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AN EMPIRICAL INVESTIGATION OF CUSTOMER SATISFACTION WITH TECHNOLOGY MEDIATED SERVICE ENCOUNTERS IN THE CONTEXT OF ONLINE SHOPPING

KYOOTAI LEE
UNIVERSITY OF MISSOURI - ST. LOUIS
KLee@umsl.edu
KAILASH JOSHI
UNIVERSITY OF MISSOURI - ST. LOUIS
Joshi@umsl.edu

ABSTRACT

With the advancement of technology, many aspects of the face-to-face interpersonal dynamics in service encounters between sellers and customers have been replaced with technology-based Web interfaces. This paper develops and tests a model of customer satisfaction with technology mediated service encounters utilizing the suggestions of Meuter et al. [43] and the factors proposed by Jarvenpaa and Todd [27]. The model overarches variables that can influence customer satisfaction in technology mediated service encounters. An empirical analysis identified the relative importance of different factors in online service encounters for customer satisfaction. In the order of importance, these factors were: delivery performance, time saved, website functional properties, internet familiarity, and price saved. Some other factors that were not found to be significant included: website aesthetic properties, risk, customer support, and product variety.

Keywords: Technology Mediated Service Encounters, Customer Satisfaction, Online Shopping Store, Webstore, Website, E-commerce, Marketing, Reduced Time Spent, Reduced Price Spent, Web Functional Property, Web Aesthetic Property, Product Variety, Perceived Risk, Delivery Performance, Customer Support

INTRODUCTION

In recent years, e-commerce has grown dramatically in terms of volume and variety of goods and services traded [9]. This has created significant opportunities to serve customers through online stores. It is important for online stores to focus on achieving higher customer satisfaction to increase sales and to retain customers. The importance of customer satisfaction in online stores has been recognized in academic research [e.g. 31, 45, 32] and practitioner literature [e.g. 48, 33, 62].

Prior research on e-commerce examined online customer satisfaction from different perspectives. For example, in prior research, operationalizations of satisfaction focused on a narrow set of issues and included: e-satisfaction [60], system satisfaction [64], information satisfaction [64, 47], and satisfaction with the site [19]. Some studies such as Shih [53] have used satisfaction with Internet/Web as a surrogate for online shopping satisfaction to predict user acceptance of e-shopping. However, we feel that general satisfaction with Internet/Web usage may not be congruent with users' experiences in online shopping.

Additionally, some of the prior MIS studies have primarily focused on technology related issues, while excluding some of the factors related to customers' experiences in online shopping that may also influence customer satisfaction. For example, Wixdom and Todd [64] and Devaraj et al. [17] tried to predict e-shopping satisfaction on the basis of technology acceptance model (TAM) through antecedents such as ease of use (EU) and system usefulness (SU), however their study did not focus the respondent to a specific online store, which may make it hard for a user to respond reliably given large variations in experiences with different online shopping sites. There are also differences in conceptualization of the relationship between online customer satisfaction (OCS) and TAM variables EU and SU; some studies have used EU and SU as predictors of OCS [64, 17], while others have viewed OCS as a predictor of EU and SU [53], and still others have used EU as a surrogate to OCS [11, 60].

Further, in prior studies, the term 'use' has been employed in some cases to refer to the use of the online channel in general and in other cases to the use of a specific online store. This may account for some of the inconsistent results obtained in prior studies. Though there would be similarities between user satisfaction with information systems and customer satisfaction with an online store, *we believe that the context of online shopping involves both experiences: technology usage as well as service encounters. Both of these experiences should help shape a customer's overall satisfaction.* This is also supported by Jarvenpaa and Todd's [27] customer centered view that provides an overarching framework for studying perceptions of a customer about online stores. Similarly, Massad et al. [40] identified a distinct taxonomy for customer satisfaction with an online store, which covers core service delivery failure, customer's situation, employee characteristics and behaviors, information technology interface, and trust. But, these two studies did not cover the relationship between customer perceptions and satisfaction.

Motivated from the limitations identified above, this research aims to develop a model of OCS based on the concept of technology mediated service encounters studied by Bitner et al. [7] and Meuter et al. [43], which provides a framework for examining different issues related to customers' experiences with online shopping stores. We carried out the following steps to arrive at the model: 1) semantic aggregation of the numerous antecedents of satisfaction identified in prior studies from different disciplines based on classification proposed by Jarvenpaa and Todd [27]; 2) development of a model of OCS with an online store; 3) assessment of relative importance of variables that influence OCS based on path analysis of empirical data. The model should be useful in the development of guidelines for online stores to obtain higher customer satisfaction, greater customer loyalty, and sales.

THEORETICAL BACKGROUND

Customer Satisfaction

Customer satisfaction has been traditionally studied in marketing area as one of the critical attitudinal variables that may influence customer behavior. Most of the studies of satisfaction in marketing literature are based on the disconfirmation theory. It postulates that, the feeling of satisfaction is a result of the comparison between perceptions of a product's performance and expectations [49]. This theory, representing psychological evaluation processes, provides an understanding of expectations, desires, experiences, and performances that may affect customer attitudes. Based on this theory, Mckinney et al.'s [42] study suggested that the difference between expectations and actual performance on system quality and information quality is likely to determine Web customer satisfaction. Similarly, Khalifa and Liu [29] posed that confirmation/disconfirmation of pre-adoption expectations and desires, upon adoption, could influence overall customer satisfaction. While the disconfirmation theory has been supported by many researchers, it is hard to operationalize the theory consistently for all product categories [14].

Several approaches have been employed to assess satisfaction as noted by Giese and Cote [21] and Spreng et al. [57]. Especially, Giese and Cote [21] summarized more than 20 definitions of satisfaction from prior studies in the marketing area. They criticized a lack of consensus about the process leading to satisfaction and the satisfaction construct, and favored the development of context-specific satisfaction measures. These approaches rely on a customer's affective or emotional response as forming the basis for the measurement of customer satisfaction specific to a context, rather than assessing disconfirmation. Like most satisfaction studies, we have also adopted the second approach.

Customer satisfaction has been studied in the marketing literature. Information systems research has also employed a related construct as user satisfaction. Marketing based views consider an Internet shopping store to be a type of shopping store, and suggest obtaining higher customer satisfaction through improvements in conventional factors [35] such as delivery, store image, and service quality. According to Lee et al. [32], some variables related to satisfaction in traditional stores may not be relevant in online stores, such as interpersonal in-

teraction and the physical environment. Information systems research related to E-commerce has viewed users' satisfaction with the interaction in terms of system quality and information quality, and adapted them to assess satisfaction with an online store. This approach typically treats customers as information systems users, and focuses primarily on user satisfaction with websites. However, it overlooks issues related to the shopping context [45]. A few studies also examined some other predictors of satisfaction in online stores, such as intelligent support [31], Internet expertise [45], and entry guidance [47]. Thus, most of the prior studies have looked at only a subset of issues related to customer satisfaction in online shopping. Table 1 summarizes different determinants of satisfaction investigated in prior research, and outlines the operational definitions of the satisfaction construct that were employed in these studies. Details of prior studies are provided in Table 9 in Appendix 1.

In this paper, we view satisfaction as an affective response based on customers' past experiences common to traditional stores as well as the technology mediated service encounters (information systems related issues). Such a definition would be consistent with the traditional definition of customer satisfaction and should be suitable for assessing online customer satisfaction (OCS).

Table 1: Operationalizations of Online Customer Satisfaction in Prior Research

Operational Antecedents	Delay, Time Saving, Time Spent, Transaction Cost, Cost Saving, Price, Pricing, Cost Reduction, Convenience in Purchasing, Ease of Ordering, Product Variety, Web-Site Performance, Relevancy, Decision Supporting, Product Selection, Accuracy, Product Quality, Service Quality, Content, Employee Competence, website properties, Shopping Enjoyment, Financial Security, Reliability, Perceived Risk, Privacy Concerns, Information Properties, Graphic Style, Image, Design Supporting, Product Presentation, Physical Evidence, Navigation Structure, Comprehensiveness, Comprehensibility, Product Information, Time to Receive, On-time Delivery, Order Tracking, Shipping/Handling, Internet Expertise
Attitudes	**Satisfaction**: E-Satisfaction, Channel Satisfaction, Satisfaction with Fulfillment Process, Information Content Satisfaction, Satisfaction with Ordering Process, Price Satisfaction, Connection Satisfaction, System Satisfaction **Etc.:** Ease to use, Usefulness

Technology Mediated Service Encounters

"Service encounters are critical moments of truth in which customers often develop indelible impressions of a firm" ([7], p.139). The service encounters were originally proposed in the context of customer experiences with bricks-and-mortar stores. For example, Bitner et al. [5] defined service encounters as face-to-face interactions between buyers and sellers, and identified the three categories of service encounters (e.g. service failure, special customer needs, and unprompted employee actions) as antecedents of satisfaction/dissatisfaction in industries such as hotel, airline, and restaurant. It is generally accepted that the encounters would affect customer satisfaction (e.g. [6], [55]). Further, Bitner et al. [7] proposed the concept of technology infused service encounters, while emphasizing the growing role of technology in service encounters. The authors named this situation as self-service technology (SST).

