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# **An Exploratory Study of Consumer Adoption of Online Shopping: Mediating Effect of Online Purchase Intention**

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## **ABSTRACT**

*An exploratory study was conducted to investigate consumer adoption of online purchase using a survey data set. Based upon the theory of innovation and self-efficacy theory, risk aversion, online proficiency, shopping convenience, and product choice variety were proposed to influence consumer intention to shop online, which, in turn, affects online purchases. Results of regression analyses revealed that all but shopping convenience were significant predictors of consumer intention to purchase online. In addition, consumer intention directly determines consumer purchases online. Finally, consumer intention to purchase online mediates the relationship of risk aversion, shopping convenience, and product choice variety to online shopping. Research and managerial implications of the findings were discussed.*

*Keywords: consumer adoption; electronic commerce; online purchase intention; online shopping; perceived attributes of innovation*

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## **INTRODUCTION**

Internet as a medium of business transaction has gained in importance in spite of the dot-com bubble burst we witnessed at the end of the century. Jupiter forecasts that online retail sales will surge to a new level, reaching \$117 billion in 2008, representing 5% of total retail sales in the U.S. (Gonsalves, 2004). Although the trend of online shopping continues and shows no sign of slowdown, Internet re-

tailing is far from reaching its full potential; only about 3% of Internet users actually make an online purchase (Betts, 2001), a particularly low percentage that must be improved in order to usher in the new era of e-commerce.

The purpose of this study is to explore the factors influencing consumer adoption of innovation in the case of online shopping. The research question is among all Internet users who are likely to make a commercial transaction

through the Internet, a topic of importance and yet under-researched. In the past, many Internet firms provided free services or services for a nominal fee, a business model that turned out to be fragile and unsustainable, one of the reasons the dot.com bubble burst (Guo, 2002). As millions of consumers enjoyed the free ride that Internet technology had to offer, the challenge facing online businesses was and always has been to distinguish valuable consumers from those cheap riders who take full advantage of amenities that new technology provides, such as free e-mail and networking, but who are not willing to spend money or symbolically consume in the online community. This task is critical to company success, as e-businesses learned the lesson the hard way that they cannot treat every customer or potential customer the same, simply because not all consumers are created equal.

The organization of this article is as follows: a literature review is conducted to develop research hypotheses that are tested, followed subsequently by methodology and results analysis. Limitations and implications of the results are also discussed.

## LITERATURE REVIEW

### Theoretical Foundations of Consumer Adoption of Innovation

Consumer adoption of innovation has received considerable attention among consumer researchers and is used most frequently to determine any diffusion of innovations. Classic studies from innovation literature argue that innovation adoption is related to the attributes of the innovation as perceived by potential adopters (Rogers, 1995; Rogers & Rogers, 2003; Rogers & Shoemaker, 1971). Any innovation can be described along the following five characteristics: relative advantage, compatibility, complexity, trialability (costs), and observability (communicability). Moreover, recent studies specifically have integrated technology acceptance model (TAM) with consumer adoption of online shopping (Koufaris, 2002; Gefen,

Karahanna, & Straub, 2003). TAM consists of perceived usefulness and ease of use and is a well-known theory of technology acceptance.

Consistent with perceived usefulness in TAM, an innovation's relative advantage is defined as "the degree to which an innovation is perceived as being better than the idea it supersedes" (Rogers, 1995, p. 213). In their meta-analysis, Tornatzky and Klein (1982) found relative advantage to be positively related to adoption. Shopping convenience and product choice variety can be considered as relative advantage and perceived usefulness, as literature suggests that these two are of primary concerns in order for consumers to accept the Internet as a shopping medium (Bellman & Lohse, 1999). Further, the belief related to perceived usefulness influences consumers' intentions to shop online (Gefen, Karahanna, & Straub, 2003).

Rogers (1995) defines compatibility of an innovation as the "degree to which an innovation is perceived as being consistent with the existing values, past experiences, and needs of the potential adopter" (p. 223). Research found that compatibility facilitates innovation adoption (Damanpour, 1991). As consumers are concerned with transaction security and information privacy issues associated with online shopping (Novak, Hoffman, & Yung, 2000), risk aversion is a useful construct to tap the risk differential between online shopping and off-line shopping, which is the compatibility gap between existing lifestyle (e.g., brick-and-mortar shopping) and new behavior (online shopping). Furthermore, the issue of trust has become an even more significant reason whether consumers will shop online (Hoffman, Novak, & Peralta, 1999).

