.5%) and 189 were female (50.5%). This distribution resembles closely with the current online consumer profile (US Census of Bureau, 2007). Approximately 83.9 percent of respondents are between the ages of 18 to 25. All of our respondents have the experience of using services in the electronic mediated environment for at least equal to or over 6 months.

Table 1: Descriptive Statistics of Respondents Characteristics

Measure	Value	Frequency	Percentage
Gender	Male	185	49.5%
	Female	189	50.5%
Age	18-25	314	83.9%
	26-35	39	10.5%
	36-55	12	3.2%
	>55	9	2.4%
Education	Some college	348	93.0%
	Bachelors	21	5.6%
	Masters	3	0.8%
	Ph.D.	2	0.6%
Income Level	<$12,000	248	66.3%
	$12,000--$36,000	80	21.4%
	$36,000--$60,000	13	3.5%
	$6,0000--$96,000	14	3.7%
	>$96,000	19	5.1%

Data Analysis

The structural equation modeling (SEM) approach was used to analyze the data for both the measurement model and structural model in this study, since SEM based procedure provide powerful ways to address key IS research questions (Chin and Todd, 1995). SEM approach is able to provide the means to analyze structured causal relationships among multiple predictors and unobserved latent variables (Chin, 1998). The software we use is PLS-Graph. Partial Least Squares (PLS) was chosen because PLS uses a component based approach to estimation and places minimal restrictions on measurement scales, sample size, and residual distributions (Chin et al. 2003).

According to Ahuja et al. (2003), students and non-students demonstrated identical patterns of online purchasing behavior. A number of ecommerce studies (Pavlou et al. 2006; Kim et al. 2007; Nicolaou and McKinght, 2006) have utilized students as subjects. Kim et al. (2007, p.18) indicated that "*students do represent a disproportionately large segment of the broader online population*". In line with these IS research guidelines, we have used students in our study.

Measurement Model

General rules have been provided by prior IS research to establish convergent validity and discriminant validity. Convergent validity was assessed by using PLS internal consistency score. According to Werts et al. (1974), the internal consistencies of all variables were calculated by composite reliability score which is $\left(\sum \lambda_t\right)^2 / \left[\left(\sum \lambda_t\right)^2 + \sum tVar(\varepsilon_1)\right]$, where the λ_t is the indicator loading, and Var(ε_1)=1- λ_t^2. Prior studies indicated that internal consistency for the constructs is further validated through composite reliability and Average Variance Extracted (AVE) (Fornell and Larcker, 1981; Tan et al. 2007). A value of 0.70 is considered as the threshold of internal consistencies for all variables (Nunnally and Bernstein, 1994; Pavlou and Fygenson, 2006). After refinement of the survey instrument through the pilot study, all constructs have high reliability (>0.85) in our sample. Thus, the measurements fulfill the requirements of convergent validity.

Convergent and discriminant validity

To verify discriminant validity, Chin (2003) offered two general rules "1) Loadings are much higher on their hypothesized factor than on other factors (own-loadings are higher than cross-loadings), and 2) the square root of each construct's average variance extracted (AVE) is larger than its correlations with other constructs" (Pavlou and

Fygenson, 2006, pg.129; Chin, 2003). As shown in Table 2, the square roots of all AVEs are much larger than all the cross-correlations. In addition, all items loaded well on their respective factors (Table 2) compared to the cross-loadings on other construct. Above referenced tests demonstrated that all measures in this study have adequate convergent and discriminant validity.

Table 2: Inter-construct correlation matrix and average variance extracted for principal construct

	Perceived ease of use	Perceived usefulness	Service content quality	Service Delivery quality	Service Convenience	Perceived Value	Satisfaction	Loyalty	Word of Mouth
Perceived ease of use	**0.84**								
Perceived usefulness	0.50	**0.76**							
Service content quality	0.69	0.38	**0.90**						
Service delivery quality	0.68	0.38	0.85	**0.91**					
Service convenience	0.78	0.53	0.80	0.79	**0.85**				
Perceived value	0.75	0.55	0.70	0.69	0.79	**0.82**			
Satisfaction	0.75	0.45	0.69	0.68	0.75	0.73	**0.93**		
Loyalty	0.53	0.53	0.46	0.46	0.53	0.59	0.49	**0.73**	
Word-of-mouth	0.53	0.61	0.46	0.45	0.55	0.57	0.51	0.49	**0.87**
*The diagonal elements represents the square root of AVE									