Due to continuous improvement in technology, many parts of the face-to-face interpersonal dynamics between sellers and customers have been replaced by technology-based interactions. Meuter et al. [43] identified 'technology failure', 'process failure', 'poor design', and 'customer-driven failure' in self service technology as incidents leading to customer dissatisfaction, and 'solved intensified need', 'better than the alternatives' and 'did its job' incidents as leading to satisfaction. Further, Curran et al. [16] found that attitude toward technologies affected intention to use the technologies based on a study of automated teller machines (ATMs). With the advent of Web-based information systems, many direct interactions between sellers and buyers have been replaced by Web-based interfaces. This Web-based environment has been called the 'market space', which is "a virtual realm where products and services exist as digital information and can be delivered through information based channels" ([51], p.14). For such online market place, Massad et al. [40] developed a taxonomy of the antecedents of customer satisfaction/dissatisfaction with service encounters in the online shopping context. Massad et al.'s [40] taxonomy includes core service delivery failures, customer's situation before encounter, employee characteristics and behavior, information technology interface, and trust. He

suggested that these factors can be employed as antecedents of satisfaction in future research.

In the evaluation of the online service encounters, prior research has examined factors that influence customer satisfaction: information quality, system quality and service quality [53, 42], reduction in time spent, shopping enjoyment and convenience [32], trustworthiness, privacy concerns and site values [3], and cost and time saving [31]. Based on prior studies, variables that influence customer satisfaction are summarized in Table 9 in Appendix 1. However, most of these studies focused primarily on technology related issues, while leaving out issues related to service encounters. In this paper, we have included factors identified in prior studies by Jarvenpaa and Todd [27], Massad et al. [40], and Meuter et al. [43] to represent both traditional shopping issues as well issues related to technology mediated service.

PREDICTORS OF CUSTOMER SATISFACTION

The research model developed in this paper was based on Jarvenpaa and Todd's [27] study which classified customers' experiences with online shopping stores. The independent variables were identified based on a review and synthesis of prior literature on customer satisfaction and user satisfaction; these include perceived time saved, perceived price saved, perceived web properties of stores, perceived product variety, perceived risk, perceived customer support, perceived delivery performance, and Internet familiarity. Table 2 presents the independent variables that may influence OCS. Most of these factors were also suggested by Jarvenpaa and Todd [27], Meuter et al. [43] and Massad et al. [40]. A summary of the prior research related to online customer satisfaction is also provided in Table 9 in Appendix 1.

Time and cost savings are generally accepted as the main advantages of using Internet shopping. Additionally, customers can also compare prices between shopping stores as they are used to in traditional shopping store. The same view has been adopted in satisfaction research that is based on transaction cost theories [31, 32]. In the classical theory of transaction cost, customers tend to search until marginal benefits are equivalent to marginal costs [58]. Devaraj et al. [17] suggested that time efficiency and store efficiency are reflected in time cost and price savings respectively, which are antecedents of satisfaction. The concept of 'cognitive miser' [54] also supports customers' preference for using a channel that is known to save time and cost. Customers contemplate price and time spent while searching for products and evaluating them. In online stores customers expect to save on price and time spent in searching for the needed product in comparison with traditional stores. Customers should also save time in online stores through faster browsing and search mechanisms. The savings in cost and time spent should act as a cue for evaluation. As per equity theory, individuals are concerned about their inputs and outcomes. Therefore, cost saving (a favorable outcome) and time saving (less input/effort) should be welcomed by users and lead to higher satisfaction [28]. Mowen and Grove [46] also found that when customers paid inflated price in comparison to others, it affected their satisfaction negatively. Based on the above analysis we propose H1and H2.

H1: Perceived time saved [PTS] is positively associated with satisfaction.

H2: Perceived price saved [PPS] is positively associated with satisfaction.

Table 2: Hypotheses and Prior Research

Hypotheses		Shopping Factors from Jarvenpaa and Todd (1997-1997)	Related Studies
H1	PTS	Effort	[B], [F], [J], [K], [N]
H2	PPS	Price	[F], [J], [N]
H3-1	PWFP	Responsiveness	[A], [B], [C], [D], [E], [H], [I], [J], [K], [L], [M], [N]
H3-2	PWAP	Tangibility	[A], [B], [C], [D], [E], [H], [I], [K], [L], [M], [N]
H4	PPV	Variety of Products	[A], [N]
H5	PR	Privacy Risk and Economic Risk	[A], [B], [C],[E], [H], [M], [N]
H6	PCS	Empathy and Assurance	[B], [E], [K], [N]
H7	PDP	Reliability	[B], [E], [F], [I], [K], [N]
H8	IF	N/A	[C], [G]

[A] Szymanski & Hise [60], [B] Deveraj et al. [17], [C] Montoya-Weiss et al. [45], [D] Muylle et al. [47], [E] Shih [53], [F] Lee et al. [32], [G] Galletta et al. [19], [H] Luo & Seyedian [39], [I] Balasubramanian et al. [3], [J] Kohli et al. [31], [K] Cao et al. [11], [L] Mckinney et al., [42], [M] Kim [36], [N] Massad et al. [40]

Web stores offer distinct benefits and disadvantages relative to traditional brick and mortar stores. Web stores cannot offer the touch and feel of real physical products and face to face interaction with sales staff [25].

However, they can compensate for this disadvantage by offering other benefits such as a wider range of products, better organization of product information (including images, specifications, options, and reviews), search and browse tools, greater customization options, and convenient comparison of prices. The importance of well-organized contents, friendly website layout, and ease of navigation has been recognized in prior research (e.g. [30], [60], [45]). System quality, information quality, and service quality have also been identified as key factors in the success of e-commerce and Web stores [66]. Galletta et al. [19] asserted that website interfaces should be one of the dominant components of a general customer attitude toward the webstore. They noted that visual, aesthetic properties of websites can be compared with atmospheric features of traditional stores. The importance of atmospheric features has been recognized in the marketing literature. For example, the features such as assortment, styling, and atmosphere have been identified to be important for customers [18, 4].

Previous studies have considered Web interface features under the category of either website factors or information system factors. Muylle et al. [47] employed relevancy, accuracy, comprehensibility, comprehensiveness, structure, hyperlink connotation, entry guidance, speed of website, and layout as independent or intervening variables to assess user satisfaction with a website. Shih [53] organized independent variables into service quality, information quality, and system quality. He used accuracy, completeness, understandability, timeliness, and availability as indicators of information quality; and query/search support functions and website reliability as indicators of system quality. Thus as noted earlier, there appears to be some overlap among different independent and intervening variables and the indicators used in prior research related to online customer satisfaction. We made an effort to remove such overlap and divided the indicators of webstore properties into two main factors: perceived functional properties and perceived aesthetic properties, respectively. The operational definitions of the two factors are discussed in the next section. Here, we can propose the following hypotheses.

H-3: Perceived Web properties of stores are positively associated with satisfaction.

H3-1: Perceived Web functional properties [PWFP] of stores are positively associated with satisfaction.

H3-2: Perceived Web aesthetic properties [PWAP] of stores are positively associated with satisfaction.

One of the benefits of using a webstore is its capability to show a large number of alternatives due to the virtually unlimited "shelf-space" [25]. Prior studies have examined the issue of product variety and satisfaction. For example, Ahn et al. [1] found product quality and variety to be determinants of satisfaction. Szymanki and Hise [60] and Athanassopoulos et al. [2] also found the suggested product offerings and product innovation including product variety to be important factors affecting e-satisfaction. Thus as customers have more alternatives to evaluate to fulfill their needs, the higher their satisfaction would be. It should be noted that the extent of variety offered is related to a specific webstore, rather than a general property of all websites. This leads to the following hypothesis.

H4: Perceived product variety [PPV] is positively associated with satisfaction.

Customers' concern for privacy and security is a widely discussed obstacle to the adoption of e-commerce. For example, according to Bruskin [10], 75% of shoppers considered credit card security as a barrier in using e-commerce. Other researchers have also asserted the importance of privacy [24] and security issues [37] in online transactions. Lim [36] and Cheung and Lee [12] also stressed that risk is a critical factor in determining the attitude of customers in e-commerce. From the viewpoint of customer behavior, customers experience risk because they face uncertainty and potentially undesirable outcomes as a result of purchases made [61]. Therefore, customers attempt to reduce the uncertainty though additional information acquisition, which improves their utility in purchasing [44]. In general, the uncertainty in online context is likely to be higher than in traditional stores, due to its impersonal nature and potential risks in the purchase cycle from ordering and payment to delivery of goods. Customers are likely to respond favorably to online retailers attempts to reduce uncertainty. Therefore, risk perceptions can influence satisfaction. In prior studies risk has been viewed in different roles, for example as a moderating variable [39] and as an independent variable [53, 60]. In this study, security and privacy concerns were measured as perceived risk, and regarded as an independent variable that retailers could attempt to reduce.

