

Factors Influencing Consumers' E-Commerce Commodity Purchases

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The 2002 North America Online Report published by eMarketer estimates that almost 24 million pre-college age students (ages 9-17) are already shopping online and gaining valuable e-commerce purchasing experience. Estimates of online shopping usage project steady growth, the number of young adults buying online will increase proportionally. This research seeks to develop a better understanding of the factors motivating young people to select e-commerce vendors for commodity purchases by exploring attitudes, demographic characteristics and purchase decision perceptions (i.e., the product, shopping experience, customer service, and consumer risk). Findings indicate that young adults with a history of e-commerce purchasing experience have a more positive attitude towards online buying than do young adults without e-commerce purchasing experience. In a related finding, a history of e-commerce purchasing experience serves as a good predictor of future e-commerce commodity purchases. Additionally, consumer risk and shopping experience perceptions were found to influence experienced e-commerce shoppers' commodity purchase decisions more than customer service or consumer risk.

Introduction

Internet users encounter many different purchasing systems and user interfaces, some with substantial variation and purpose. Despite this variety, each individual develops a generalized impression of the Internet purchase process. Personal experiences combined with information communicated by others form the basis for developing an image in the mind's eye of the individual (Martineau, 1957). Ultimately, each person adopts an attitude (i.e., predisposition to respond in a consistently favorable or unfavorable manner) regarding an Internet purchase process that incorporates what they know or believe about the process, how much they like or dislike the process, and how they routinely act or behave regarding the process (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975; Vijayasarathy, 2001).

Marketers have identified many factors that influence a consumer's purchase decision and online buying behavior (Goldsmith, Bridges, & Freiden, 2001; Jarvenpaa & Todd, 1996-97; Vellido, Lisboa & Meehan, 2000). Jarvenpaa and Todd (1996-97) classify these factors into four

clusters of purchase perceptions that influence a consumer's purchase decision. These clusters of purchase perceptions are: product understanding, shopping experience, customer service, and consumer risk.

Product understanding, often called product perception, serves as the primary determinant of where consumers choose to shop (Cronin, 1996). Price, product quality, and product variety are the most influential product perceptions cited in the literature (Arnold, Handelman, & Tiger, 1996; Baker, Levy & Grewal, 1992). Shopping experience is the second cluster of determinants and includes the attributes of time, convenience and product availability, effort, lifestyle compatibility

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and playfulness or enjoyment of the shopping process (Baty & Lee, 1995; Berkowitz, Walker, & Walton, 1979; Bhatnagar, Misra, & Rao, 2000; Hoffman & Novak, 1996; Liu, Arnett, Capella, & Taylor, 2001; Perterson, Albaum, & Ridgway, 1989). Customer service, the third cluster that influences purchase decisions, includes vendor responsiveness, assurance, and reliability (Baker, Levy, & Grewal, 1992). Economic, social, performance, personal and privacy risk dimensions are typically included within consumer risk, the fourth cluster of purchase perceptions (Jarvenpaa & Todd, 1996-97; Park, 2001; Simpson & Lakner, 1993).

In light of the ongoing paradigm shift from traditional (brick and mortar store) to Internet-based purchases, a question arises as to whether the same factors that have been found to influence traditional purchases similarly influence Internet-based purchases. And, if they do not, what other factors are present or not present that influence Internet-based purchases? This study seeks to answer both of these questions by:

1. aggregating the findings of existing research that identifies attitude, demographic, and purchase perception components;
2. creating a categorical model of purchase perception factors by combining the aggregated components; and
3. testing and validating the model through data analysis.

This research is limited in scope to examining the Internet purchase behavior of a targeted population of college students making a particular type of commodity purchase, textbooks. By establishing and validating a categorical model for describing factors that affect online commodity purchases for a narrowly defined population, this research can then be extended to include larger and more diverse populations to enhance this research's generalizability.

Review of Literature

Consumer attitudes, demographic characteristics, and purchase perceptions influencing purchase

decisions from traditional retail outlets also combine to affect commodity purchases decisions from e-commerce sites. The study of e-commerce is relatively new. E-commerce research draws heavily upon existing marketing literature, specifically the domains of consumer choice and buyer behavior, complementing it with recent online and Internet-related research.