Table 3: Factor Loadings for the Measurement Model and Reliability for the Principal Constructs

| Items Used For Principal Construct	Mean	Std. Deviation	Loading	Loading (Refined)
Perceived Ease of Use (Reliability= 0.93)				
ESP's website is easy to use.	4.02	0.95	0.84	0.84
It is easy to become skillful at using this ESP's website	3.88	0.99	0.84	0.84
Leaning to operate this ESPs' website is easy.	3.95	0.88	0.85	0.85
This ESP's website is flexible to interact with.	3.88	0.95	0.79	0.79
My interaction with this ESP's website is clear and understandable.	3.91	0.94	0.87	0.87
It is easy to interact with this ESP's website.	3.91	0.91	0.84	0.84
Perceived Usefulness (Reliability= 0.95)				
ESP's website is useful for searching and buying service.	3.53	1.09	0.84	0.84
ESP's website improves my performance in searching and buying a service	3.41	1.11	0.85	0.85
ESP's website enables me to search and buy a service faster.	3.45	1.07	0.90	0.90
ESP's website enhances my effectiveness in searching and buying a service	3.43	1.07	0.89	0.89
ESP's website makes it easier to search for and purchase a service.	3.47	1.10	0.88	0.88
ESP's website increases my productivity in searching and purchasing a service	3.38	1.11	0.86	0.86
Service Content Quality (Reliability = 0.93)				
Generally, the service content offered on this ESP's website to support me in performing my transactions is satisfactory.	3.88	0.99	0.87	0.87
On the whole, the service content offered on this ESP's website is highly effective in supporting me to perform my transactions.	3.91	1.01	0.92	0.92
Generally, I am pleased with the service content offered on this ESP's website to support me in performing transactions	3.93	1.01	0.91	0.91
Service Delivery Quality (Reliability = 0.93)				

Items Used For Principal Construct	Mean	Std. Deviation	Loading	Loading (Refined)
The general technological mechanisms underlying various service functionalities of this ESP website are satisfactory.	3.91	0.92	0.90	0.90
Generally, the service functionalities are delivered in a professional manner in this ESP's website	3.99	0.96	0.91	0.91
Overall, the service functionalities are delivered efficiently via this ESP's website	3.95	0.96	0.91	0.91
Service Decision Convenience (Reliability = 0.87)				
It took minimal time to get the information needed to choose this online ESP.	3.88	0.98	0.77	0.77
Making up my mind about what I wanted to buy from this online ESP was easy.	3.56	1.08	0.78	0.78
It was easy to get the information I needed to decide which online ESP to use.	3.83	0.94	0.80	0.80
It was convenient to decide if I by service from this online ESP	3.81	0.94	0.84	0.84
Service Access Convenience (Reliability = 0.92)				
It was easy to contact the online ESP	3.72	0.78	0.86	0.86
It did not take much time to reach the online ESP.	3.77	1.03	0.87	0.87
I was able to get to the online ESP's website quickly	3.94	1.01	0.84	0.84
It was convenient to access this online ESP's website	3.96	0.99	0.82	0.82
Service Search Convenience (Reliability = 0.90)				
I could find the product/service I wish to buy from this online ESP very quickly.	3.79	1.05	0.88	0.88
It was easy to identify the product/service I wish to buy from this online ESP	3.81	1.04	0.88	0.88
It is convenient to search on this online ESP's site	3.83	1.07	0.85	0.85
Service Transaction Convenience (Reliability = 0.90)				
I did not have to make much of an effort to pay for the service.	3.83	1.07	0.78	0.78
This online ESP made it easy for me to conclude my purchase.	3.84	1.03	0.86	0.86
It was convenient to transact with this online ESP	3.94	0.99	0.84	0.84
I was able to complete my purchase quickly.	3.81	1.06	0.86	0.86
Service Benefit Convenience (Reliability = 0.92)				
I was able to get the benefits of the service with minimal effort.	3.95	0.97	0.89	0.89
This online service was easy to use.	4.05	0.97	0.89	0.89
The time required to receive the benefits of the service was appropriate.	3.96	0.95	0.90	0.90
Service Post-Benefit Convenience (Reliability = 0.91)				
This online ESP resolved my problem quickly.	3.76	0.99	0.90	0.90
It took little effort to arrange follow-up service.	3.64	1.00	0.83	0.83
This online ESP made it easy for me to resolve my problem	3.66	1.02	0.90	0.90
Perceived Value (Reliability = 0.91)				
The prices I pay for service from this online ESP represent a very good deal.	3.45	1.17	0.72	Dropped
The time I spend in order to use this service from this ESP's site is highly reasonable.	3.77	0.98	0.85	0.85
The effort involved in using this service at this ESP's site is worthwhile.	3.84	0.97	0.86	0.86
The service consumption experience at this ESP's site is excellent.	3.74	0.95	0.84	0.84
I found significant value by using service from this provider.	3.81	0.96	0.82	0.82
Satisfaction (Reliability = 0.92)				