H5: Perceived risk [PR] is negatively associated with satisfaction.

In online shopping, customers could face issues related to delivery such as delay, product damage, and wrong product shipped. Such problems arise as the ordered product cannot be checked and verified on the spot, unlike a real store. Jahng et al. [26] identified this issue as "the lack of social presence and product presence in E-commerce environment." Ahn et al. [1] and Shih [53] also

stressed the importance of timeliness and reliability of delivery for customer satisfaction. Researchers have identified the importance of delivery and customer service in online contexts [22, 23]. Although Cho [13] did not study satisfaction, she contended that concerns over delivery and return could abort an intended transaction.

H6: Perceived delivery performance [PDP] is positively associated with satisfaction.

Some online stores neglect to provide sufficient customer service resources, which makes it very difficult for customers to contact them. This antecedent factor was tested in a few prior studies of the online context. Unlike traditional stores, in webstores it is not easy to resolve conflicts because of the lack of a physical presence. Therefore, some prior studies have emphasized 'employee's sincere support' as one of the predictors of satisfaction with online shopping store (e.g. [40], [3]). For example, Massad et al. [40] identified employee's attitude and effective communication as predictors of satisfaction. In traditional shopping context, Parasuraman et al. [50] identified empathy and responsiveness as dimensions to measure service quality, and defined them as 'employee's caring or individual attention to customers' and 'employee's willingness to support prompt service'. The two dimensions are said to be related to satisfaction significantly in prior studies (e.g. [65]). Therefore, we hypothesized that sincere customer support can improve affective attitudes toward the online stores.

H7: Perceived customer support [PCS] is positively associated with satisfaction.

Familiarity, Internet related knowledge, and prior experience in using computers, Internet, and webstores are important customer attributes that may influence the online shopping experience and satisfaction. The three terms have been used interchangeably. For example, Liao and Cheung [34] asserted that IT education and Internet usage would promote the willingness to shop via online. Montoya-Weiss et al. [45] proposed that general Internet expertise may affect usage of an online channel and affect satisfaction through risk perceptions. In particular, expertise can be expressed in knowledge based familiarity [20], which is an antecedent of ease of use, which can affect technology usage directly and indirectly. Galletta et al. [19] found that customers' familiarity with website menus moderated the relationship between satisfaction and behavioral intentions. Novice users are likely to experience higher anxiety and difficulty in using services of a Web store. This is likely to make their interaction with online store less satisfactory. Those with greater experience can derive more benefit from the services and products offered by webstores. They may also be able to better estimate the risk in online shopping on a realistic basis. Therefore, we propose Internet familiarity as a moderator in the relationship between independent variables and satisfaction.

H8: Internet familiarity [IF] moderates relationship between customer's perceptions related to an online shopping store and customer satisfaction.

RESEARCH METHOD

Instrument Development

Operational definitions of most of the variables and their scales were adopted from prior research. Table 3 presents the operational definitions of the variables used in this research. For example, the variable 'Perceived time saved (PTS)' represents the perceived time/effort spent by a customer to buy goods/services in the online store under consideration; it was directly adopted from Devaraj et al. [17] and Kholi et al. [30]. However, we felt that there were some overlapping varibles and scales used in prior research to measure online store properties as shown in Table 1. In this paper, we have rationalized the overlapping variables and reconfigured the scales for measuring these variables. Store property variables 'Perceived Web functional properties (PWFP)' and 'perceived Web aesthetic properties (PWAP)' have been operationalized in a number of different ways in prior studies. For example, PWFP was measured on relevancy, timeliness, accessibility, accuracy, and completeness scales by Mckinney et al. [42], Shih [53], Montoya-Weiss et al. [45], Wixom and Todd [64], Athanassopoulos et al. [2] and Muylle et al. [47]. Similarly, PWAP was measured on store layout, design, impression, and user friendliness scales by Montoya-Weiss et al. [45], Muylle et al. [47], and Athanassopoulos et al. [2]. The rearranged variables are presented in Table 3 and scales employed to measure them are included in Appendix 2. In our research, PWFP represents functional characteristics of an online store, such as relevancy and completeness of information, whereas PWAP represents aesthetic properties of an online store, such as website design and visual appeal. The variable perceived delivery performance (PDP), following Ahn et al. [1], Cho [13] and Shih [53], covers 'how fast and how safely the goods/services would be delivered with a reasonable service charge.' The scales used for the dependent variable, overall customer satisfac-

tion (OCS), have been employed and validated by many prior researchers (e.g. [17], [32], [60]).

Table 3: Operational Definitions of Variables

Name	Measurement	Prior Researcher
PTS	- The extent of time spent (saved) in making a purchase in the online store relative to other purchasing experiences.	[17], [31]
PPS	- The extent of price paid (saved) in making a purchase in the online store relative to other purchasing experiences.	[31], [8], [2]
PWFP	- Perceived functional quality of the online store's website.	[42], [53], [45], [64], [2], [47]
PWAP	- Perceived aesthetic quality of the online store's website.	[45], [47], [2]
PPV	- Customer's perception of the extent of product range and variety in the online store.	[2], [64], [1], [60], [13]
PR	- Customer's perception of risk to the confidentiality of private and financial data while shopping in the online store.	[53], [36], [39]
PDP	- Customer's perception of delivery performance of the online store.	[1], [11], [53]
PCS	- Customer's perception of customer support provide by the online store	[38]
OCS	- Overall satisfaction of the customer with the online store.	[17], [32], [60]
IF	- Internet familiarity of the online customer.	[45], [20]
[PTS: Perceived Time Saved], [PPS: Perceived Price Saved], [PR: Perceived Risk], [PWFP: Perceived Web Functional Properties], [PWAP: Perceived Web Aesthetic Properties], [PPV: Perceived Product Variety], [PCS: Perceived Customer Support], [IF: Internet Familiarity], [PDP: Perceived Delivery performance], [OCS: Overall Customer Satisfaction]		

Pretest and Item Refinement

The instrument was screened by six MIS researchers for clarity and then pretested with twenty students. Based on the feedback, the instructions and some scales were refined. Subsequently, the instrument was administered to 305 undergraduate and graduate students who were enrolled in different classes in a metropolitan University in the US. We obtained responses from 251 online customers in university classes about their last purchase experience with an online store. They were asked to fill in a questionnaire during the class time in one of the authors' presence.

The definition of online stores was explained as a store which has responsibilities ranging from promotion and sales to after-sales activities, in order to differentiate online shipping stores from brokers such as e-Bay. Upon examination of questionnaires, some were found to have significant missing data and some had all items filled in with the same response. After dropping these unusable responses, a total of 251 usable responses were obtained for further analysis. Table 4 presents demographic background of the respondents included in the study. The average age of respondents was around 24, with females constituting 40% of the total. Most of the respondents used online stores less than once a month.

Table 4: Demographic Background of the Respondents

Variables		Frequency	Variables		Frequency
Frequency	Less than once a month	129	**Annual Amount of Online Purchase**	$300 or less	126
	1-3 times per a month	94		$301 - $500	57
	4-6 times per a month	16		$501 - $700	17
	over 7 times a month	7		$701 - $900	10
	Missing	5		over $900	34
				Missing	7
Age	under 20	29	**Ethnic Group**	Caucasian	180
	20-25	118		African	20
	26-30	43		Asian	15
	30-35	31		Hispanic	2
	over 35	26		Others	28
	Missing	4		Missing	6
Gender	Male	148			
	Female	99			
	Missing	4			

Primary Data Analysis

Content validity is supported by the fact that all the variables used in this research are adopted from standard instruments employed in prior studies in the IS and marketing fields. They were also screened for relevance.