Contrasted to perceived ease of use, complexity is the degree to which the new innovation is perceived as difficult to use. Resulting from individual differences, online shopping is still perceived as difficult to comprehend for some groups of consumers. As such, self-efficacy theory becomes relevant to the discussion. Self-efficacy refers to the individual's belief about his or her capability and motivation

to execute and to perform the course of action required to produce a given accomplishment or outcome (Bandura, 1977). It concerns not only the skills one has but also the judgments of what one can do with whatever skills one possesses, which mainly reflects an individual's self-confidence in his or her ability to perform a task. Online shopping proficiency is an individual's perceived skills and knowledge in consummating an online transaction. Consisting of online experience, knowledge, and education, online proficiency could facilitate any online search and other online activities (Kulviwat, Guo, & Engchanil, 2004). Thus, online proficiency is proposed as one of the four factors influencing consumers' decisions to shop online.

While trialability is the degree to which the innovation can be experimented with prior to confirmation, observability is the degree to which the innovation is visible to others. Trialability and observability are not very relevant in this present context, given that the Internet is widely and easily accessed nowadays, so its cost seems less important. Also, most companies provide a trial period and result guarantee in order to provide peace of mind to consumers and to attract consumers. This contention is consistent with the innovation literature that the first three attributes are considered the most significant in affecting innovation adoption (Moore & Benbasat, 1991; Tornatzky & Klein, 1982). Next, we discuss how the four determinants affect consumer innovativeness in terms of online shopping.

### **Risk Aversion**

Internet adoption by U.S. households is a fairly rapid process compared to television. Within a short period of six years or so from 1994 to 2000, more than half of households had access to the Internet. It took more than double that amount of time for the same percentage of households to embrace color TV (Angwin, 2001). The number of consumers with Internet access is not small, but the problem facing e-businesses is that the conversion rate, the percentage of online users that actually make an

online purchase, is low (Betts, 2001). If we can find determining factors separating Internet users who are likely to shop online from those who are not likely to or never will participate in commercial exchanges over the Internet, e-businesses will be better able to devise marketing programs to attract and induce target consumers to spend online.

In an interesting project, researchers used a sample of one person to study online shopping behavior (Levy, 2001). After carefully examining marketing professor Bruce Weinberg's Internet shopping diary (Weinberg, 2000), Professor Brunel pointed out that consumers must have special incentives before switching to online shopping from a brick-and-mortar environment, because there are burdens as well as benefits with online shopping (Weinberg, 2001).

In the business literature, hygiene factors are an important concept in human resource management (Jansen, van der Velde, & Telting, 2001). Hygiene factors are those fundamental rights that employees desire in a workplace, such as fairness and job security. With unsatisfactory hygiene factors, workers will be very unhappy in their organization. On the other hand, employees will not be motivated to work extra hard, even if those hygiene factors are all taken care of, because they are deemed as basic working conditions (Levinson et al., 1962). There may exist hygiene factors in the context of online shopping (Zhang & von Dran, 2000). Burdens of online shopping could serve as a hygiene factor. As widely discussed in the literature, privacy and security issues are a major concern relating to online shopping (Caudill & Murphy, 2000; Miyazaki & Fernandez, 2001). Annihilation of privacy and security issues may not make everyone shop online, but an outstanding problem in that regard surely will discourage consumers from shopping through the Internet. In fact, 53% of consumers would shop online if more secure payment options were made available (Rheault, 2004). This is consistent with White and Truly's (1989) assertion that risk perceptions are negatively related with willingness to buy. Further, prior research has shown that as perceived risk of

online purchase decreases, consumers' intentions to purchase online increase (Garbarino & Strahilevitz, 2004). Thus, we propose the following hypothesis:

**H1:** Risk aversion is negatively related to adoption intention of online shopping.

### Online Proficiency

Derived from self-efficacy theory, online proficiency refers to the judgment of one's ability to shop online. Individuals with high online proficiency tend to perceive online shopping as easy to use (opposite of complexity). Before jumping into shopping online, consumers must have a working knowledge of the computer and the Internet. In other words, online experience is a prerequisite to online shopping. Although most consumers are receptive to new technology, the digital divide separates people into two classes: the haves and the have-nots. Unfortunately, this adversely affects the expansion of e-commerce (Williamson, 2001). Some parental concerns, such as sexually explicit and violent material on the Web and conversing with strangers in the chat-room, further constrict the potential use of the Internet among youth (Devi, 2001). Even young adults have genuine fears toward the Internet (Grant & Waite, 2003).

Not only must fear be removed among people toward the Internet, but positive online experience is also necessary before consumers will feel comfortable enough to shop online. Online proficiency is posited to influence behavioral intentions to shop online. Several empirical studies confirm this contention. For instance, Agarwal and Karahanna (2000) found that perceived ease of use of an information technology influences behavioral intention to use the information technology. Moreover, Novak, Hoffman, and Yung (2000) suggested that online experience may be related to online intention to shopping. In fact, Koyuncu and Lien (2003) found that people with more online experience are more likely to order over the Internet, especially when they are in a more private and secure environment such as home.

