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A descriptive model of online shopping process: some empirical results

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Keywords Internet, Home shopping, Data security, User satisfaction

Abstract Since early 1990s, tremendous growth of e-commerce has transformed the world retail infrastructure rapidly. Although the Internet burst between 2000 and 2002 which slowed down the rage in the financial market, the Internet infrastructure continues to grow and becomes an integral part of market strategic portfolio for many organizations. In order to be successful in the Internet niche, many retailers engage in business model reengineering to keep up with changes in how customers acquire goods and services. Based on in-depth interviews and a follow-up survey, the present study depicts a common online shopping process and identifies three common online shopping components: interactivity, transaction, and fulfillment. These components and their respective factors form one's online shopping experience. Managerial implications and future research directions are offered.

Introduction

The explosive expansion of e-commerce since the 1990s has dramatically changed the retail landscape in the world economy. In the USA, the combined monetary value for Internet-related businesses is expected to grow to around \$1.4 trillion by 2003 (Davis, 1999). In the business-to-business sector, Internet technology facilitates numerous changes in corporate infrastructure in information exchange and procurement and distribution process. While the business sector accounts for most of the value of Internet commerce, rapid growth in the retail sector propels retailers to tap into this vast, yet unpredictable, business domain. In the fourth quarter of 2002, online retail sales reached \$17.44 billion, an increase of 40 per cent from the same period a year ago (*eWeek*, 2003).

The fast advancement of the Internet infrastructure presents new opportunities that are rarely seen in the world economy. With assistance from the latest development in communication and information technology, online marketers rush to establish positions in newly identified niches in an attempt to acquire new competitive advantages. One distinctive advantage for Internet marketers is the ability to reach a large number of consumers scattered around in various geographic locations, particularly in hard-to-reach areas, in a matter of minutes or hours (Strauss and Frost, 1999). Another advantage is the ability to reach out to younger generations that are heavily sought after by marketers. Adding Internet advertising to the promotional mix has become a common strategy used by major advertising agencies and marketers (Bush *et al.*, 1998; Johnson, 1997; Schlosser *et al.*, 1999). It has been reported that



banner advertising on Web pages is as effective per exposure as a typical TV commercial (Briggs and Hollis, 1997). With more than 40 per cent of the US population estimated to be online in 2003, marketers have to contemplate how to connect with online users effectively and efficiently (Chiger, 1999; Rowell *et al.*, 1999). In some foreign markets, the Internet has become a staple item in many households. Lynch and Beck (2001) reported a study that outlines the profiles of online shoppers in 20 countries and shows support for regional strategies to tap into various regional markets.

While the Internet becomes readily accessible, more consumers learn to look for product information from the Internet prior to making purchases. Many early online marketers used price as bait, along with detailed product information, to lure consumers to their sites. Because of the intense competition for new customers, numerous Internet marketers spent excessive amount of expenses to acquire new customers. In comparison with other marketing expenses, customer acquisition cost represents a major marketing cost for Internet companies. For example, E*Trade had one of the highest acquisition costs per customer of \$410 in 1999. The early acquisition costs for Amazon.com and eBay were \$28 and \$11, respectively (Cross, 1999). Other online marketers such as Priceline.com and Mothenature.com have used cash incentives to attract new customers. Soon after its initial launch, in an effort to generate greater sales revenue, Priceline.com sometimes opted to absorb the price difference when none of its suppliers would accept a customer-specified price. Similarly, Mothenature.com provided simple cash discounts to new customers during its introductory period. A number of online retailers offered free shipping to boost sales during the 2002 Christmas shopping season (Gonsalves, 2003) to lure customers. Others, such as OfficeMax and Amazon.com, formed strategic alliances using cross links to add exposure and competitive advantages in the seemingly endless online universe (Menon and Kahn, 2002; Pringle, 1998; Varadarajan and Cunningham, 1995). Service marketers, such as banks and realtors, also look for opportunities to enhance market positions by adding the Internet to their service mix (Furash, 1999; Surati, 1999).

The evolving online retailing infrastructure

Traditional retailers and marketers join the Internet frenzy by following various strategies. Some retailers created separate, independent, Internet-based companies or subsidiaries, such as Barnesandnoble.com. Most retailers and marketers have chosen to add the Internet to their existing marketing channel mix (e.g. OfficeMax, CompUSA, Puritan Pride, and Toys”R”Us). Others use the Net as a public relations tool by providing fun or informative Web sites (e.g. General Mills, Kellogg’s, Disney, and Nintendo). These companies utilize the Internet medium as a way to manage their long-term customer relationship as well as to enhance their on-going relationship marketing programs (Berry, 1995; Pepper and Rogers, 1996; Sheth, 1995; Varadarajan and Cunningham,

1995). Yet other companies, like Toshiba USA, Compaq, and Hewlett Packard, use the Internet as a way to provide after-sales services, such as accepting orders for replacement parts and supplies and providing online technical assistance (Loughlin, 1999).