Not surprisingly, similar demographic or experiential groups often respond comparably when surveyed. For example, consider how the propensity to use technology affects purchasing behaviors. The use of technology was once perceived to be a male-oriented activity. On past surveys males demonstrated a greater affinity for technology (Wilder, Mackie, & Cooper, 1985). More recent surveys of technology users' attitudes discovered no differences between genders (Settle, Dillon, & Alreck, 1999). Other research reports that different social norms and reduced access to the Internet cause women to have worse attitudes than men regarding e-commerce technology (Bredin, Granitz, & Koernig, 2001). Age, as opposed to gender, is a more significant discriminator regarding respondents' affinity for technology (Settle, Dillon, & Alreck, 1999). As e-commerce purchasing becomes more popular among youth, over time it is reasonable to expect that buyer characteristics other than age and gender will increasingly affect the buying process.

The literature offers insight into four major elements—attitude, demographic characteristics, purchase perceptions, and product perceptions—that are believed to influence potential buyers.

Attitude

Fishbein and Ajzen (1975) describe attitude toward a behavior as a person's evaluation of a specified behavior involving an object or outcome. For example, a person may dislike using a computer to perform online banking where using the computer to do banking is the behavior and the person's feelings are the attitude. Ajzen and Fishbein (1980) find that attitude toward a behavior relates more strongly to a specified behavior than does attitude toward an object or outcome. This study applies Ajzen and Fishbein's principles to a specific

instance of a specified behavior, the attitudes of young adults toward the purchase of a low-risk commodity product (a textbook) from an Internet vendor, to learn if the expected results occur as predicted (Lowengart & Tractinsky, 2001).

Demographic Characteristics

Previous e-commerce purchasing research examined numerous demographic characteristics. Bhatnagar, Misra, and Rao (2000) included age, gender, marital status, and years on the Internet in a recent study on risk, convenience, and Internet shopping behavior. They found that marital status has no effect on purchase behavior and found mixed results based upon gender (except for specific gender-related products), years on the Internet, and age. Other studies report that e-commerce purchasers are younger; more educated and have higher incomes than do non e-commerce purchasers (Ratchford, Talukdar, & Lee, 2001). Notwithstanding these demographics, as many as 75% of surveyed Internet shoppers report that even though they do use the Internet to shop, they have not yet made an e-commerce purchase (Udo & Marquis, 2001-2002). This study uses previous findings as a basis for examining a narrowly defined population of young adults who are in the midst of becoming college educated, most of whom fall within the "younger, more educated, and higher income" demographic, to learn whether existing research conclusions are borne out in this more finely-targeted sample.

Purchase Perceptions

Perceptions believed to influence consumers' purchase decisions have been extensively researched and documented in the context of traditional consumer behavior literature. Jarvenpaa and Todd (1996-97) clustered e-commerce purchase perceptions into four general categories: 1) Product Perception, 2) Shopping Experience, 3) Customer Service, and 4) Consumer Risk. This study builds upon Jarvenpaa and Todd's research findings, using the purchase perception construct as a basis for exploring how each of the four purchase

perceptions applies to a commodity e-commerce purchase.

Product Perception

The three most influential purchase perception factors cited in the literature are the perceptions of price, product quality, and product variety (Arnold, Handelman, & Tiger, 1996; Baker, Levy & Grewal, 1992; Cronin, 1996). Price is defined as the total monetary cost to the consumer for the purchase. Pricing perceptions are important since new pricing strategies are being applied to goods and services sold over the Internet. Dynamic pricing, defined as a pricing strategy where prices change over time, across consumers, or across product bundles can easily be executed on the Internet (Kannan & Kopalle, 2001). This pricing strategy contrasts with conventional retail channels where pricing changes are traditionally performed over the course of weeks or months (Kannan & Kopalle, 2001).