Since online proficiency is derived from online experience, we propose the following:

**H2:** Online proficiency is positively related to adoption intention of online shopping.

### Shopping Convenience

Shopping convenience for online customers means time savings and ease of Internet use for shopping purpose (Seiders et al., 2000). Bhatnagar et al. (2000) suggested that the likelihood of online purchasing increase as the consumer's perception of Internet shopping convenience develops. Evidence indicates that consumers who value convenience are more likely to buy on the Web, while those who prefer experiencing products are less likely to buy online (Li et al., 1999).

To enhance consumers' online adoption intentions, a company should try to give its customers a memorable experience; as a result, customers will be more willing to buy on the Web. A company can provide a memorable experience to its customers by managing the customer's touch point (Zemke & Connellan, 2001). A touch point is anywhere a customer comes in contact with the company's Web, including ads, links, search capabilities, and other processes. A company should consider customer touch points as moments of truth. Each is an opportunity for the customer to make positive or negative judgments about the company. When customers have positive experience and find shopping online convenience, then it is more likely that they will be willing to adopt that medium for shopping.

Since Internet shopping can be viewed as an innovation (Mahajan & Wind, 1989; Peterson et al., 1997), a similar shopping channel such as catalog shopping may affect consumers' willingness to engage in online shopping, because they resemble each other in some ways (Dickerson & Gentry, 1983; Taylor, 1977). Taylor (1977) found a positive relationship between usage of a product class or service and adoption of its related products. Thus, prior knowledge of the products or services in a class may lead to an increased ability to detect supe-

rior new products in that category and, hence, to contribute to the probability of adoption.

Despite the fact that myriad people today have access to the Internet for various functions (Peterson, 1997), a small percentage of these individuals actually utilizes this medium for electronic commerce (Schiesel, 1997). Hirschman (1980) provides a potential explanation for this phenomenon, suggesting that to transform vicarious adopters to actual purchasers of the innovation, actualized innovativeness or consumer creativity may need to be present. Thus, a person who has had a good experience in the past with catalog shopping (e.g., convenience) will be more willing to try a similar shopping avenue: online shopping.

**H3:** Shopping convenience is positively related to adoption intention of online shopping.

### Product Choice Variety

As the Internet connects personal computers around the globe, it creates a perfect platform for informational exchanges between people who otherwise are dispersed geographically. People disseminate, share, and retrieve information through the Web at their fingertips. As technology trims down the search cost to a minimum (Peterson & Merino, 2003), it encourages consumers to search for more information about a variety of products. Furthermore, search engines and comparison-shopping sites customize product information to consumers' unique needs and likings (Hoffman & Novak, 1996), giving consumers the ownership over the information. This maneuverability in combination with sheer volume of information dramatically increases information search scope and depth and enhances product choices for consumers. Compared to off-line shopping, the Internet offers not only a wide variety of information, but it also offers varying choices of brands and product types (Lynch & Ariely, 2000). Rohm and Swaminathan (2004) recently found that variety-seeking behavior is an important factor for online shopping motive. Thus, this is likely to be a significant motive to influ-

ence consumer adoption intention to shop online.