Items Used For Principal Construct	Mean	Std. Deviation	Loading	Loading (Refined)
Overall, I am satisfied with this ESP	3.99	0.99	0.91	0.93
I did the right thing when I decided to use this ESP	3.90	0.99	0.91	0.91
I regret doing business with this ESP (**R**).	2.78	1.48	0.77	Dropped
Loyalty (Reliability = 0.87)				
I have a strong relationship with this ESP	3.14	1.41	0.74	Dropped
I am likely to switch to another ESP in the near future. (**R**)	2.70	1.28	-0.50	Dropped
I will choose this ESP next time when I purchase same service	3.55	1.07	0.90	1.00
Word-of-Mouth Communication (Reliability = 0.91)				
I often recommend this ESP to others	3.53	1.14	0.89	0.89
I tell my friends about this ESP	3.47	1.08	0.89	0.89
I want my friends to buy from this ESP	3.30	1.09	0.84	0.84
ESP stands for Electronic Service Provider identified by subject				

The reliabilities of each construct in our study exhibit acceptable levels (see Table 3). The reliabilities range from 0.87 to 0.95 which are considerably higher than the typical threshold value of 0.70 (Nunnaly, 1978). The loadings of each item on their respective constructs are also very high when the items were allowed to simultaneously cross-load on other constructs in the study. Several items were dropped due to poor loading or due to higher cross-loading with other constructs (see Table 3). But the remaining items exhibited very high loading on their respective constructs.

Validation of formative second-order construct

To estimate the formative second-order construct *Service Convenience in EME*, we modeled the coefficients (γ_i) of each first-order factor to the latent second-order factor following Diamantopoulos and Winklhofer (2001). As shown in the Figure 3 below, the impact of all first-order constructs that capture the various dimensions of Service Convenience in EME is significant (p<.01). We examined the correlations among the first-order factors and they were all significant (p<0.01). Significant correlations among the first-order constructs suggest that the first-order constructs may belong to the same set, even though formative constructs need not be correlated (Chin, 1998). We also tested whether the second order construct fully mediates the impact of the first-order constructs. This step ensures that the second-order construct is a more parsimonious representation of the first-order constructs and is able to fully capture their predictive power on dependent variables (Chin 1998). In short, these tests support the proposed second-order formative model of Service Convenience and verify its construct validity.
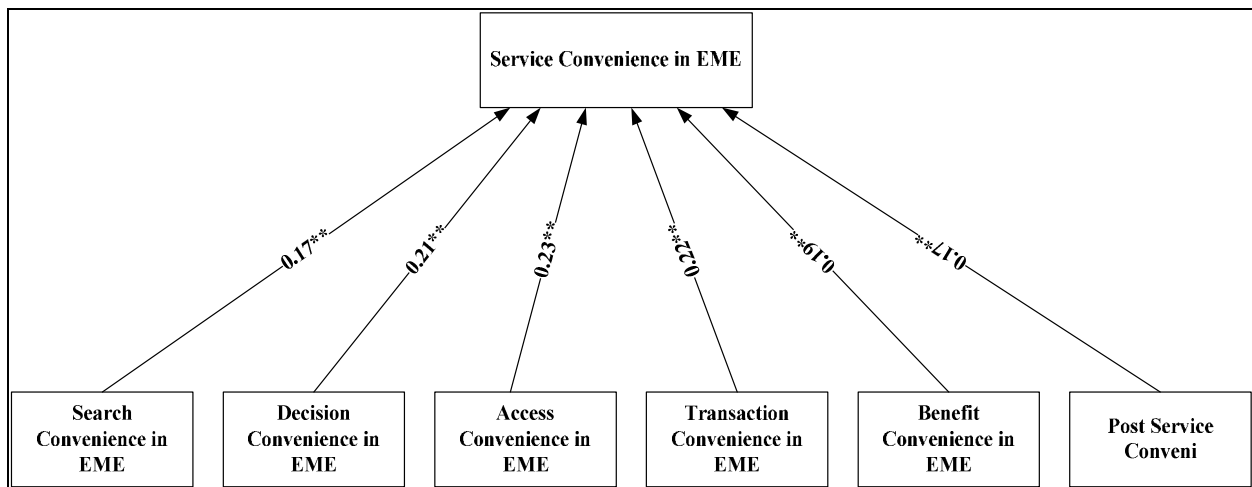
Figure 3 Formative relationships between first-order constructs and second-order construct