The dramatic growth in e-commerce also introduces new challenges. More consumers lodge complaints with various consumer agencies (Gordon, 1999). The most common types of complaints on Internet transactions include refund and billing disputes, return and exchange policies, defective products, and poor customer services. Inadequate infrastructure, lack of trust, and privacy and security concerns often lead to lost sales (Yianakos, 2002; Grabner-Kraeuter, 2002). Online shoppers are known for low tolerance. It was estimated that, on average, online shoppers only waited for eight seconds for system feedback before bailing out (Dellaert and Kahn, 1999). Managing waiting experience becomes a necessary task to neutralize the potential negative effects of waiting. A Web page designer has to consider not only appearance and functionality, but also loading time (Weinberg, 2000). Disparity in customer services among Internet marketers can be found when comparing several online retailers' purchase policies. Reputable online marketers, such as Amazon.com and Barnesandnoble.com, install secure and comforting policies to manage their relationships with online shoppers. However, lesser-known online marketers often have less assuring policies, such as requiring customers to pay for return shipping charges for products that are defective on arrival.

Why consumers shop online

An important managerial question is why consumers choose to shop online. The two most commonly cited reasons for shopping on the Internet have been price and convenience. The ability to shop online without leaving the house or office and to have the ordered products delivered to the door is of great interest to many consumers. In addition, the use of price as a bait to win over consumers is evident in the success of Amazon.com who heavily advertises lower prices for the same books one can find from local bookstores. Also, the Internet allows for efficient price search and comparison by employing Internet tools such as recommendation agents, allowing consumers to screen alternatives online, and comparison matrix, an online matrix with in-depth comparisons among selected alternatives (Haubl and Trifts, 2000). With a simple request, a service site, such as Yahoo Shopping and Bizrate, can provide a quick price comparison among several online vendors. It makes sense for consumers, who know what they are looking for, to search the Net and find an Internet marketer who is able to offer competitive prices. For consumers who are not certain about which products best serve their needs, the Internet has become a convenient and rich source of information for product comparisons. Compared with traditional brick-and-mortar retailers, online marketers often offer extensive product information on demand. On the other hand, privacy and

security have been of great concern for Internet shoppers (Grabner-Kraeuter, 2002; James, 1999; Kiely, 1997; Yianakos, 2002).

To understand the consumer's motivation and the future of Internet marketing, it is imperative to learn how consumers value and perceive their online shopping experience. Using a national sample of 2,500 cable subscribers, Eastlick and Lotz (1999) provided an early empirical research in describing differences between adopters and non-adopters of online shopping medium. They found that many early adopters are male, young, highly educated, and knowledgeable in technology. Haubl and Trifts (2000) found that interactive tools might have favorable effects on the quality and the efficiency of purchase decisions. Childers *et al.* (2001) examined hedonic and utilitarian motivations and showed how these motivations influence one's online shopping behavior.

Research objectives

An ensuing managerial issue has been how to evaluate the quality of the consumer's online shopping experience. In the long run, online marketers who are able to maintain competitive advantages in providing superior shopping experience are more likely to prosper in the highly competitive Internet marketplace. To measure the online shopping experience, it is imperative to understand one's online shopping process and how various stages of the process form one's shopping experience.

In the present study, the following issues are examined:

- How do online shoppers describe their online shopping process?
- Is there a common model of online shopping process?
- What are the fundamental dimensions of one's online shopping process?
- How do the underlying dimensions influence online shoppers' satisfaction with their online purchases?

In-depth interviews

In-depth interviews were conducted with 35 consumers, from a major US metropolitan area in the spring of 2001, who had purchased at least once from the Internet in the past 12 months, to gain insight into consumers' online shopping process and their perceived online shopping experience. Consumers were asked to elaborate on the following issues:

- past online purchases;
- reasons for buying from the Internet;
- self-described online shopping process and experience;
- intention for repeat purchase; and
- issues and concerns for online purchases.