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Table 5: Results of Factor Analysis

Factors	% of Variance	Components							
		1	2	3	4	5	6	7	8
PWFC5	30.431	**.850**	.190	-.021	.069	.005	.143	.089	.012
PWFC4		**.843**	.143	-.087	.097	.185	.010	.162	.003
PWFC6		**.842**	.155	-.039	.083	.134	.053	.096	.014
PWFC3		**.782**	.103	-.098	.176	.065	.117	.183	.150
PWFC2		**.637**	.182	-.072	.102	.048	.096	.117	.368
PWFC1		**.517**	.211	-.117	-.015	.248	.002	.090	.464
PWAP3	9.045	.072	**.809**	.009	.179	.142	.178	.106	.141
PWAP1		.111	**.763**	-.039	-.042	.083	.047	.094	.185
PWAP2		.191	**.760**	-.002	-.007	.127	.081	.103	.122
PWAP4		.280	**.742**	-.110	.072	.170	.147	.176	.019
PWAP5		.235	**.665**	-.136	.104	.274	.185	.063	.056
PR3	8.254	-.079	-.062	**.955**	-.093	-.092	-.037	-.016	-.061
PR2		-.087	-.076	**.924**	-.154	-.044	-.057	-.043	-.014
PR4		-.091	-.040	**.920**	-.035	-.120	-.051	-.049	-.088
IF2	7.104	.111	.038	-.096	**.905**	.120	.066	.108	.116
IF3		.166	.013	-.070	**.866**	.109	.138	.120	.073
IF1		.118	.141	-.125	**.804**	.152	-.105	.041	.134
PLD1	5.807	.089	.180	-.050	.059	**.831**	.124	.033	-.012
PLD5		.230	.109	-.043	.086	**.744**	.179	.082	.078
PLD3		.092	.151	-.151	.118	**.726**	.090	.194	.090
PLD4		.021	.319	-.058	.275	**.572**	.139	-.003	.146
PCS2	5.406	.093	.147	.007	.118	.119	**.879**	.031	.103
PCS1		.077	.246	-.016	.053	.119	**.778**	.026	.170
PCS3		.144	.096	-.153	-.071	.238	**.768**	.103	.053
PTS1	4.940	.187	.138	.080	.094	.162	.069	**.827**	.040
PTS2		.247	.159	-.085	.111	.041	.053	**.813**	-.044
PTS3		.096	.114	-.094	.058	.069	.029	**.797**	.126
PPV2	3.537	.163	.217	-.097	.079	.050	.231	.049	**.763**
PPV1		.103	.175	-.036	.300	.110	.108	.050	**.761**

Total Variance Explained 74.524%

* Principal Component Analysis with Varimax Rotation

Confirmatory factor analysis was conducted for data reduction. In the analysis, the result confirmed the distinct structure of the independent variables employed in this study.

Even though 'perceived price saved (PPS)' was measured with multiple items, after examining their factor loadings, a single item was selected to assess PPS, and thereafter it was excluded from the factor analysis. PPS was standardized to be consistent for further analysis. Table 5 shows the results of factor analysis. These factors explain more than 73.84% of the total variance, which indicates that the factor structure is a good representation of the variables. Unidimensionality was measured for each latent variable through Cronbach's alpha. The reliability values range from 0.823 to 0.951. Table 6 presents the results of reliability analysis. Convergent validity was examined by looking at correlations between all scales used in the instrument [59].

The correlations among scales within a variable were found to be higher than correlations among scales across variables. This suggests good discriminant validity, particularly when considered in conjunction with independent non-overlapping factor loadings. Table 7 shows two tailed Pearson correlations among variables.

Table 6: Results of Reliability Analysis

Variables	Item	α if Item Deleted	Cronbach's α	Variables	Item	α if Item Deleted	Cronbach's α
PWFP	PWFP1	0.9098	0.907	PR	PR1	0.9371	0.9508
	PWFP2	0.8985			PR2	0.8964	
	PWFP3	0.8834			PR3	0.9492	
	PWFP4	0.8815		IF	IF1	0.9217	0.886
	PWFP5	0.8841			IF2	0.7571	
	PWFP6	0.8845			IF3	0.8122	
PWAP	PWAP1	0.8702	0.885	PCS	PCS1	0.7937	0.831
	PWAP2	0.8596			PCS2	0.6656	
	PWAP3	0.8472			PCS3	0.822	
	PWAP4	0.8530		PTS	PTS1	0.7114	0.821
	PWAP5	0.8702			PTS2	0.7124	
PPV	PPV1	N/A	0.749		PTS3	0.8317	
	PPV2	N/A		OCS	OCS1	0.8250	0.904
PDP	PDP1	0.7610	.824		OCS2	0.7923	
	PDP3	0.7787			OCS3	0.9672	
	PDP4	0.8266					
	PDP5	0.7862					

Table 7: Correlation among Variables

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]
[1]	1																	
[2]	0.172	1																
[3]	0.109	0.437	1															
[4]	0.054	0.374	0.492	1														
[5]	0.230	0.292	0.409	0.527	1													
[6]	-0.035	-0.097	-0.212	-0.183	-0.258	1												
[7]	0.194	0.307	0.336	0.270	0.358	-0.222	1											
[8]	0.240	0.204	0.325	0.430	0.420	-0.172	0.199	1										
[9]	0.201	0.229	0.406	0.407	0.320	-0.161	0.349	0.374	1									
[10]	0.269	0.475	0.486	0.487	0.721	-0.166	0.329	0.382	0.299	1								
[11]	0.017	0.009	-0.011	0.001	-0.025	-0.010	-0.357	0.015	-0.123	0.059	1							
[12]	0.003	-0.292	-0.247	-0.145	-0.044	-0.003	-0.308	-0.078	-0.109	-0.122	0.122	1						
[13]	-0.008	-0.282	-0.235	-0.112	0.010	-0.069	-0.183	-0.095	-0.165	-0.103	0.034	0.549	1					
[14]	0.001	-0.177	-0.113	0.045	-0.043	0.003	-0.270	0.036	-0.060	-0.042	-0.028	0.541	0.580	1				
[15]	-0.026	-0.051	0.018	-0.040	-0.128	-0.007	-0.363	-0.051	-0.121	-0.010	0.206	0.288	0.290	0.518	1			
[16]	-0.013	-0.007	-0.091	0.002	-0.005	0.200	0.162	-0.017	-0.061	-0.037	-0.108	-0.089	0.024	-0.043	-0.243	1		
[17]	0.015	-0.089	-0.093	0.045	-0.047	-0.011	-0.230	-0.004	-0.197	-0.081	0.177	0.282	0.389	0.380	0.419	-0.018	1	
[18]	-0.089	-0.095	-0.127	-0.043	-0.087	-0.033	-0.392	-0.137	-0.331	-0.022	0.320	0.173	0.414	0.324	0.372	-0.080	0.555	1

[1] PPS [2] PTS [3] PWFP [4] PWAP [5] PDP [6] PR [7] IF [8] PCS [9] PPV [10] OCS [11] PPS_IF [12] PTS_IF [13] PWFP_IF [14] PWAP_IF [15] PDP_IF [16] PR_IF [17] PCS_IF [18] PPV_IF

RESULTS

LISREL was used to conduct path analysis to test the hypothesized relationships between independent and dependent variables proposed. Table 8 shows the results of analysis with Internet familiarity (IF) acting as a moderating variable. The moderating effect of IF was examined through the addition of PTS*IF, PPS*IF, PWFP*IF, PWAP*IF, PPV*IF, PR*IF, PDP*IF and PCS*IF as additional independent variables after mean centering them. The results indicate that PPS (path coefficient: 0.079), PTS (0.21), PWFP (0.11), PDP (0.57) and IF (0.097) significantly influence OCS. PDP, PPV and PCS were found to have significant interaction with IF, with path coefficients of 0.093, 0.14, and -0.13, respectively. Additionally, with interaction effects, the increase in R^2 (0.58 and 0.54 with/without a moderating effect respectively) was significant at a level of 0.00. Thus we can conclude that moderating effect of IF was significant as hypothesized, and it interacted with the relationships of PPV, PDP and PCS to OCS. Based on these results, H1, H2, H3-1, H6 and H7 were accepted. The effect size[1] was 0.582, which was large according to Cohen [15] in terms of the significance of product-moment r. The results of hypotheses testing are summarized in Table 8.

[1] The effect size was calculated with R^2-[p/(N-1)] , where p is number of independent variables, N is sample size, and R2 is the total variance explained [52].

DISCUSSION

The importance of maintaining high customer satisfaction has been emphasized for a long time by researchers and practitioners. This paper focused on developing and testing a model of customer satisfaction with online stores based on the factors suggested by Jarvenpaa and Todd [27]. The model overarches variables that can influence customer satisfaction in technology mediated service encounters. Variables specific to technology mediated service encounters were originally elucidated by Bitner et al. [7] and Meuter et al. [43]. The model aims to identify the relative importance of variables that influence overall customer satisfaction (OCS).

In using online stores, customers' experience features of traditional shopping as well as those related to website browsing. In other words, an online purchase process embodies issues related to the nature of technology and service. In view of this, the model included variables related to both aspects, namely time and price saved, webstore properties (functional properties and aesthetic properties), and other traditional store properties (product variety, risk, delivery performance, and customer support), and Internet familiarity. Among the webstore properties, we rationalized the variables and folded them into two main categories: functional properties and aesthetic properties. Functional properties consist of features such as currency, relevancy, reliability, accuracy, completeness, and sufficiency of information; while aesthetic properties consist of visual comfort, friendly design, positive

impression, and design to facilitate transaction. The factor analysis confirmed that the variables investigated in this research were distinct.