The Structural Model

PLS path coefficients are shown in figure 4. Item loadings of each construct are omitted for a clear exposition. Perceived ease of use is significantly associated with service convenience in the electronic mediated environment (β=.33, p<0.01). There is also a positive association between perceived usefulness and service convenience in the electronic mediated environment (β=.15, p<0.01). The results demonstrate that service content quality has positive impact on consumer service convenience perception (β=.30, p<0.01). Service delivery quality also strongly influences service convenience in the electronic mediated environment (β=.25, p<0.01). These results support H1, H2, H3, and H4 respectively. These four antecedents together explained 78% of the variance of service convenience in the electronic mediated environment.
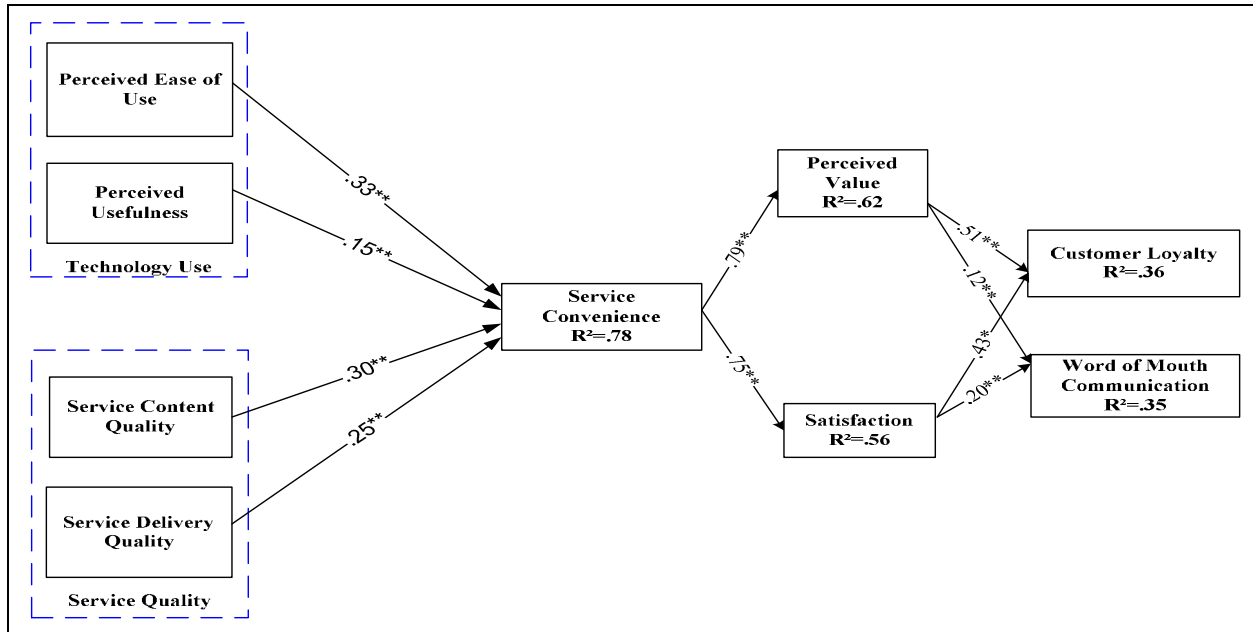
Figure 4: PLS Results for Structural Model
** Significant at p<0.01, *Significant at p<0.1

With regard to the consequents of service convenience, service convenience shows strong impacts on consumer perceived value (β=.79, p<0.001) and satisfaction (β=.75, p<0.001), thereby supporting H5 and H6. This global service convenience perception is able to explain 62% of the variance of consumer perceived value of service in the electronic mediated environment and 56% of the variance of satisfaction related to service in the electronic mediated environment.