Product quality is defined as those distinguishing characteristics or traits inherent in the product or service that differentiate it from competitive product or service offerings (Cronin, 1996). For the purpose of clarifying this definition, *service* refers to the service that is being purchased and should not be confused with *customer service*, which is treated as a separate factor and is defined later in this article.

A third factor contributing to product perception is product variety, defined as the assortment of alternative and complementary goods available from the retailer. Product variety is important to shoppers because it provides them with the opportunity to compare, contrast, and select from amongst multiple potential solutions that meet their needs.

This study attempts to validate the contribution that price and product quality make to the product perception factor, particularly as that factor relates to e-commerce purchases. Perceptions of product variety are not considered in this study due to the commodity nature of the product being considered. As a commodity, there is no discernible difference between alternative product offerings.

Shopping Experience

The shopping experience is a mixture of effort, lifestyle compatibility, fun, and playfulness (Baty & Lee, 1995; Goldsmith, 2000; Hoffman & Novak, 1996, 1997; Liu, Armet, Capella, & Taylor, 2001; Ratchford, Talukdar, & Lee, 2001). When engaged in e-commerce purchases over the Internet, effort is primarily a mental activity; shoppers work at their keyboard instead of having to plan for and travel to multiple shopping sites. For e-commerce shopping, the dominant components of effort are ease of use, coupled with the ease of placing and canceling orders. These components may be described in terms of the time required to find and purchase products, the convenience of using the shopping engine or "shopping cart" as part of the purchasing process, and the availability of the desired products (Berkowitz, Walker, & Walton, 1979; Bhatnagar, Misra, & Rao, 2000; Swaminathan, Lepkowska-White, & Rao, 1999).

Lifestyle compatibility encompasses the consumers' lifestyle and shopping habits (Vellido, Lisboa, & Meehan, 2000). The shopping tools must be easy to use and must provide the customer with all of the information necessary to make a purchase decision. If further support is required, such as telephone interaction to answer personal questions, the tools must facilitate this linkage and personnel must be available to provide support. Long telephone wait times and the lack of available personnel negatively impact the purchaser's perceived compatibility of lifestyle. In addition, lifestyle compatibility may reflect on the consumer's opinion of those that make e-commerce purchases (Goldsmith & Bridges, 2000). Research has noted that those who have *not* made an e-commerce purchase categorize those that have made an e-commerce purchase as "nerds" (Goldsmith & Bridges, 2000).

Playfulness and the perception of "fun" take into account the shopper's overall satisfaction with the shopping experience (Goldsmith, Bridges, & Freiden, 2001; Hoffman & Novak, 1996, 1997). Playfulness is negatively affected by shopping sites that are cumbersome to navigate, insult the

shopper's intelligence, or do anything to diminish the shopping experience. Unnecessary shopping time and the inability to locate in-stock products of the desired color and size are examples of occurrences that diminish the shopping experience (Bhatnagar, Misra, & Rao, 2000).

This study seeks to validate the contribution of physical effort, lifestyle compatibility, enjoyment, shopping time, and product availability to the overall shopping experience.

Customer Service

Customer service affects purchase decisions through vendor knowledge, responsiveness and reliability (Baker, Levy, & Grewal, 1992; Gefen, 2002). Vendor knowledge and responsiveness are embodied in the way that the service provider anticipates and responds promptly and effectively to customers' needs and requests, providing the customer with the knowledge necessary to make a purchase (Jarvenpaa & Todd, 1996-97). An example of anticipating customers' needs occurs when a merchant clearly states which forms of payment are acceptable and goes on to explain the differences in expected delivery times and charges for different delivery options available to the customer.

Reliability occurs when the customer perceives that there is a high probability that the service provider will deliver precisely what is being promised, within the proper time. Internet purchases of tangible goods present unique challenges when compared with traditional 'brick and mortar' retail store purchases. Consumers do not have the opportunity to physically inspect goods purchased over the Internet prior to purchasing them (Jarvenpaa & Todd, 1996-97). Instead, Internet purchasers must rely on mediated representations of the goods being purchased, are normally dependent on third parties for delivery of purchased goods, and may question the convenience of product returns. Customer service variables of vendor knowledge, responsiveness (delivery time and return convenience) and reliability are examined in this study.