The results of the path analysis show that perceived time saved (PTS) and perceived price saved (PPS) significantly influence customer satisfaction. This result is consistent with the findings of prior research (e.g. [31], [32], [19], [17], [63]). Especially, in terms of price saving, competition based on price should be considered among online shopping stores as well as offline ones. This idea was elaborated by Meuter et al. [43] as a category of "better than alternatives". It was also investigated in Deveraj et al.'s [17] study, which examined online store efficiency based on price savings.

Among the independent variables, delivery performance (PDP) was found to have the highest influence on OCS with a coefficient of 0.57 (significant at 0.001). This result is in line with results of prior e-commerce studies, which emphasized safe and reliable delivery (e.g. [1], [53], [22], [13]). In online stores, customers are required to pay in advance, while the delivery of goods is not provided immediately. This is likely to make the customers anxious about the status of the delivery of their goods. Good delivery performance has a substantial influence on customer satisfaction as indicated by the results of this study. This is consistent with the findings of Massad et al.'s [40] study that identified timeliness in the delivery of products as having the highest importance to consumers. Internet familiarity (IF) was found to have a significant moderating influence on the relationship between PDP and OCS (0.093 with a significance of 0.000). This result is consistent with Galletta et al.'s [19] study that found a moderating effect of Internet expertise on the relationship between satisfaction and service delay.

Perceived Web functional properties (PWFP) was also found to be a significant antecedent of OCS. This result supports the importance of technical aspects of online shopping, which have also been emphasized in other studies (e.g. [66], [60], [45], [3]). Perceived Web aesthetic properties (PWAP) was not found to be significant in this study. Prior studies also show mixed results for this attribute. For example, while Szymanski and Hise [60] found that site design significantly affects e-satisfaction, Montoya-Weiss et al. [45] obtained an opposite result. One possibility is that the inconsistency in the above results may be attributable to the measurement scales used. Montoya-Weiss et al. [45] measured the graphic style, whereas Szymanski and Hise [60] measured the mix of the navigation structures and graphic styles. Ahn et al. [1] also combined site design with other navigation features to form the system quality variable, and found a positive relation between system quality and online shopping acceptance. In this study, our measurement focused on aesthetic features similar to Montoya-Weiss et al.'s [45] study. In sum, we can conclude that hedonic aspects related to usage of website graphics do not seem to be a determinant of OCS. One reason may be that popular online stores that customers frequently visit may have similar levels of aesthetic design. Instead, the functional aspects, which directly help purchasing processes, such as the amount of information and its accuracy, are more significant determinants of OCS as noted earlier.

Table 8: Results of Path Analysis

Variables	Path Coefficient	t-Value & Significance	Variables	Path Coefficient	t-Value & Significance
PPS	0.079	1.86*	PPS*IF	0.064	1.41
PTS	0.21	4.38***	PTS*IF	0.019	0.35
PWFP	0.11	2.06**	PWFP*IF	-0.066	1.16
PWAP	0.032	0.59	PWAP*IF	0.039	0.65
PDP	0.57	10.99***	PDP*IF	0.093	1.77*
PR	0.061	1.42	PR*IF	-0.007	0.16
IF	0.097	1.79*	PCS*IF	-0.13	2.54**
PCS	0.044	0.94	PPV*IF	0.14	2.51**
PPV	-0.010	0.21			
* 0.1 **0.05 ***0.001 [R^2=0.65 (t-Value : 10.77 >1.96), Effect Size: 0.582]					

Customer support (PCS) was not found to have a significant path coefficient with OCS. Customer support and service quality in online shopping have been found to be significant by other researchers (e.g. [53], [22], [3]), though interpersonal interaction was not found to be important for online shopping [32]. One reason for these differences may be due to the context of service encounters. For example, Massad et al.'s [40] averred that the

lack of communication effectiveness with store employees (an important aspect of customer service) is the highest dissatisfier for customers. Meuter et al. [43] also emphasized a fast response to service delivery failures. In an online context, physical customer support interaction mainly occurs when there is a problem such as a delivery failure or a malfunction during the payment process. Therefore, if there is no problem in the purchasing process, customer support involving interpersonal communication through phones or e-mails may not be needed. In this study, the average level of OCS was 5.96 (standard deviation 1.15) on a scale of 1 to 7. Given such high satisfaction levels, it is likely that respondents may not have needed or used the customer support facility of online stores. Additionally, in group interviews with about 50 students in multiple classes, many respondents commonly reported that they never interacted with customer support personnel during online purchasing. Therefore, it is not unusual to find a non-significant result for customer service.

Perceived risk (PR), which represented concerns about the security of private information and financial information, was not significantly related with satisfaction. Though some authors (e.g. [12], [36]) mentioned that risk would be one of the antecedents of customer's attitude having a negative impact on satisfaction, it was not found to be significant in this study. PR measures the uncertainties anticipated by customers. However, it seems that for those who have successfully made an online purchase, its salience goes down in relation to the other issues experienced while making the purchase. In this paper, the average of aggregate of perceived risk was 3.72 with standard deviation 1.93, which indicates a moderate level of perceived risk. Unlike prior studies that were based in the early period of Internet shopping, respondents may be more familiar with online shopping, and may consider the risk to be a non-significant issue compared to other conveniences of online shopping. They may also make most of the repeat purchases from sites that they trust or consider trust worthy based on online customer feedback and comments, thus undermining the role of risk.

Perceive product variety (PPV) was also not found to have a significant path coefficient with OCS. Online stores have generally no limitation on maintaining a high product variety. This was also indicated in the high average score of PPV at 6.01 (standard deviation: 1.09) on a scale of 1 to 7. Therefore, product variety may be viewed as a hygiene factor which may lead to dissatisfaction, only when it is insufficient. It appears that with the passage of time more and more stores are able to offer a wider variety of products, making this factor a non-issue in the assessment of satisfaction. Customers may also find the products using the search engines such as Google, they already have information about products-offerings from multiple online stores. So, variety of the products from an individual shopping store may not be a discriminator. This is also reflected in the fact that two types of shopping stores, ones offering diverse products (e.g. Amazon.com) and the others providing limited products (e.g. Fozieri.com) coexist now. However, results indicate that internet familiarity (IF) moderates the relationships between PPV and OCS with a path coefficient of 0.14. Customers who are more familiar with the Internet may try to find greater choice of products, and may find higher satisfaction with stores that offer it. Those with higher internet familiarity were also generally more satisfied with online stores as indicated by the significant path coefficient between IF and OCS. It may be due to their ability to harness online resources more effectively.

In sum, this study recognized online shopping as a technology mediated service encounter, and identified issues that would be relevant in this context. An empirical analysis identified the relative importance of different factors in online service encounters for customer satisfaction. In the order of importance, these factors were: delivery performance, time saved, website functional properties, internet familiarity, and price saved. Some other factors that were not found to be significant included: website aesthetic properties, risk, customer support, and product variety.

IMPLICATION FOR PRACTITIONERS

This paper identifies the relative importance of the antecedents of the overall customer satisfaction with an online shopping store. The results of this study combined with Massad et al.'s [40] and Bitner et al.'s [7] study can provide useful guidelines for practitioners in online service encounters. Unlike traditional service encounters, issues related to online stores can be divided into two streams, namely technical aspects and traditional marketing aspects. In online stores practitioners should focus on issues arising out of both aspects, and understand the role of technologies.

Similar to Massad et al. [40], the results of this study show that delivery performance is the most important issue for keeping customers satisfied with online shopping stores. Online stores should pay attention to improving customer experience by providing safe packaging, reliable cost effective delivery options, prompt feedback on the delivery status, and ensuring timely delivery of the ordered products. Stores should also make it easy to

track and monitor the delivery progress. An informed customer is likely to be a more satisfied customer.

Web functional properties also play an important role in ensuring customer satisfaction. Firms should pay attention to the development of their Internet shopping website to provide the needed functionality. Websites should be field tested with customers for usability. Online stores should provide information not only about products, but also about all the elements of a sales transaction from product search to delivery in a convenient organized manner. A good aesthetic appearance in line with industry standards would be a necessary prerequisite for a successful online store, though not a discriminator, given the generally high standards maintained by competitors.

Time and price savings are also important issues for customers. Though, it appears that time saved is twice as important for consumers' satisfaction relative to price saved. This result indicates that online stores should make efforts to streamline their website interface to minimize the time needed to search products and place an order. They should take steps to improve response time, eliminate repetitive data entry by storing customer profiles, and provide easy search and browsing features that customers may be familiar with. Price is traditionally assumed to be an important factor for customers. However, it was ranked lower than other factors in this study. It appears that in online shopping customers seek convenience and pay greater attention to factors other than price in making their purchase decisions. Thus results of this study seem to be consistent with other studies that found that customers treat price to be less important and are willing to pay a higher price for the same product to an online store with a good brand image, which they treat as a signal of reliability in service quality and shipping performance [56].