All hypotheses related to relational exchange are supported except the proposed hypothesis relating satisfaction and customer loyalty. The perceived value has significant impacts on loyalty (β=.51, p<0.01) and word-of-mouth communication (β=.12, p<0.01). Satisfaction has a weak impact on customer loyalty (β=.43, p<.10), but it is significantly associated with word-of-mouth communication (β=.20, p<0.01). With regard to the relational outcome, perceived value and satisfaction is able to explain 36% of the variance of customer loyalty and 35% of the variance of word-of-mouth communication respectively. These results fully support H7, H8, H10, but not H9. The summary of the hypotheses and corresponding tests are displayed in Table 4.

Table 4: Summary of Hypotheses Tests and Results

Hypothesis	Path Descriptions	Hypothesized direction	Path coefficients	T-statistic	Support
H1	Perceived ease of use➔Service convenience in EME	(+)	.33	4.21	Yes
H2	Perceived usefulness➔ Service convenience in EME	(+)	.15	6.19	Yes
H3	Service content quality ➔ Service convenience in EME	(+)	.30	5.34	Yes

Hypothesis	Path Descriptions	Hypothesized direction	Path coefficients	T-statistic	Support
H4	**Service delivery quality → Service convenience in EME**	(+)	.25	4.60	**Yes**
H5	**Service Convenience in EME→Perceived value**	(+)	.79	35.70	**Yes**
H6	**Service convenience in EME→ Satisfaction**	(+)	.75	25.38	**Yes**
H7	**Perceived value→loyalty**	(+)	.51	7.25	**Yes**
H8	**Satisfaction→loyalty**	(+)	.12	1.65	**No**
H9	**Perceived value→word-of-mouth**	(+)	.43	6.33	**Yes**
H10	**Satisfaction→word-of-mouth**	(+)	.20	2.67	**Yes**

Discussion

Three main objectives have been addressed in examining service convenience in the electronic mediated environment. First, this research identified six service convenience dimensions in the electronic mediated environment, and also created a second order service convenience construct. Our findings indicated that all six convenience dimensions contributed to consumer overall service convenience perception. The formative relationship between first order service convenience dimensions and second order service convenience construct shows that each service convenience dimension is equally important to consumer overall judgment. Therefore, online service providers must develop service convenience strategies to meet consumers' requirements for each of the above dimensions since one type of inconvenience may negatively affect other types of convenience (Seiders et al. 2007).

Second, the developed instrument to measure service convenience in the electronic mediated environment has been validated by our sample. Both convergent validity and discriminant validity have been achieved to facilitate evaluation of the latent structure of the service convenience construct, second order construct, as well as the overall research framework. Our study is the first to introduce this significant service convenience construct in the electronic mediated environment to IS research and to present validated instruments for future research efforts.

Third, this research revealed several major antecedents and consequences of service convenience in the electronic mediated environment. The analytical framework demonstrated strong explanatory power of service convenience and relational exchange in the electronic mediated environment which validated conceptual models and theoretical hypotheses proposed in prior literature. All of the proposed hypotheses are supported with acceptable statistical significance except one.

Consumer perceived ease of use significantly impacts service convenience. Typically, the design of the service system, in the electronic mediated environment, differs across service providers. Therefore, consumers would have different perception in terms of the level of ease in using online service applications. To improve the service convenience, online service providers must try to enhance their interactive service systems, online store design and layout, especially the display of the product and service information. We found the association between perceived usefulness and service convenience to be significant. The online service may be perceived useless if people encounter difficulties to access the online service in a self-service environment and, thus perceive low benefit in using such an online service. Hence, online service provider should improve the functions and accessibility of the service systems in the electronic mediated environment to reduce any negative impact, since in most cases there is little or minimal availability of live-person assistance for services in the electronic mediated environment (Zeithaml and Bitner, 2000; Berry et al. 2002).