The results indicated that respondents bought a wide variety of products online. Books, music CDs, airline tickets, computers, and computer peripherals

and supplies were the most frequently mentioned products. When asked why they chose to shop from the Internet, price and convenience were the two main reasons. In addition, respondents also mentioned it was fun to shop and browse on the Internet. For some hard-to-find items, such as supplies and replacement parts for out-of-date computer products, the Internet might be the only source. A few consumers also liked the large selection of products offered by Internet marketers and the advantage of no local sales tax. Among various concerns or complaints about their online transactions, not being able to touch and feel the product was a major issue. Respondents also complained about return and exchange policies of some Internet vendors. Security and privacy were also mentioned, as expected, as two important factors. All respondents indicated positive intentions for future online purchases.

Compiling respondents' responses to their self-described online shopping process, three common components were identified. The first component, "interactivity", includes those factors that link shopping with the online shopping site such as Internet connection, Web site design and appearance, and system capacity. The interactivity component is analogous to the physical shopping environment in a typical retail store. The second component, "transaction", contains factors that directly affect one's purchase decision, such as price, convenience, and security. The third component, "fulfillment", encompasses factors such as delivery, exchange and return policies, and post-purchase services.

Interactivity

A shopper's Internet shopping experience starts with the interactivity issues between online shoppers and the Internet marketer. Based on interviewees' responses, the most frequently mentioned interactivity issues were Internet connection, Web site design, maneuverability, and waiting time. A few respondents expressed frustration in long wait for system feedback and difficulty in maneuver within some Web sites. Some interviewees experienced unreliable connection and had to redo the complete ordering process because of assorted reasons, including system interruptions and ISP-imposed idle time limit.

Three major components are involved: the consumer's connection quality, ISP's overall quality, and the vendor's connection quality. While an Internet marketer does not have direct control over consumers' and ISPs' connection capability, it can improve a consumer's shopping experience by offering a well-designed Web site to make maneuver easier and to provide adequate capacity to prevent system overload. A well-designed Web site may also effectively manage a customer's waiting experience with special features to neutralize the potential negative effects (Dellaert and Kahn, 1999). Managing the interactivity of one's online shopping experience is comparable to managing the physical contact in a traditional store. Novak *et al.* (2000) conducted an online survey with highly experienced users and found that one's focused state of mind arises as a result of achieving flow on the Web. Interactivity is cited as one of the

conditions for achieving flow. Inadequate interactivity interrupts one's flow and may lead to lost sales. Interactivity factors may help shape one's attitude toward a Web site (Chen and Wells, 1999).

Transaction

A list of transaction-related items was compiled from the in-depth interview results. These items were grouped into five common factors:

- (1) value;
- (2) convenience;
- (3) assurance;
- (4) evaluation; and
- (5) entertainment.

Each of the five factors is a function of a number of related factors. The value factor consists of the price and quality factors. Convenience includes location, time, and variety. Assurance is determined by privacy, security, and purchase policies. Product information and the ability to offer customized comparison determine the evaluation component. Finally, the entertainment component is determined by the fun and novelty factors. Many of the compiled factors were also found in previous studies (e.g. Novak *et al.*, 2000; Roberts *et al.*, 2003; Shiu and Dawson, 2002).

Fulfillment

Interviewees were concerned with delivery schedule and options, excessive shipping and handling charges, warranty services, return and exchange policies, availability and quality of technical support, etc. Post-sales services and related technical support are also important factors that determine the quality of the fulfillment component. A transaction might be terminated based on one's concern over one of the post-purchase factors. How Internet orders are processed and delivered may affect how shoppers perceive Internet marketers (Jedd, 2000).

An overall model of Internet shopping process

Based on the in-depth interview results, an overall model of Internet shopping process emerges with the three key components:

- (1) interactivity;
- (2) transaction; and
- (3) fulfillment.

Figure 1 shows the complete online shopping process from one's PC to post purchase satisfaction. The model is a general model that is commonly described by most respondents.