As mentioned earlier, in group interviews, many respondents commonly reported that they never interacted with customer support during online purchasing. As most transactions go through successfully without requiring any customer support interaction, most respondents had not experienced it. Yet it may be an important factor when abnormal circumstances arise due to service failures. Therefore, webstores still need to provide easily locatable e-mail and phone contact information, and quality support for customers who may need to contact the firm. Online stores can also offer interactive chat as a channel of customer support. Sufficient resources should be devoted to ensure timely response to customers' phone, email, and chat messages. As Bitner et al. [7] said, absence of fast service recovery may cause customer dissatisfaction. Therefore, customer services may be more relevant for customer dissatisfaction rather than satisfaction.

LIMITATIONS AND FUTURE STUDY

Some limitations of the study should be kept in mind in interpreting the results. The data was collected from university students in the Midwest USA. It represents a convenience sample, rather than a random sample of the US population. This should be kept in mind while generalizing the results to other populations. The respondents' age ranged from 18 to above 35, with an average of about 26. There were about 60% males and 40% females in the sample. Even though the sample seems to be focused on younger population, we believe that this sample quite well represents the Internet shopping customers, which is reported to be younger than 44 years old and well educated [41]. Additionally, we conducted t-tests to check for differences among different age groups. The results indicate that there is no difference in mean values of all the variables included in the study for different age groups at a significance level of 0.05. Thus the results indicate similar experiences of different age-groups in this study. However, age groups higher than 35 were not sufficiently represented in this study. The analysis was based on cross-sectional data, and limitations of cross-sectional data analysis should be kept in mind while interpreting causal influences. Finally, responses were based on recall of accumulated online shopping experiences.

This research focused on customer satisfaction. However, other issues related to customer behavior are also important and need to be investigated in future research. Issues such as trust and intention to buy are some factors that can be examined along with customer satisfaction. An understanding of independent variables used in this study and their influence on customer behavior should help develop better models of customer behavior in online shopping. Additionally, it may also be useful to study how to recover from service failures in technology mediated service encounters. This should be useful in developing appropriate resource allocation decisions for the service function of online stores.

REFERENCES

[1] Ahn, T., Ryu, S., and Han, I. "The Impact of the Online and Offline Features on the User Acceptance of Internet Shopping Mall," *Electronic Commerce Research and Applications*, Volume 3, Number 4, 2004, pp.405-420.

[2] Athanassopoulos, A., Gounaris, S., and Stathakopoulos, V. "Behavioral Responses to Customer Satisfaction: An Empirical Study," *European Journal of Marketing*, Volume 35, Number 5, 2001, pp.687-707.

[3] Balasubramanian, S., Konana, P., and Menon, N. M. "Customer Satisfaction in Virtual Environments: A Study of Online Investing," *Management Science*, Volume 49, Number 7, 2003, pp.871-889.

[4] Bearden, W. O. "Determinant Attributes of Store Patronage: Downtown versus Outlying Shopping Areas," *Journal of Retailing*, Volume 53, Number 2, 1977, pp.15-22.

[5] Bitner, M. J., Booms, B. H., and Tetreault, M. S. "The Service Encounter: Diagnosing Favorable and Unfavorable Incidents," *Journal of Marketing*, Volume 54*,* Number *2*, 1990, pp.71-84.

[6] Bitner, M. J., Booms, B. H., and Mohr, L. A. "Critical Service Encounters: The Employee's Viewpoint," *Journal of Marketing*, Volume 58, Number 4, 1994, pp.95-106.

[7] Bitner, M. J., Brown, S., and Meuter, M. L. "Technology Infusion in Service Encounters," *Journal of the Academy of Marketing Science,* Volume 28, Number 1, 2000, pp.138-149.

[8] Bolton, R. N., and Lemon, K. N. "A Dynamic Model of Customers' Usage of Services: Usage as an Antecedent and Consequence," *Journal of Marketing Research,* 1999, Volume 36, Number 2, pp.171-186.

[9] Boston Consulting Group. n.d. *BCG Reports 100 Percent Growth in Online Business-to-Customer Revenues in Asia-Pacific This Year, Reaching Close to US$ 14 Billion*. Retrieved 06 2005, from BCG Media Release: URL: http://www.bcg.org/media_center/media_press_release_subpage48.asp.

[10] Buskin, J., "Tales from the front: A firsthand look at buying online," in *Wall Street Journal*, 1998, pp. R6.

[11] Cao, Y., Gruca, T. S., and Klemz, B. R. "Internet Pricing, Price Information and Customer Satisfaction," *International Journal of Electronic Commerce*, Volume *8*, Number 2, 2003-4, pp.31-50.

[12] Cheung, C., and Lee, M. O. "Trust in Internet Shopping: A Proposed Model and Measurement Instrument," *Proceedings of the 6th Americas Conference on Information systems*, Waltham, MA, 2000, pp. 681-689.

[13] Cho, J. "Likelihood to Abort an Online Transaction: Influences from Cognitive Evaluations, Attitudes and Behavioral Variables," *Information and Management*, Volume 41, Number 7, 2004, pp.827-838.

[14] Churchill, G. A., and Suprenant, C. "An Investigation into the Determinants of Customer Satisfaction," *Journal of Marketing Research*, Volume 19, Number 4, 1982, pp.491-504.

[15] Cohen, J. "A Power Premier," *Psychological Bulletin*, Volume 112, Number 1, 1992, pp.155-159.

[16] Curran, J. M., Meuter, M. L., and Surprenant, C. F. "Intentions to Use Self-Service Technolgies: A Confluence of Multiple Attitudes," *Journal of Service Research*, Volume 5, Number 3, 2003, pp.209-224.

[17] Devaraj, S., Fan, M., and Kohli, R. "Antecedents of B2C Channel Satisfaction and Preference: Validating e-Commerce Metrics," *Information Systems Research,* Volume 13, Number 3, 2002, pp.316-333.

[18] Doyle, P., and Fenwick, I. "Shopping Habits in Grocery Chains," *Journal of Retailing*, Volume 50, Number 4, 1974, pp.39-52.

[19] Galletta, D. F., Henry, R., McCoy, S., and Polak, P. "Web Site Delays: How Tolerant Are Users?" *Journal of the Association for Information Systems*, Volume 5, Number 1, 2004, pp.1-28.

[20] Gefen, D., Karahanna, E., and Straub, D. W. "Trust and TAM in Online Shopping: An Integrated Model," *MIS Quarterly*, Volume 27, Number 1, 2003, pp.51-90.

[21] Giese, J. L. and J. A. Gote, "Defining Consumer Satisfaction," *Academy of Marketing Science Review* [Online] 00 01 Available: http://www.amsreview.org/amsrev/theory/giese00-01.html, 2000.

[22] Grewal, D., Iyer, G. R., and Levy, M. "Internet Retailing: Enablers, Limiters and Marketing Consequences," *Journal of Business Research*, Volume 57, Number 7, 2004, pp.33-43.

[23] Gurau, C., Ranchhod, A., and Hanckey, R. "Internet Transactions and Physical Logistics: Conflict or Complementary," *Logistics Information Management*, Volume 14, Number 1, 2001, pp.33-43.

[24] Hagel, J., and Rayport, J. "The Coming Battle for Customer Information," *Harvard Business Review*, Volume 75, Number 1, 1994, pp.53-65.

[25] Häubl, G., and Trifts, V. "Customer Decision Making in Online Shopping Environments: The Effects of Interactive Decision Aids," *Marketing Science*, Volume 19, Number 1, 2000, pp.4-21.

[26] Jahng, J., Jain, H., and Ramamurthy, K. "Effective Design of Electronic Commerce Environment: A Proposed Theory of Congruence and an

Illustration," *IEEE System, Man and Cybernetics*, Volume *30*, Number 4, 2000, pp.456-471.

[27] Jarvenpaa, S. L., and Todd, P. A. "Consumer Reactions to Electronic Shopping on the World Wide Web," *International Journal of Electronic Commerce*, Volume 1, Number 2, 1996-1997, pp.59-88.

[28] Joshi, K. A. "Model of Users' Perspective on Change: The Case of Information Technology Implementation," *MIS Quarterly*, Volume 15, Number 2, 1991, pp.119-242.

[29] Khalifa, M., and Liu, V. "Satisfaction with Internet-Based Services: The Role of Expectations and Desires," *International Journal of Electronic Commerce*, Volume 7, Number 2, 2002-3, pp.31-49.

[30] Kim, J. "Architectural Metrics for E-Commerce: A Balance between Rigor and Relevance," in W. Suh, ed., *Web-Engineering: Principles and Techniques*, pp. 132-160, Hershey, Idea Group Inc, 2005.

[31] Kohli, R., Devaraj, S., and Mahmood, A. M. "Understanding Determinants of Online Customer Satisfaction: A Decision Process Perspective," *Journal of Management Information Systems*, Volume 21, Number 1, 2004, pp.115-135.