Consumer Risk

Consumer adoption of new retail innovations, such as e-commerce textbook purchasing, is influenced by perceived risks. The risk dimensions typically considered are: economic, privacy, personal, and performance (Jarvenpaa & Todd, 1996-97; Simpson & Lakner, 1993). Economic or financial risk encompasses monetary losses associated with poor purchase decisions, the inability to return products, and the non-receipt of products ordered (Bhatnagar, Misra, & Rao, 2000; Perterson, Albaun, & Ridgway, 1989).

Personal risk refers to the possibility that the consumer will be harmed or injured by either the product or by the shopping process. Credit card security is the predominant example of a personal risk inherent in e-commerce purchase transactions (Goldsmith & Bridges, 2000; Jarvenpaa & Todd, 1996-97). Privacy risk reflects the degree to which a consumer may sacrifice their privacy when they are required to provide confidential information in the course of making a retail e-commerce transaction (Bhatnagar, Misra, & Rao, 2000; Jarvenpaa & Todd, 1996-97; Vijayasathy, 2002).

Performance risk embodies the consumer's perception that a product or service may fail to meet expectations, the "fear of not getting what they want" (Cox & Rich, 1964). Perceptions of performance risk are not considered in this study because the consumer is directed to purchase a particular, specific product without consideration of the product's performance. (In the case of a textbook publisher, the instructor assigning the textbook should have already considered product performance risk!) This study examines the remaining perceived risks with the goal of validating the role that each one plays in shaping potential e-commerce purchasers' consumer risk perceptions.

Each of the determinants described above (product perception, shopping experience, customer service, and consumer risk), and depicted in Figure 1, was examined in an effort to better understand each determinant's effect upon a consumer's decision to purchase a commodity product from an e-commerce vendor.



Methodology

A survey instrument was developed to gather information from student consumers about their recent commodity (textbook) purchases. Respondents were selected from a single university where students had the option to purchase textbooks from a traditional campus bookstore, an off-campus bookstore, and from multiple electronic commerce sites that were advertised on campus bulletin boards and in the campus newspaper. Freshmen were intentionally excluded from the sample because of their relative inexperience and exposure to the textbook buying process.

The Instrument

The first section of the questionnaire gathered demographic information. In addition to the customary questions regarding academic level and gender, students were also asked demographic characteristic questions regarding their level of computer use, computer ownership, years of computer use, computer experience, self-evaluated general expertise (beginner, novice, average, experienced, or expert), and expertise with Internet search and e-mail tools (beginner, novice, average, experienced, or expert). Two additional questions asked how many total Internet purchases the student made during the previous six months and

the number of textbooks that the student had purchased using the Internet during the previous academic semester.

The second section of the questionnaire contained a five-question general attitude survey. The mean of the standard seven-point semantic differential rating scale responses to the five questions was used to measure attitude. The attitude scales were based on Ajzen and Fishbein's (1980) theory as modified by Davis (1993). These scales consisted of the leading phrase, "All things considered, my using the Internet to purchase textbooks is:" followed by the five attitude measures. The five measures surveyed were: good/bad, wise/foolish, favorable/unfavorable, beneficial/harmful, and positive/negative. Positive attitudes had a rating of 1, neutral a rating of 4, and negative attitudes a rating of 7.

The third section of the questionnaire was designed to measure how each of the four clusters of purchase determinants affected each respondent's decision to purchase or not to purchase a commodity product by e-commerce. Figure 1 presents 17 words or phrases identified within the literature and grouped within the four purchase-decision determinants. As illustrated in Figure 1, there are two product perception items (price and quality), five shopping experience items (physical effort, lifestyle compatibility, enjoyment of the activity, shopping time, and whether the required product was in stock), six customer service items (knowledgeable vendor, delivery time, responsiveness, acceptable payment method, vendor reliability, and return convenience), and four consumer risk items (credit card security, product fails to meet expectation, confidentiality of personal data, and return policy). The items presented in Figure 1 were listed randomly; respondents circled a number on a seven-point semantic distance scale to show how well they felt each described an e-commerce textbook purchase. The extremes were labeled "Not at all" and "Very influential."