**H4:** Product choice variety is positively related to adoption intention of online shopping.

### Online Purchase

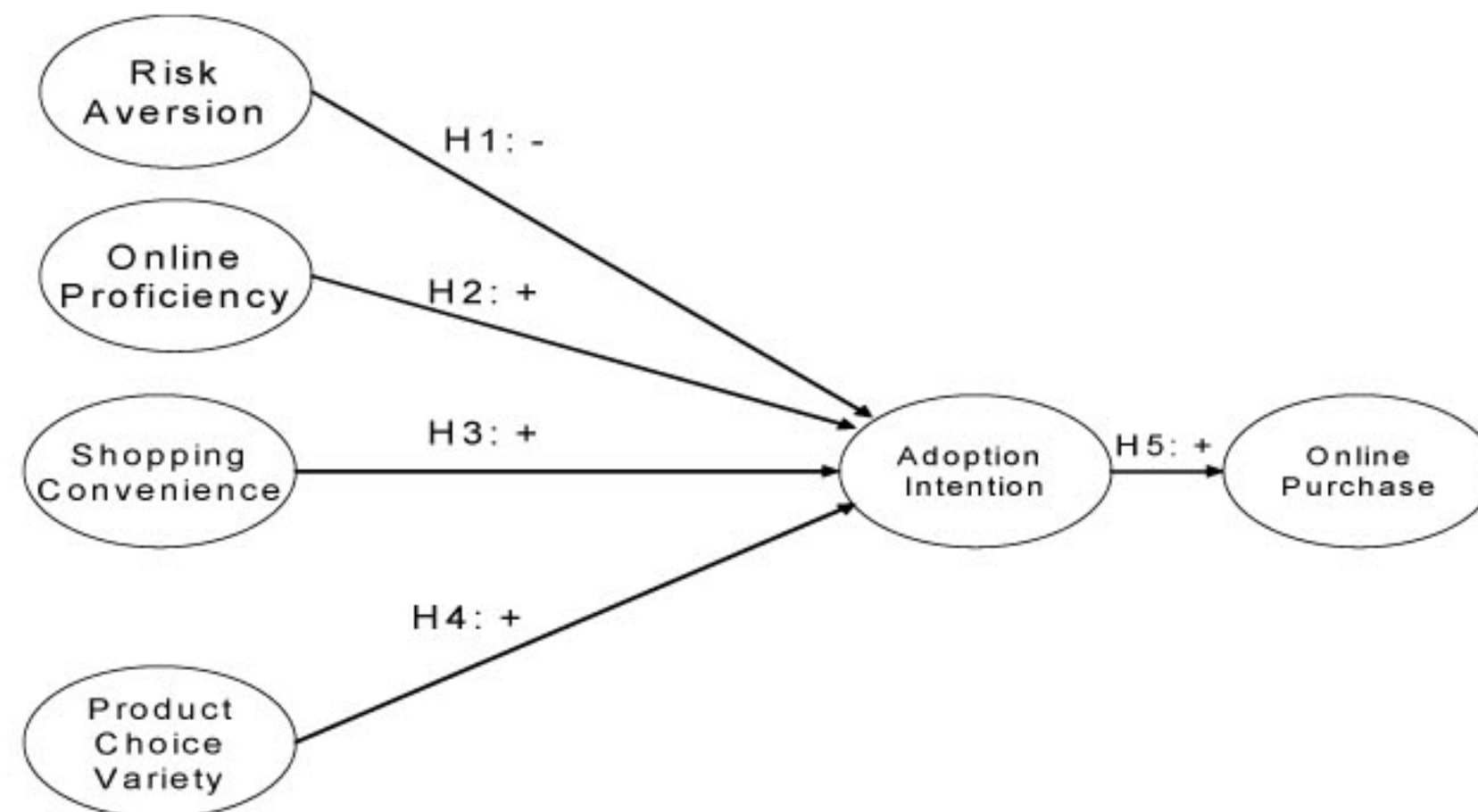
Consistent with technology acceptance model (TAM) and theory of planned behavior (TPB), behavioral intention long has been recognized as a positive and direct determinant of behavior. Several empirical studies have confirmed that behavioral intention plays an important substantive role in predicting behavior. For instance, in a meta-analysis of the behavioral intention to behavior, Sheppard, Hartwick, and Warshaw (1988) found strong support for using intentions to predict behavior. Taylor and Todd (1995) found strong support in testing TAM, TPB, and the decomposed TPB that the path from behavioral intention to behavior was significant in all models. Given the previous studies, we propose the following:

**H5:** Adoption intention of online shopping is positively related to online purchase.

Moreover, behavioral intention also has been proposed as an important mediator in the relationships between behavior and other innovation attributes. While beliefs-intention-behavior relationships in TAM have been studied extensively in the context of information systems, relatively little studies have focused on the hypothesized mediating role of intention in the context of online purchase. The extant literature of TAM to address this mediation effect has shown that the results are inconclusive. The current study attempts to address the inconclusive results of mediation of adoption intention in the context of online shopping.

**H6:** Adoption intention fully mediates the influence of selected innovation attributes on online purchase.

Figure 1. Research model



## A FRAMEWORK OF CONSUMER ADOPTION OF ONLINE SHOPPING

Based on the innovation theory and self-efficacy theory as well as extensive literature review, the research model is derived and proposed. All constructs are hypothesized to have direct and positive relationships (except risk aversion to have a direct and negative relationship) with adoption intention of online shopping. In turn, adoption intention has a direct and positive effect on online purchase. Figure 1 illustrates the research model that was derived from factor analyses, which we attempted to test.

## METHODOLOGY

For model testing, measured items first were created to tap the major constructs. The instruments were pretested with 20 students. Once the questionnaire was finalized, data were collected from business major students in a Midwestern university. One hundred questionnaires were distributed and collected, out of which 15 questionnaires could not be used due to missing or incomplete data. Hence, the usable sample size for this study was 85. Table 1 gives the descriptive statistics on their demo-

graphics. We subjected the data to an exploratory factor analysis. Five factors emerged, and their measured items are reported in Table 2. The reliabilities for adoption intention, online purchase, risk aversion, online proficiency, shopping convenience, and product choice variety are 0.72, 0.76, 0.80, 0.73, 0.73, and 0.64, respectively. Researchers suggest Cronbach alpha of .70 for confirmatory research and .60 for exploratory research as acceptable (Fornell & Larcker, 1981; Hair et al., 1998). Thus, all constructs can be considered reliable. Correlations among five constructs are shown in Table 3.