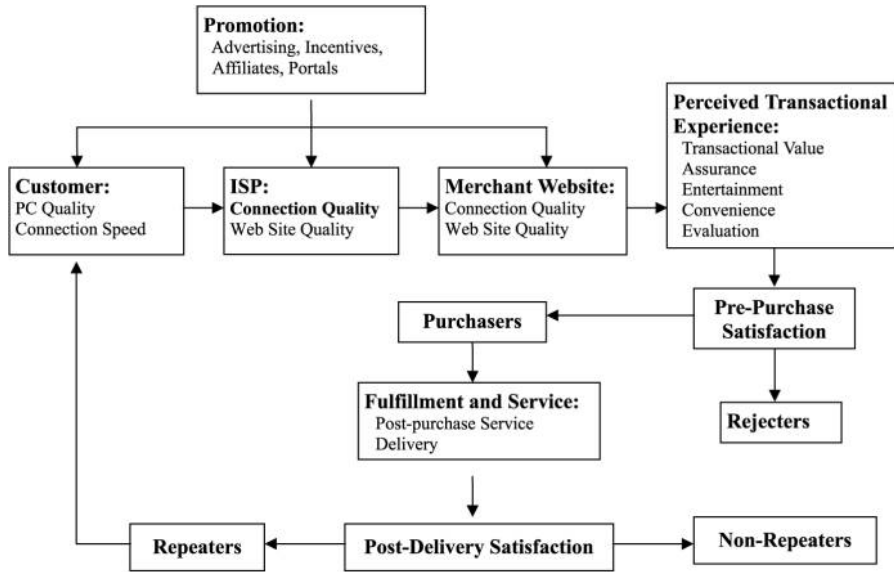


Figure 1.
The descriptive model of online shopping process

Based on the descriptions shown in Figure 1, an online shopper's purchase experience is expected to be influenced by the above three components and their respective factors to various degrees. Their relationships are illustrated in Figure 2.

The survey

A questionnaire was developed based on the findings from the in-depth interviews. Interactivity was measured by a 12-item scale that addresses respondents' evaluation of connection quality (e.g. speed and reliability) and maneuverability (e.g. Web site design, ease of search, and load time) as related

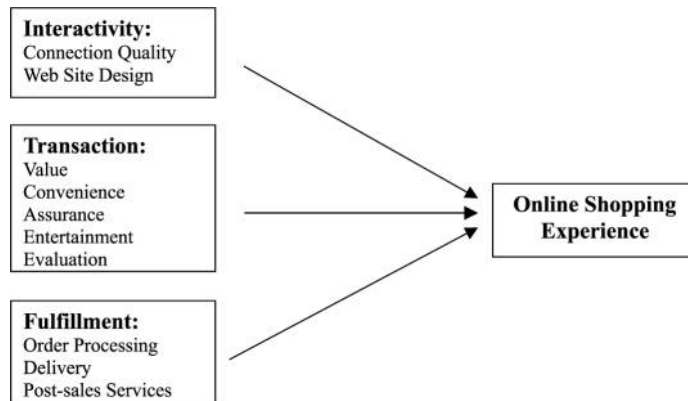


Figure 2.
Determinants of online shopping experience

to the respondent, ISPs, and Internet vendors. An 18-item scale was used to estimate the transaction factor along five items:

- (1) value;
- (2) convenience;
- (3) assurance;
- (4) evaluation; and
- (5) entertainment.

Fulfillment was measured by a seven-item scale, which included items of order processing, shipping arrangement, delivery speed, technical support, customer service, return and exchange policy, and warranty service. An overall satisfaction measure, online shopping patterns, past online purchases, and other related items were also included in the survey. The questionnaire was revised and validated based on a pretest with 15 experienced online shoppers.

Prospective online shoppers were selected and recruited using a hybrid cluster/referral sampling procedure (McDaniel and Gates, 1996). The market area was first divided into 225 neighborhood blocks. A total of 20 blocks were randomly selected. Interviewers were instructed to contact and recruit a number of respondents in their assigned, pre-selected neighborhood blocks. Respondents were requested for referrals for other potential online shoppers residing in the same neighborhood. The procedure yielded 306 valid responses and was completed in early December of 2001. In comparison with the overall market characteristics, participants were similar to those of the market area, though the sample respondents were younger, more affluent, and more educated. While the sample characteristics differ from the population in the market area to some extent, those differences were consistent with findings from previous studies (e.g. Eastlick and Lotz, 1999).

Results

Overall, 70.5 per cent of respondents indicated that they are very likely or likely to purchase from the Internet again in the next six months. Table I shows the percentages of respondents who have purchased from each product category in the previous 12 months and which products' respondents expect to purchase in the coming six months. The results show strong increases across all product categories. Books, music CDs and tapes, and airline tickets have the highest interest level. Overall, respondents anticipate making more purchases from the Internet in the next six months.