Data Collection Procedures

Surveys were distributed in a variety of business classrooms approximately 30 days after students completed their textbook buying process. One hundred and forty-two students completing the survey were business majors and twenty-seven were Integrated Science students. One hundred and sixty-nine usable questionnaires were collected.

Survey Instrument Validity and Reliability

In order to provide content validity for the variables gathered, all questionnaire items were drawn from previous studies of similar design as recommended by MIS survey research literature (Davis, 1989, 1993; Jarvenpaa & Todd, 1996-97; Straub, 1989). Factor validity was assessed by factor analysis of the product perception, shopping experience, customer service, and consumer risk scale items using principal component extraction and oblique rotation. As shown in Table 1, the four-factor solution is consistent with four distinct scales, one for each of the four purchase perception clusters (product perception, shopping experience, customer service, and consumer risk). Four items did not appear to fall into any of the four scales. Consequently, "shopping time," "delivery time," "physical effort," and "required textbook is in stock" were removed and the factor analysis was run again. In the absence of the aforementioned

Table 1: Construct Validity (Factor Analysis)

Scale Items	Customer Service	Product Perception	Shopping Experience	Consumer Risk
Vendor reliability	.773*	.232	.173	.210
Return convenience	.741*	.162	.018	.206
Return policy	.735*	.375	.018	.223
Responsiveness	.733*	.167	.253	.143
Vendor knowledge	.617*	.101	.435	-.018
Price	.113	.869*	.106	.223
Quality	.326	.703*	.161	.219
Enjoyable activity	.180	.167	.824*	.220
Lifestyle compatibility	-.024	.190	.804*	.116
Forms of payment	-.024	.220	.130	.847*
Confidentiality	.508	.192	.107	.628*
Credit card security	.478	-.024	.286	.576*

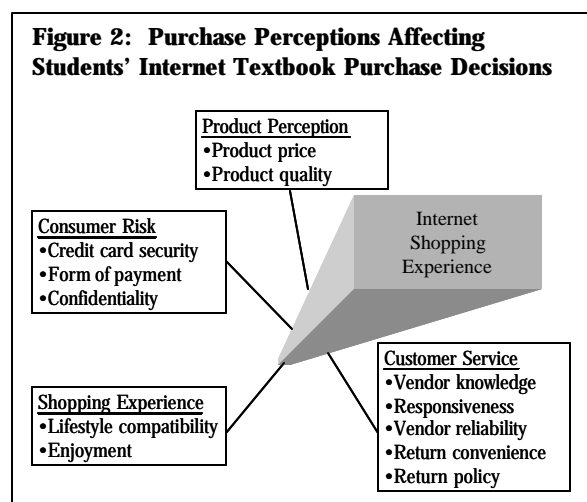
items, results suggest that the respondents related "return policy" more closely with customer service than with consumer risk. This finding was not surprising; it is consistent with Vellido, Lisboa, and Meehan's (2000) observation that some factors overlap in a web-based context.

Figure 2 depicts a revised model of purchase perceptions affecting students' Internet textbook purchase decisions. This revised model removes the four items that did not load into an established purchase perception factor. The revised model reflects the results of the survey by associating the return policy item with the customer service factor instead of with the consumer risk factor as originally perceived.

Cronbach's alpha was used to assess inter-item reliability for each multi-item instrument: attitude, product perception, shopping experience, customer service, and consumer risk (i.e., seven-point semantic differential rating scales). As reported in Table 2, Cronbach's alpha scores were .876 for attitude, .802 for product perception, .783 for shopping experience, .841 for customer service, and .755 for consumer risk. These alpha scores are acceptable for exploratory analysis, indicating that the factors within each multi-item variable are inter-related.

Results

This section presents the results of the survey with an interpretation describing how the data indicate Internet commodity goods purchasers make their



purchase decisions. Conclusions are offered to provide a better understanding of how e-commerce purchases will affect future buying habits for commodity purchases.