Confirmatory factor analysis using EQS was performed to test the construct validity: convergent and discriminant validity. Table 4 shows loadings and average variance extracted (AVE) for all four unobserved constructs in the measurement model. The loadings and AVE of the constructs higher than .7 and .5, respectively, are considered good (Bentler, 1990; Hair et al., 1998). The results illustrate that all of the constructs under investigation surpass the acceptable level showing good convergent validity. Discriminant validity is presented in Table 5. To achieve the discriminant validity, the square root of the average variance extracted in diagonal elements of the matrix should be greater than corresponding off-diagonal elements (cor-

Table 1. Respondent demographics

| Characteristics         | Percentage of All Respondents (n) |
|-------------------------|-----------------------------------|
| <b>Gender</b>           |                                   |
| Male                    | 51% (n = 43)                      |
| Female                  | 49% (n = 42)                      |
| <b>Age</b>              |                                   |
| ≤ 24                    | 66% (n = 56)                      |
| 25 - 34                 | 19% (n = 16)                      |
| 35 - 44                 | 12% (n = 10)                      |
| 45 - 54                 | 2% (n = 2)                        |
| 55+                     | 1% (n = 1)                        |
| <b>Household Income</b> |                                   |
| < \$6,999               | 64% (n = 54)                      |
| \$10,000 to \$29,999    | 25% (n = 21)                      |
| \$30,000 to \$49,999    | 7% (n = 6)                        |
| \$50,000 to \$74,999    | 2% (n = 2)                        |
| \$75,000+               | 2% (n = 2)                        |
| <b>Work Experience</b>  |                                   |
| None                    | 27% (n=23)                        |
| Less than 1 year        | 15% (n=13)                        |
| 1-5 years               | 35% (n=29)                        |
| 6-10 years              | 9% (n=8)                          |
| 10+                     | 14% (n=12)                        |
| <b>Ethnicity</b>        |                                   |
| Caucasian               | 60% (n=51)                        |
| African American        | 15% (n=13)                        |
| Asian                   | 20% (n=17)                        |
| Hispanic                | 2% (n=2)                          |
| Others                  | 2% (n=2)                          |

relation among constructs). It confirms that all of the off-diagonal values are less than the diagonal values that show support for discriminant validity.

Diagonal elements (bold) are the square root of the average variance extracted between the constructs and their measures. Off-diagonal elements are the correlations among constructs. For discriminant validity, diagonal elements should be larger than off-diagonal elements.

## DATA ANALYSES AND RESULTS

Although structural equation modeling (SEM) has substantial advantages over traditional statistical techniques (e.g., multiple regression), it is recommended that the sample size be 150 or more (Anderson & Gerbing, 1988; Hair et al., 1998). Due to well below the recommended size for SEM, a multiple regression model is used for testing the hypotheses. All but one predictor are highly significant in explaining the adoption intention of online shop-



Table 2. Measurement items and reliabilities

| Constructs/Indicators  | Reliability<br>( $\alpha$ ) |
|--|-----------------------------|
| <b>Adoption Intention</b><br>• Willingness to experiment with online shopping.<br>• How interested are you in shopping online?   | <b>0.72</b>                 |
| <b>Online Shopping</b><br>• How frequently do you purchase online?<br>• Approximately how many items have you purchased online in last 6 months?<br>• How often do you make purchases from Web-based vendors?  | <b>0.76</b>                 |
| <b>Risk Aversion</b><br>• Providing credit card information online is one of the most important reasons I do not buy online.<br>• Online shopping is risky.  | <b>0.80</b>                 |
| <b>Online Proficiency</b><br>• I am proficient in using the Internet for purchasing.<br>• Online shopping would be easy for me.  | <b>0.73</b>                 |
| <b>Shopping Convenience</b><br>• Online shopping would allow me to do my shopping more quickly.<br>• People shop online because it simplifies finding desired products.<br>• I go online shopping, as it minimizes the hassles of shopping.              | <b>0.73</b>                 |
| <b>Product Choice Variety</b><br>• Online shopping would allow me to get better price/choice when shopping.<br>• Online shopping would allow me to have better item selection in my shopping.<br>• People shop online to get a broad choice of products. | <b>0.64</b>                 |

Table 3. Correlations of six constructs

|                            |              | DV1   | INT1  | RISK1 | PROF1 | CONV1 | VARI1 |
|----------------------------|--------------|-------|-------|-------|-------|-------|-------|
| <b>Pearson Correlation</b> | <b>DV1</b>   | 1.000 | .322  | -.064 | .327  | .204  | .025  |
|                            | <b>INT1</b>  | .322  | 1.000 | -.458 | .584  | .389  | .543  |
|                            | <b>RISK1</b> | -.064 | -.458 | 1.000 | -.495 | -.286 | -.181 |
|                            | <b>PROF1</b> | .327  | .584  | -.495 | 1.000 | .478  | .415  |
|                            | <b>CONV1</b> | .204  | .389  | -.286 | .478  | 1.000 | .360  |
|                            | <b>VARI1</b> | .025  | .543  | -.181 | .415  | .360  | 1.000 |