When asked to select one primary reason for shopping online, among the five common factors, convenience is the most frequently chosen reason for shopping online, followed by value. When asked to rank all of the five factors,

Products	Have bought in the previous 12 months (%)	Will purchase in the next six months (%)
Airline tickets/travel packages	41	65
Books	40	61
Music CDs/tapes/video tapes/accessories	36	70
Clothing/accessories	24	41
Computer accessories/peripherals/supplies	22	31
Electronics	14	33
Toys	12	26
Vitamins/food supplements	10	22
Stock brokerage services	10	20
Office/school supplies	6	13
Personal/notebook computers	5	12
Furniture	4	8
Automobiles	3	8
Delivery services	3	7
Antiques	3	3
Home appliances	2	7
Groceries	0	4

Table I.
Product bought and
intention to buy

Note: Based on a sample size of 306

value is ranked as the most important, followed closely by convenience. Value and convenience are clearly the two main reasons that respondents shop online.

Respondents' online shopping experience was measured by multiple items related to the factors of interactivity, transaction, and fulfillment. An overall rating of 4.34 on a five-point scale for an overall satisfaction measure indicates a high level of satisfaction. Among all respondents, 87.1 per cent indicate that they are satisfied or very satisfied with their online shopping experience.

Effects of online shopping factors

Factor analysis was employed to estimate the three components of online shopping experience: interactivity, transaction, and fulfillment. An overall interactivity measure was obtained via a single factor analysis, which explains 42 per cent of the total variance ($\alpha = 0.91$). Similarly, two single factor solutions were obtained, explaining 39 per cent of the total variation of the transaction factors ($\alpha = 0.85$) and 45 per cent of the total variation of the fulfillment factors ($\alpha = 0.81$), respectively. For the transaction component, a five-factor solution was obtained. Overall, the five-factor solution explained 65 per cent of total variation. The factor structure is generally congruent with the expected structure (Table II). The five factors were identified as:

- (1) convenience;
- (2) evaluation;
- (3) entertainment;

Items: (on five-point Likert scale)	Convenience	Evaluation	Entertainment	Assurance	Value	Mean	Model of online shopping
1. The Internet vendor offered a large selection	0.90	0.21	0.13	0.18	-0.04	3.98	565
2. I was able to find what I wanted very easily	0.37	0.83	0.17	0.41	0.02	4.04	
3. It was fun shopping with the Internet vendor	0.47	0.18	0.74	0.35	0.12	3.61	
4. It was convenient to shop with the Internet vendor	0.82	0.39	0.32	0.43	0.09	4.15	
5. It saved me a lot time in shopping	0.77	0.23	0.29	0.37	0.26	4.06	
6. It was nice to be able to place the order at the time convenient to me	0.85	0.29	0.27	0.36	0.00	4.27	
7. I was able to save money with my order	0.33	0.05	0.28	0.40	0.73	3.77	
8. The transaction was very secure	0.57	0.20	0.28	0.76	0.08	3.91	
9. Specific product information was usually offered when requested	0.27	0.74	0.31	0.58	0.21	4.15	
10. The transaction was of considerable value	0.45	0.03	0.46	0.42	0.57	3.74	
11. There was no privacy concerns involved with the transaction	0.24	0.15	0.26	0.63	-0.42	3.42	
12. I was exposed to some new and interesting products	0.20	0.27	0.78	0.33	-0.03	3.49	
13. It was an entertaining shopping experience	0.54	0.27	0.71	0.38	0.21	3.81	
14. I was able to place order at the place convenient to me	0.60	0.25	0.16	0.52	0.28	4.01	
15. The vendor provided adequate privacy assurance	0.18	0.37	0.15	0.70	-0.06	3.58	
16. I was able to adequately evaluate each product alternative	0.28	0.69	0.39	0.23	0.24	3.88	
17. The transaction is very secure	0.48	0.19	0.20	0.81	0.01	3.97	
18. The vendor offered information on many alternative products	0.21	0.90	0.13	0.18	-0.04	3.68	

Table II.
Factor analysis on transaction component

- (4) assurance; and
- (5) value.

For analysis, the factor scores of single factor solutions were used in the subsequent analysis in testing the individual effects of interactivity, transaction, and fulfillment. For all factor analyses, we followed the procedure to exclude observations (respondents) with any missing values.

Regression analyses were employed to examine the effects of the interactivity, transaction, and fulfillment factors on the overall satisfaction, which was measured by a five-point Likert scale on the degree of agreement that the respondent was very satisfied with the online transaction. First, effects of the interactivity, transaction, and fulfillment factors were estimated separately by single regression analysis. The results indicate that transaction has the greatest simple effect among the three factors, while all three factors show a significant effect ($p < 0.01$ for all three factors; see Table III). When all three factors were included in a multiple regression model, only transaction and interactivity have a significant effect. This finding indicates a strong correlation among the three factors. The multiple regression model explains 31 per cent of the total variation in overall satisfaction of online shopping experience.