[32] Lee, j., Pi, S., Kwok, R. C., and Huynh, M. Q. "The Contribution of Commitment Value in Internet Commerce: An Empirical Investigation," *Journal of the Association for Information Systems*, Volume 4, 2003, pp.39-64.

[33] Leslie, F. M. "Spotlight on Marketing," *Business Horizons*, Volume 49, Number 3, 2006, pp.179.

[34] Liao, Z., and Cheung, M. T. "Internet Based E-Shopping and Customer Attitudes: An Empirical Study," *Information and Management*, Volume 38, Number 5, 2001, pp.299-306.

[35] Liau, S. S. "Understanding User Perceptions of World Wide Web Environments," *Journal of Computer Assisted Learning*, Volume 18, Number 2, 2002, pp.137-148.

[36] Lim, N. "Customer's Perceived Risk: Sources versus Consequences," *Electronic Commerce Research and Applications*, Volume 2, Number 3, 2003, pp.216-228.

[37] Limayen, M., Khalifa, M., and Frini, A. "What Makes Customers Buy From Internet? A Longitudinal Study of Online Shopping," *IEEE Transactions System Man Cybernetics, Part A: Systems and Humans*, Volume 30, Number 4, 2000, pp.421-432.

[38] Liu, C., and Arnett, K. P. "Exploring the Factors Asscoiated with Web Site Success in the Context of Electronic Commerce," *Information and Management*, Volume 38, Number 1, 2000, pp.23-33.

[39] Luo, X., and Seyedian, M. "Contextual Marketing and Customer-Orientation Strategy for E-Commerce: An Empirical Analysis," *International Journal of Electronic Commerce*, Volume 8, Number 2, 2003-4, pp.95-118.

[40] Massad, N., Heckman, R., and Crowston, K. "Customer Satisfaction with Electronic Service Encounter," *International Journal of Electronic Commerce*, Volume 10, Number 4, 2006, pp.73-104.

[41] Mathwick, C., Malhotra, N. K., and Rigdon, E. "The Effect of Dynamic Retail Experiences on Experiential Perceptions of Value: An Internet and Catalogue Comparison," *Journal of Retailing*, Volume 78, Number 1, 2002, pp.51-60.

[42] McKinney, V., Yoon, K., and Zahedi, F. M. "The Measurement of Web-Customrr Satisfaction: An Expectation and Disconfirmation Approach," *Information Systems Research*, Volume 13, Number 3, 2002, pp.296-315.

[43] Meuter, M. L., Ostrom, A. L., Roundtree, R. I., and Bitner, M. J. "Self-Service Technologies: Understanding Customer Satisfaction with Technology Based Service Encounters," *Journal of Marketing*, Volume 64, Number 3, 2000, pp.50-64.

[44] Mitchell, V. "Customer's Perceived Risk: Conceptualizations and Models," *European Journal of Marketing*, Volume 33, Number 1, 1999, pp.163-195.

[45] Montoya-Weiss, M. M., Voss, G. B., and Grewal, D. "Determinants of Online Channel Satisfaction with a Relational Multi-Channel Service Provider," *Journal of the Academy of Marketing Science*, Volume 31, Number 4, 2003, pp.448-458.

[46] Mowen, J. C., and Grove, S. J. "Search Behavior, Price Paid, and the Comparison Other: An Equity Theory Analysis of Customer Satisfaction/Dissatisfaction with Service Choices," in K. R. Hunt, and R. L. Day, eds., *International Fare in Customer Satisfaction and Complaining Behavior,* pp. 57-63, Bloomington, Indiana University School of Business, 1983.

[47] Muylle, S. M. "The Conceptualization and Empirical Validation of Web Site User Satisfaction," *Information and Management*, Volume 41, Number 5, 2004, pp.543-560.

[48] Ofir, T., and Alexander, S. "Satisfaction with Mobile Services in Canada: An Empirical

Investigation," *Telecommunications Policy*, Volume 30, Number 5, 2006, pp. 314-331

[49] Oliver, R. L., and Swan, J. E. "Equity and Disconfirmation Perceptions as Influences on Merchant and Product Satisfaction," *Journal of Customer Research*, Volume 16, Number 3, 1989, pp.372-383.

[50] Parasuraman, A., Zeithaml, V. A., and Berry, L. L. "SERVQUAL: A Multiple-Item Scale for Measuring Consumer Perceptions of Service Quality," *Journal of Retailing*, Volume 64, Number 1, 1988, pp.12-40.

[51] Rayport, J. F., and Sviokla, J. J. "Exploiting the Virtual Value Chain," *Harvard Business Review*, Volume 73, Number 6, 1995, pp.14-24.

[52] Schumacker, R. E., and Lomax, R. G. *A Beginner's Guide to Structural Equation Modeling,* Mahwah, New Jersey, Lawrence Erlbaum Associates, 2004.

[53] Shih, H. "An Empirical Study on Predicting User Acceptance of E-Shopping on the Web," *Information and Management*, Volume 41, Number 3, 2004, pp.351-368.

[54] Shugan, S. M. "The Cost of Thinking," *Journal of Customer Research,* Volume 7, Number 2, 1980 pp.99-111.

[55] Smith, A. K., and Bolton, R. N. "An Experimental Investigation of Customer Reactions to Service Failure and Recovery Encounters: Paradox or Peril?" *Journal of Service Research*, 1998, Volume 1, Number 1, pp.65-81.

[56] Smith, M. D., and Brynjolfsson, E. "Customer Decision Making at an Internet Shopbot: Brand Still Matters," *The Journal of Industrial Economics*, Volume 49, Number 4, 2001, pp.541-558.

[57] Spreng, R. A., Mackenzie, S. B., and Olshavky, R. W. "A Reexamination of the Determinants of Customer Satisfaction," *Journal of Marketing*, Volume 60, Number 3, 1996, pp.15-32.

[58] Stinger, G. "The Economics of Information," *Journal of Political Economy*, Volume 69, Number 6, 1961, pp.213-225.

[59] Straub, D., Boudreau, M. C., and Gefen, D. "Validation Guidelines for IT Positivist Research," *Communications of the Association for Information Systems*, Volume 13, Number 24, 2004, pp.380-427.

[60] Szymanski, D. M., and Hise, R. T. "E-Satisfaction: An Initial Examination," *Journal of Retailing*, Volume 76, Number 3, 2000, pp.309-322.

[61] Taylor, J. W. "The Role of Risk in Customer Behavior," *Journal of Marketing*, Volume 38, Number 2, 1974, pp.54-60.

[62] Thomas, T. S. "Dissatisfaction Prevention is Worth More," *Marketing News*, Volume 39, Number 14, 2005, p.8.

[63] Voss, G. B., Parasuraman, A., and Grewal, D. "The Roles of Price, Performance, and Expectations in Determining Satisfaction in Service Exchanges," *Journal of Marketing*, Volume 62, Number 4, 1998, pp.46-61.

[64] Wixom, B. H., and Todd, P. A. "A Theoretical Integration of User Satisfaction and Technology Acceptance," *Information Systems Research*, Volume 16, Number 1, 2005, pp.85-102.

[65] Yoon, S., and Suh, H. "Ensuring IT Consulting SERVQUAL and User Satisfaction: A Modified Management Tool," *Information System Frontier*, Volume 6, Number 4, 2004, pp.341-351.

[66] Zhang, P., and Von Dran, G. M. "User Expectations and Rankings of Quality Factors in Different Web Site Domains," *International Journal of Electronic Commerce*, Volume 6, Number 2, 2001-2, pp.9-33.

AUTHOR BIOGRAPHIES

Kyootai Lee is a doctoral student in Management Information Systems at University of Missouri - St.Louis. His current working focuses on organizational issues in information systems development such as miscommunication, turnovers, emotional intelligence and developer's performance. His papers are currently published in *Information Resource Management Journal* and conference proceedings (e.g. *AMCIS and SIGMIS conference*), and also reviewed in international journals. He served as a reviewer SIGMIS CPR Conference 2006 and 2007, and AMCIS 2007.