DV1: Online Purchase; INT1: Adoption Intention; RISK1: Risk Aversion; PROF1: Online Proficiency; CONV1: Shopping Convenience; VARI1: Product Choice Variety

ping (Figure 2). While online proficiency (standardized  $\beta = .30$ ,  $p < .01$ ) and product choice variety ( $\beta = .36$ ,  $p < .01$ ) are positively related to adoption intention of online shopping, risk aversion ( $\beta = -.23$ ,  $p < .05$ ) is negatively related to the adoption intention of online shopping, as hypothesized. Thus, hypotheses 1, 2, and 4 are supported. However, shopping convenience ( $\beta = .05$ , n.s.) is not related to adoption intention

of online shopping, offering no support for hypothesis 3. Adoption intention of online shopping is shown to have a direct and positive effect on online purchase ( $\beta = .23$ ,  $p < .05$ ), thus confirming hypothesis 5. The regression results are presented in Table 6. Low VIF indicates that multicollinearity was not a problem.

To test the mediation effect in hypothesis 6, multiple regression is employed. Follow-

Table 4. CFA results for measurement model

| Construct      | Factor Loading | Variance Extracted |
|----------------|----------------|--------------------|
| RISK1 – Item 1 | .95            | .70                |
| Item 2         | .70            |                    |
| PROF1 – Item 1 | .67            | .62                |
| Item 2         | .89            |                    |
| CONV1 – Item 1 | .70            | .50                |
| Item 2         | .54            |                    |
| Item 3         | .84            |                    |
| VARI1– Item 1  | .41            | .45                |
| Item 2         | .93            |                    |
| Item 3         | .54            |                    |

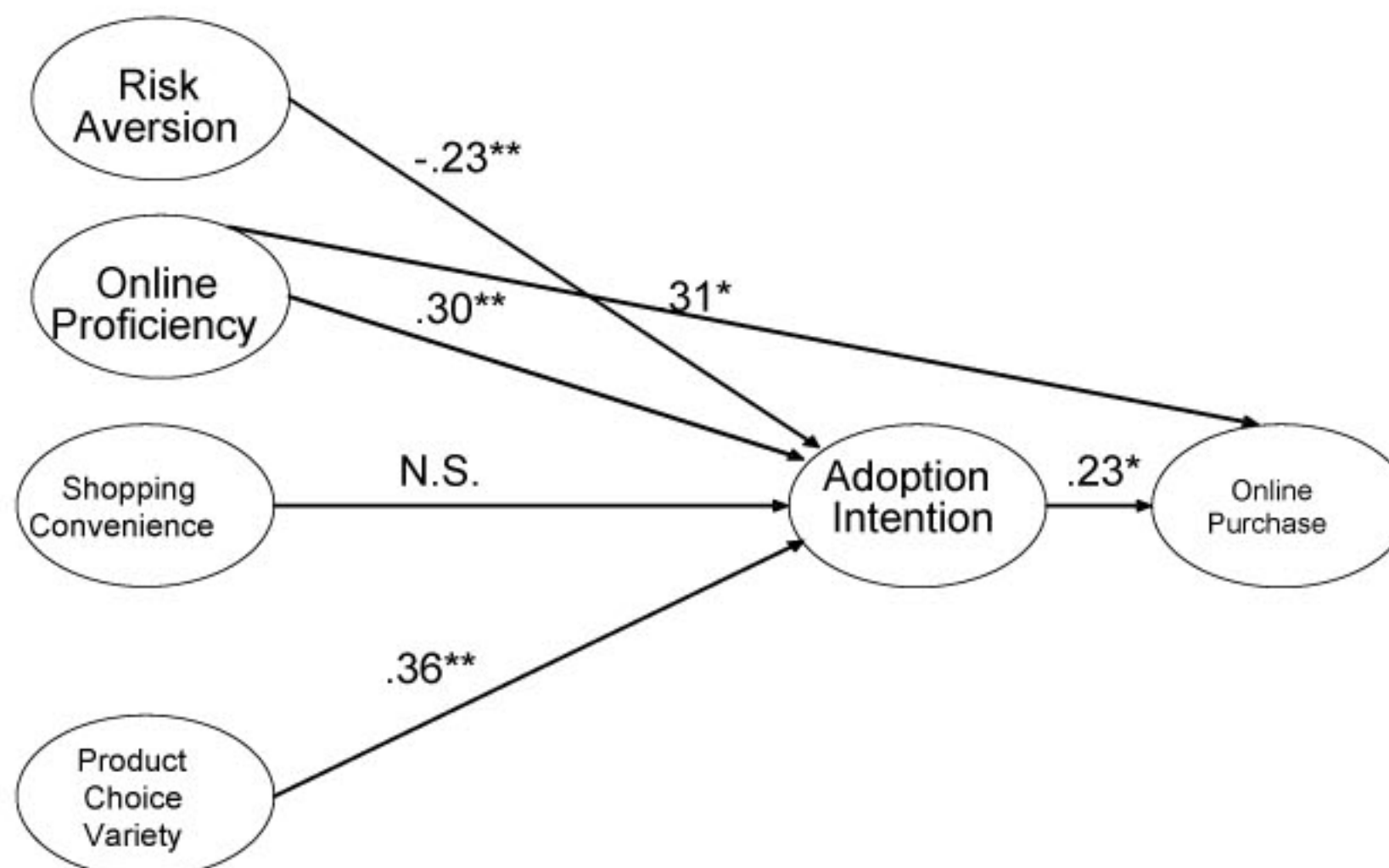
Risk1 = Risk Aversion; Prof1 = Online Proficiency; Conv1 = Shopping Convenience; Vari1 = Product Choice Variety