Further analyses were conducted to examine the effects of the five items of the transaction component on online shopping experience. Again, individual effects of the five components were estimated using simple regression analyses. All standardized betas are significant at the 0.01 level. As expected, convenience has the greatest effect, closely followed by value. When all five components were included in a multiple regression model, only the convenience, value, and evaluation factors have a significant effect. The results suggest a strong correlation among the five components of the transaction factor.

Dependent variable	Overall satisfaction ^a	Overall satisfaction ^b	Overall satisfaction ^a	Overall satisfaction ^b
<i>Independent variables</i>				
Interactivity	0.425*	0.218*	–	–
Transaction	0.524*	0.423*	–	–
Value	–	–	0.463*	0.199*
Convenience	–	–	0.473*	0.227*
Assurance	–	–	0.382*	0.038
Evaluation	–	–	0.422*	0.163**
Entertainment	–	–	0.324*	0.025
<i>Fulfillment</i>	0.411*	–0.008	–	–
<i>R-square</i>	–	0.310	–	0.290
<i>n</i>	306	306	306	306

Table III.
Effects of interactivity, transaction, and fulfillment on overall satisfaction of online shopping experience

Notes: ^a Standardized beta coefficients based on single regression analysis; ^b Standardized beta coefficients based on multiple regression analysis; * $p < 0.01$; ** $p < 0.05$

Discussion

Online shoppers from a major US metropolitan area reported a high level of overall satisfaction and strong intention to repeat online purchases. Online shopping experience is found to be influenced by various factors related to interactivity, transaction, and fulfillment. The three factors encompass various aspects of online shopping experience and are good indicators of one's overall satisfaction with online shopping, as evidenced by the significant individual simple effects as well as joint effects of the three variables.

Managerial implications

Internet marketers need to be aware of the overall online shopping process and how various components of the shopping process affect one's online shopping experience. The importance of interactivity is manifest by its strong association with overall satisfaction. Further examination reveals that the quality of Internet service providers (ISPs) has a significant effect on one's Internet shopping experience, though Internet marketers may not have control over ISPs. This complicates the task for the Internet marketer in improving the online shopping environment. In some cases, a marketer may have to resolve issues related to ISPs' operations. An extreme measure may be to incorporate an ISP into an online marketer's overall Internet infrastructure. For example, some Web sites have to make some adjustments to AOL's configurations because of AOL's dominant position. A joint program by Yahoo! and K-Mart to provide free pre-configured ISP for potential online customers illustrates a more aggressive approach in dealing with this issue. Some online stock brokerage firms provide personal computers or wireless hand-held computers and Internet access for selected customers in an attempt to improve the overall interactivity quality and make the customer's online trading/shopping experience more efficient and effective.

The transaction factor is an integral part of online shopping. To online consumers, convenience and value are unmistakably the fundamental benefits. Internet marketers need to create and maintain superior performance in various convenience and value factors to build long-term sustainable competitive advantages. Ability to conduct careful product evaluation is another distinctive advantage for Internet marketers. Marketing managers need to continue to provide adequate and easy-to-access product and comparison information to facilitate online transactions.

Finally, fulfillment is a factor that cannot be ignored. Fulfillment is an important means to improve one's confidence in online transactions. In addition, superior fulfillment quality provides greater convenience for consumers.

Limitations

There are some limitations inherent with this study as with many survey studies. First, we used self-report measures, although this approach has been widely used in previous studies (e.g. Novak *et al.*, 2000). Second, the results may be idiosyncratic and subject to individual differences. The patterns observed in

this study may only be limited to the study sample. Third, the sampling method is not without concern. While the selection of neighborhood blocks was random, using referrals to identify additional qualified respondents may limit the generalizability of research findings. Finally, this study, like other survey research, is subject to common limitations such as nonresponse error, incomplete sampling frame, etc.

Future research implications

Future research needs to address the measurement issue on the quality of online shopping experience and to closely investigate how one's shopping experience and various factors determine future online patronage (e.g. Mathwick *et al.*, 2001). Based on the results from the present study, a multi-dimensional scale may be developed along various salient factors, such as value, service, security, fun, convenience, and others. Future research may examine alternative actionable strategies to improve the customer's online shopping experience. Attention should also be given to potential moderators and mediators. As the Internet has become a permanent fixture in many marketers' portfolios, more research effort is needed to better understand the nature of the online shopping process and experience.

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