Service content quality and service delivery quality have significant impacts on service convenience in the electronic mediated environment. This study extended Tan et al. (2007) research of e-government service into a more generic context in which all categories of services in the electronic mediated environment have been considered. The enhanced service content quality and delivery quality should lower consumer's actual time and effort costs, and improve service convenience for the entire process of buying and using services in the electronic mediated environment.

The second-order service convenience construct played an important mediating role between its antecedents and consequents. The findings of our study confirm that service convenience serves as an indispensable factor for successful long-term relationship development in the electronic mediated environment. In our research, we have

found that service convenience explained respectively 62% and 56% of the variance of value and satisfaction with service consumption in the electronic mediated environment. This finding clearly demonstrates the value of service convenience in developing long term exchange relationship between consumers and service providers. Marketing and consumer research literature as well as ecommerce and IS literature have long identified value and satisfaction to be critical in determining the exchange relationship (Oliver 1992; Rose and Straub, 2001; Rose et al. 2005). Additionally, our analyses demonstrate that perceived value and satisfaction account for 36% and 35% of the variance of loyalty and word of mouth communication related to services in EME respectively. This result further confirms that we were able to properly conceptualize service convenience as a second order factor, with six formative dimensions, that mediated the antecedents and consequents in the context of exchange relationship. This further provides proof of the validity of the second order factor model for service convenience in the context of a relevant nomological net (Chin, 1998). In short, we have been able to demonstrate that service convenience is a very important construct that explains a significant part of consumer experience in relation to the development of long term exchange relationship with service providers in EME. Given that we live in a largely service economy, it is critical that we recognize the importance of service convenience in EME and its consequences for both research and practice.

Theoretical and Practical Implications

In the electronic mediated environment, good and friendly service system design will reduce the time and effort costs related to consumers' entire shopping experience (Berry et al. 2002). Therefore, understanding consumer requirements of ease of use and usefulness of electronic devices and environment are critical. Companies could incorporate ease of use and usefulness into each type of service convenience design. At the same time, online service providers should provide stable and reliable service content quality as well as service delivery quality. Typically, consumers who are confident with the online company's service quality tend to have higher perceptions of service convenience and a better consumer-provider relationship than those consumers who lack such confidence.

Mangers might want to analyze their business and examine the core issues underlying each convenience dimension. The creation of decision convenience could be derived from a clear and accessible interface which would reduce the time and effort costs of consumer decision-making in the electronic mediated environment. To establish service access convenience, companies must bring the service to the consumers rather than bring the consumers to service (Berry et al. 2002). Companies could develop a whole package of core services as well as the post-purchase service to facilitate consumers' access to service maintenance and product repair or exchange. The search convenience could be achieved through the provision of a clear online query and information availability features. Transaction convenience could be obtained by reducing the consumer's waiting time. Several online companies provide one-stop service to reduce the costs of consumers' time and effort related to making the payments in relation to consuming some valued added online service. The benefit convenience is usually involved in the context of hedonic service consumption. Consumers often like to invest time and effort to get a rewarding and enjoyable experience (Holbrook &Lehmann, 1981; Seiders et al. 2007). Finally, the post-benefit convenience needs to be offered since most consumers expect to spend less additional time and effort to reinitiate contact with the online service provider. Essentially, an integrated strategy of service convenience should be developed to improve customer perceived value and satisfaction for developing a long-term exchange relationship in the electronic mediated environment.

Conclusion, Limitations and Future Research

Our study yielded meaningful results; however, some limitations need to be noted. The validity of our results strongly depends upon the sampling of the surveyed subjects.   We used student data to inform our analysis. The student sample in the US is not representative of all the online consumers. However, students are more open to the kind of innovations found in electronic services and are often the first to adopt such innovations. In addition, the generalizability of the results may be limited to sample size. However, partial least squares (PLS) largely overcome that methodological limitation (Chin, 1998).

This paper identified four major antecedents affecting service convenience in the electronic mediated environment based on the existing literature. There could be other factors that contribute to consumers' perception of service convenience in electronic mediated environment, for example, service enjoyment, competitive intensity, product category involvement, number of recent interactions, and product return experiences (Seiders et al. 2007). Therefore, future research might try to replicate the theoretical framework in a specific service context: e-government service, hedonic service, and financial service to test for generalizability and to extend our findings from this research.

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