Table 5. Discriminant validity matrix

| Construct | RISK1 | PROF1 | CONV1 | VARI1 |
|-----------|-------|-------|-------|-------|
| RISK1     | .84   | -.49  | -.28  | -.18  |
| PROF1     | -.49  | .79   | .47   | .41   |
| CONV1     | -.28  | .47   | .71   | .36   |
| VARI1     | -.18  | .41   | .36   | .67   |

Risk1 = Risk Aversion; Prof1 = Online Proficiency; Conv1 = Shopping Convenience; Vari1 = Product Choice Variety

Figure 2. Model result



Significance at \*\*<0.01 level; \*<0.05 level; N.S. = non-significance

Table 6. Coefficients

|       |            | Unstandardized Coefficients |            | Standardized Coefficients | t      | Sig. | Collinearity Statistics |       |
|-------|------------|-----------------------------|------------|---------------------------|--------|------|-------------------------|-------|
| Model |            | B                           | Std. Error | Beta                      |        |      | Tolerance               | VIF   |
| 1     | (Constant) | .794                        | .627       |                           | 1.267  | .209 |                         |       |
|       | RISK1      | -.185                       | .073       | -.231                     | -2.519 | .014 | .750                    | 1.333 |
|       | PROF1      | .295                        | .104       | .296                      | 2.832  | .006 | .579                    | 1.727 |
|       | CONV1      | 6.638E-02                   | .119       | .052                      | .558   | .578 | .736                    | 1.359 |
|       | VARI1      | .518                        | .129       | .360                      | 4.026  | .000 | .792                    | 1.262 |
|       | INT        | .806                        | .376       | .233                      | 2.147  | .035 | .745                    | 1.122 |

Dependent Variable: DV = Adoption Intention of Online Shopping

Independent Variables: Risk1 = Risk Aversion; Prof1 = Online Proficiency; Conv1 = Shopping Convenience; Vari1 = Product Choice Variety; INT = Adoption Intention

(Note: Adjusted R square is .47 or 47%)

ing Baron and Kenny (1986), the dependent variable (online purchase) is regressed on the independent variables (risk aversion, online proficiency, shopping convenience, and product choice variety). As posited, adoption intention mediated the relationships of risk aversion ( $\beta = -.02$ , n.s.), shopping convenience ( $\beta = .07$ , n.s.), and product choice variety ( $\beta = .06$ , n.s.). However, only online proficiency showed a direct effect on online purchase ( $\beta = .31$ ,  $p < .05$ ). Thus, hypothesis 6 is partially supported.

## IMPLICATIONS AND LIMITATIONS

Previous research has examined the predictors of online purchase intentions (Boyle & Ruppel, 2004; Brown, Pope, & Voges, 2003; Kim & Kim, 2004) and determinants of online shopping behavior, such as amount and frequency (Corner et al., 2005). In other words, both purchase intentions and actual shopping behavior have been treated as dependent variables in various studies. Our research is different in that we incorporated adoption intention of online shopping as the mediating variable through which risk aversion, online proficiency, and product choice variety affect online shopping behavior. Our approach is similar in spirit as Kulviwat, Guo, and Engchanil (2004), who pro-

posed a model of online information search where motivation is the mediating variable through which various factors such as perceived risk affect online search.

Results indicate that purchase intentions and online shopping are distinctive constructs, and including both in a model sheds more light on the consumer online purchase decision-making process. For example, risk aversion and product choice variety may not have a direct effect on online shopping behavior, but their effects on consumer online purchase decision making cannot be underestimated, because they influence purchase intentions, which, in turn, affect online purchase. People who expressed their intentions to shop online are more likely to do so than those who had no such intentions. That is, people talk the talk and also walk the walk. Thus, our research provides hints as to how to separate serious online shoppers from cheap riders who are having fun in the virtual community without throwing their money online or paying their dues, so to speak. One simple way to find out to which category online visitors belong is to ask them whether they would be interested in shopping online. Internet use proficiency, variety-seeking opportunity online, and reduced risk perceptions will cultivate consumer interests to shop online, which ultimately will lead to online shopping.