Kailash Joshi is Professor of MIS at the University of Missouri, St.Louis. He received his Ph.D. in Management Information Systems from Indiana University in 1986. Prior to joining academics, he worked in industry in the areas of purchasing, materials, production, and systems for nine years. His other papers have appeared in *MIS Quarterly, Decision Sciences, IEEE Engineering Management, Information Systems Journal, Information and Management, OMEGA: The International Journal of Management Science, DataBase, Journal of Information Technology Management, Journal of Data Warehousing, Journal of Purchasing and Material Management, and Production and Inventory Management Journal.*

APPENDIX 1

Table 9: Summary of Prior Research on Customer Satisfaction

Researcher	Experimental Environment	Variables Employed
	Results	
Szymanski & Hise [60]	Online store	Convenience / Merchandising / Site design / Financial Security / E-satisfaction
	- A regression coefficient for product offerings with e-satisfaction was not significant - Regression coefficients for convenience, information, site design and financial security were statistically significant. And that of convenience is the greatest among the coefficients.	
Deveraj et al. [17]	Online store	Technology acceptance / Channel transaction cost / Channel service quality / Channel satisfaction / Channel preference
	- Usefulness, ease of use, time and price savings were positively related to EC channel satisfaction. - The factor assurance out of the 4 SERVQUAL elements was positively related to EC channel satisfaction. - In TAM, ease of use had a positive effect on usefulness.	
Montoya-Weiss et al. [45]	Online financial service and university website	Navigation Structure Perception / Information Content perception / Graphic style perception / General Internet expertise / Alternative channel service quality perceptions / Online channel service quality perceptions / Online channel security risk perceptions / Overall satisfaction / Online channel use
	- Online channel service quality was a positive factor for overall satisfaction. - Alternative channel service quality was a positive factor for overall satisfaction. - Security risk perceptions were a negative factor for overall satisfaction. - Navigation structure and information content were positive factors for online channel service quality. - Information content had negative effect on security risk perceptions. - General Internet expertise had negative effect on security risk perceptions, but positively affected on online channel use.	
Muylle et al. [47]	Companies' Web site	Relevancy / Accuracy / Comprehensibility / Comprehensiveness / Ease of use / Entry guidance / Structure / Hyperlink connotation / Speed of Web site / User satisfaction with the information contents / User satisfaction with the connection / Web site user satisfaction / Layout / Language customization
	- Overall user satisfaction with Web sites can be measure by information contents, connection and layout. - User satisfaction with the information contents was composed of relevancy, accuracy, comprehensibility and comprehensiveness. - User satisfaction with the connection was composed of ease of use, entry guidance, structure and speed.	
Khalifa & Liu [29]	Online knowledge community	Pre-adoption expectation / Pre-adoption desires / Pre-adoption expectation disconfirmation / Pre-adoption desire disconfirmation / Perceived performance at adoption / Overall satisfaction
	- Overall satisfaction was predicted by expectation disconfirmation, perceived performance at adoption, desire disconfirmation. - Perceived performance at adoption was a positive predictor of expectation disconfirmation. - Perceived performance at adoption and pre-adoption desires was predictors of desire disconfirmation positively and negatively respectively.	

Table 9: Summary of Prior Research on Customer Satisfaction (Continued)

Researcher	Experimental Environment	Variables Used
	Results	
Shih [53]	Online store	User satisfaction / Perceived information quality / Perceived system quality / Perceived Service quality / Web security & access cost / Perceived usefulness / Perceived ease of use / Attitude / User acceptance
	- Individual attitudes towards e-shopping positively affected user acceptance of digital and physical products. - The hypothesis about the user acceptance was affected partially by the individual perceived ease of use, Web security, access cost, user satisfaction, perceived information quality, perceived system quality and perceived service quality	
Lee et al. [32]	Internet commerce professionals	Shopping enjoyment / Convenience in purchasing / Cost reduction / Time Spent / Time to receive product / Product quality / Customer satisfaction
	- Shopping enjoyment and convenience in purchasing in Internet commerce were significantly related to customer satisfaction. - Reduction time spent in Internet commerce was negatively associated with customer satisfaction. - The effect of product values in Internet commerce was significantly related to customer satisfaction.	
Galletta et al. [19]	Web-environment experiment	Delay / Familiarity / Satisfaction with the site / Intentions to return / Numbers of tasks completed
	- Delay impaired attitudes (satisfaction), behavioral intentions and task performance with diminishing returns. - Satisfaction predicted behavioral intentions. - Familiarity moderates the relationship above.	
Luo & Seyedian [39]	Internet storefront sites	Perceived importance of contextual marketing / Perceived importance of customer orientation marketing / Privacy concern / Site design / Site value / Satisfaction
	- Perceived importance of contextual marketing and customer orientation marketing were determinants of satisfaction. - Sire values mediated the relationships between satisfaction and perceived importance of contextual marketing and customer orientation marketing. - Privacy concerns didn't play a role to moderating between satisfaction and perceived importance of contextual marketing and customer orientation marketing. - Site design moderated between satisfaction and perceived importance of contextual marketing and customer orientation marketing	
Balasubramanian et al. [3]	Online investing	Perceived trustworthiness / Perceived environmental security / Perceived operational competence / Satisfaction / Disposition
	- The trustworthiness influences the satisfaction - The environmental security influences the trustworthiness and the operational competence - The operational competence affects the trustworthiness and the satisfaction - The trust disposition affects the operational competence and the perceived security.	
Kohli et al. [31]	Online store	Intelligence supporting / Design supporting / Choice supporting / Time saving / Cost Saving / Satisfaction
	- The path between intelligence-design and design-choice were statistically significant. - Choice was significantly related to cost savings and time savings. - Cost savings and time savings were all related to satisfaction. - Choice directly effects on satisfaction.	

Table 9: Summary of Prior Research on Customer Satisfaction (Continued)

Researcher	Experimental Environment	Variables Used
	Results	
Cao et al. [11]	Online store	Price satisfaction / Shipping and handling / Product information / Ease of ordering / Product selection / Web site performance / Product representation / On-time delivery / Order tracking / Customer support / Satisfaction with price / Satisfaction with ordering process / Satisfaction with fulfillment process
	- Price satisfaction was a negative predictor to satisfaction with price. - Satisfaction with ordering process was a positive factor for price satisfaction and satisfaction with fulfillment process. - Price satisfaction was a negative factor for satisfaction with fulfillment process, but the authors admit the misunderstanding of the concept *satisfaction* and different data collection procedures.	
Mckinney et al., [42]	Online Airline ticket purchasing	/ Information quality expectation / System quality expectation / Web information quality satisfaction / Web system quality satisfaction / Information quality disconfirmation / System quality disconfirmation / Information quality perceived performance / System quality perceived performance / Web customer satisfaction
	- Web customer satisfaction was related with Web information quality satisfaction and system quality satisfaction. - Web information quality satisfaction was related with Web information quality disconfirmation and relevant perceived performance. - Web information quality expectation was related with Web information quality perceived performance and Information quality disconfirmation. - Web system quality satisfaction was related with Web system quality disconfirmation and relevant perceived performance. - Web system quality expectation was related with Web system quality perceived performance and system quality disconfirmation.	
Kim [30]	Online shopping store, Online brokerage stock market, search portal and online network game site	Firmness[internal stability and external security] / Convenience[information gathering and order processing] / Delight[system interface and communication interface] / Customer satisfaction / Customer loyalty
	- Kim tried to assess the relationships between the dependent and independent variables based on data from multiple organizations in different industries.	
Massad et al. [40]	Newsgroup Websites	N/A
	- Four categories related to customer satisfaction/dissatisfaction are identified in the online-shopping context. - The four categories were information technology interface category, trust category, customer's situation before the encounter category, and perceived employee characteristics and behaviors category. - Each major category has its own subcategory, and these categories can be employed as antecedents for future studies related to service encounter in online shopping contexts.	

APPENDIX 2

Questionnaire Used to Assess Customer Satisfaction With An Online Store

Item No	Questions
PTS 1	I saved time by shopping in the online store.
PTS 2	I saved effort by shopping in the online store.
PTS 3	I spent less time in making this purchase in the online store compared to other stores.
PPS1	I found the online store to be cheaper than other stores.
PWFP 1	The information on the online store site was up to date.
PWFP 2	Information on the online store was relevant to my purchase decision.
PWFP 3	Information on the online store was reliable for making my purchase decision.
PWFP 4	The online store site provided accurate information.
PWFP 5	Information contained the online store was complete.
PWFP 6	The online store site provided sufficient information.
PWAP 1	The layout of the online store site is visually comforting.
PWAP 2	The online store site had user friendly design.
PWAP 3	I like the look and feel of the online store.
PWAP 4	My impression of the atmosphere of the online store site was positive.
PWAP 5	The design of the online store site facilitated the transactions.
PR 1	I was concerned about the security of personal information while using the online store.
PR 2	I was worried about the security of financial transactions while using the online store.
PR 3	I was concerned about that my personal information may be used without my consent.
PDP 1	The online store offered reasonable delivery timing.
PDP 3	The online store delivered the products safely packaged.
PDP 4	The online store supported the capability to track my goods during delivery.
PDP 5	The delivery cost and time of the online store were reasonable.
PCS 1	The online store had empathy for my problems.
PCS 2	The online store employees gave me assurance to solve my problems.
PCS 3	The online store responded to my questions quickly.
IF 1	I am well experienced in using the Internet.
IF 2	I'm familiar with online stores through previous visits and searches for my needs.
IF 3	I'm familiar with online stores through previous purchase.
OCS 1	Overall I was satisfied with this online experience.
OCS 2	Overall I was pleased with this online experience.
OCS 3	I would like to purchase in this store again.