The results of this study have implications for both practitioners and researchers. As risk aversion is negatively related to consumer adoption intention of online shopping, it supports the notion that risk aversion is a hygiene factor. E-commerce firms must do more to beef up privacy and security measures in order to remove this major obstacle to online commerce expansion (Credit Management, 2004; FTC, 2000). One way to reduce the perceptions of risk is that e-marketers may make online shopping a multiple-stage process. Intermediate steps are offered to familiarize customers with the online shopping environment. Perhaps incentives or protective measures could be provided to induce customers to conduct pre-purchase activities, such as online search by providing possible falsification of personal information or optional search without soliciting privacy information. For instance, on its Web site, American Airlines offers a secured information search (required login, thus personal information) as well as a non-secured information search, where no login is needed, nor is personal information collected. Another alternative is that online stores may reduce risk associated with purchase by ensuring tight control of possible losses that might result from security breach. In fact, some companies such as American Express offer disposable credit card numbers to alleviate anxiety for online shopping (Hancock, 2000).

Results also indicate that shopping convenience, one of the most often-touted benefits of Internet shopping, is not enough to attract consumers to shop online. Perhaps this is due to the fact that the subjects used in the study were college students, who may not value convenience as much as the non-student population. Instead, product choice variety should be emphasized more in advertising Internet shopping advantages vis-à-vis traditional shopping. This finding is consistent with recent work (Rohm & Swaminathan, 2004), indicating that variety-seeking behavior of consumers is a significant factor in the online environment. The question, however, remains on

how much Internet product choice variety should be improved subject to future studies.

Further, results show that superior technological online skills enable individuals to utilize Internet shopping more extensively compared to those who generally lack the skills that could lead them not to be receptive to innovations. This assertion is consistent with Roger (1995), who states that those who are more capable of understanding and handling technology can generalize the results of an innovation to its full scale use and likely reap its full benefits. Individuals with superior technological skills have the ability to mobilize efforts to learn the innovation and, thus, are more likely to induce adoption intention and actual behavior. Since online experience is a prerequisite to online shopping, consumers must develop a certain level of skills so that online proficiency can be established. Positive online experience and minimum online proficiency are the springboards for online shopping. As such, e-businesses may want to provide free training courses in order to improve consumers' literacy with computers, before they throw money on a promotional scheme to attract online purchasing.

Although there are many studies in consumer adoption for off-line behavior, this study explores the determinants of consumer adoption in the case of online shopping. Thus, a number of interesting issues have surfaced from this study that could be considered for future research. Future research could identify additional variables and examine their influence on consumer online shopping.

In this study, we employed convenient sample of students. It must be acknowledged that this might be a potential shortcoming of this research. Future research might replicate the study using other sampling frames to compare whether the results still hold. Further, we used respondents' statements regarding their willingness to shop online as the measurement of consumer adoption of online shopping. Also, only two measured items were used to tap on some constructs such as online proficiency and

risk aversion. The number of items should be increased to enhance construct reliability and validity in future research studies.

In addition, future research also should be carried out to see what other items could be used to tap the adoption intention construct. Since online shopping is a relatively new phenomenon, and since not much has been done specifically in online environment literature that measures consumer intention or willingness to shop online, this provides plenty of research opportunities to see if more than two items, as presented in this study, could be better used to measure this construct.

Another area of research opportunity could be how to reduce customers' feelings of risk in online environment. Since in an online environment, customers cannot get the feeling of touch, it creates a feeling of risk in their minds. In the present study, risk was measured using a two-item scale, because those two items are considered to be the most important factors that create more insecurity in customers' minds and prevent them from using a Web site. However, future studies should be carried out to see how customers feeling if risk could be minimized.

## CONCLUSION

Drawing upon the innovation theory, this study examined the antecedents of consumer adoption of online shopping. The results indicate that risk aversion, online proficiency, and product choice variety are important determinants of consumer adoption intention of online shopping, whereas shopping convenience is not an important predictor of consumers' intentions to shop online. We used consumers' intentions to shop online as the mediating variable through which risk aversion, online proficiency, and product choice variety affect online purchase. The use of a mediating variable in the model is revealing in that only online proficiency has a direct impact on both intentions and actual online shopping behavior. Risk aversion and product choice variety only indirectly affect shopping behavior through intentions.

As e-companies continue to look for the viable business model, they have come to a consensus that businesses must provide superior customer value in their product or service offerings so that consumers are willing to pay for products and services online and not just be a free rider (Grewal et al., 2003). Our study provides insights into what separates free riders, mere Internet users, from those who are serious about making online purchases or treating the Internet as a legitimate marketplace. As e-commerce becomes a way of life, more research on the topic is warranted.

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