Attitude

The demographic distributions of the responding sample and the mean attitudes toward purchasing a textbook via electronic commerce based on the five-question general attitude survey are shown in Table 3. The percentage of respondents within each demographic distribution is enclosed in parentheses. The sample was somewhat evenly balanced between males and females and among academic level. The self-evaluation of computer expertise had a wider-ranging distribution. Recall that freshmen were not asked to complete the questionnaire, given the assumption that a freshman would be unlikely to have much experience with the online university textbook buying process.

T-tests for independent samples were used to locate response differences in attitude for gender and ownership of a home computer. Analysis of variance (ANOVA) was used to determine response differences in attitudes based upon academic level, self-reported computer skills, and self-reported Internet search and e-mail skills. No significant attitude differences for gender, ownership of a home computer, academic level or self-reported Internet search and e-mail skills were evident.

Only one variable, self-reported computer skills, presented a close to significant difference in student attitudes toward the purchase of a textbook via electronic commerce. Based on this finding and an analysis of the mean data presented in Table 3, the self-reported computer skills data were regrouped from the original four categories into two categories (novice was combined with average and experienced was combined with expert). A second

Table 2: Inter-Item Reliability (Cronbach's Alpha)

Variable	Alpha
Attitude	.876
Product perception	.802
Shopping experience	.783
Customer service	.841
Consumer risk	.755

ANOVA showed a significant difference for self-reported computer skills ($F=4.191$, $df=167$, $sig.=.042$). Students who identified themselves as experienced or expert had significantly more positive attitudes (mean score of 3.342) about purchasing a textbook via e-commerce than did those who self-identified themselves as novice or average (mean score of 3.708). An interesting side note that emerged from the data was that no student self-identified as a beginner for any computer skill (e-mail, Internet, or general use) and only six students self-identified as novices.

Electronic Commerce Purchases and Attitude

Table 4 presents the number of students (and percentage) reporting e-commerce purchases within the last 6 months and also reporting that they purchased textbooks from an e-commerce vendor in the prior semester. In addition, the mean attitude toward using e-commerce to purchase a textbook is presented for each response category.

Analysis of variance (ANOVA) was used to determine the effects of attitude upon the number of e-commerce purchases made in the last six months and upon the number of textbooks purchased through e-commerce in the previous semester. Attitude was found to be significantly different for the number of e-commerce purchases made in the last six months ($F=3.21$, $df=4$, $sig.=.014$) and the number of textbook purchases made through an e-commerce vendor in the previous semester ($F=11.216$, $df=4$, $sig.=.001$).

An examination of the mean attitude data presented in Table 4 reveals that those students who did not make an e-commerce purchase within the past six months and who did not purchase a textbook through electronic commerce during the prior semester had a less positive attitude toward using the Internet to purchase textbooks. Recall that attitude was measured on a seven-point

Table 3: Number and Percentage of Demographics Respondents and Mean Attitude

Characteristics	Number (Percent)	Mean Attitude	Characteristics	Number (Percent)	Mean Attitude
Sex: ($F=1.727$, $Sig.=.191$)			Own a computer: ($F=.545$, $Sig.=.461$)		
Male	95 (56)	3.343	Yes	158 (95)	3.406
Female	73 (44)	3.523	No	9 (5)	3.489
Self-reported computer skills: ($F=2.004$, $Sig.=.065$)			Self-reported Internet search skills: ($F=.433$, $Sig.=.903$)		
Beginner	0 (0)	-	Beginner	0 (0)	-
Novice	6 (4)	4.167	Novice	0 (0)	-
Average	31 (18)	3.619	Average	25 (15)	3.400
Experienced	119 (70)	3.355	Experienced	81 (48)	3.398
Expert	13 (8)	3.231	Expert	63 (37)	3.463
Self-reported E-mail skills: ($F=.666$, $Sig.=.426$)			Academic level: ($F=.321$, $Sig.=.726$)		
Beginner	0 (0)	-	Sophomore	36 (21)	3.328
Novice	0 (0)	-	Junior	57 (34)	3.404
Average	20 (12)	3.490	Senior	76 (45)	3.482
Experienced	75 (44)	3.405			
Expert	74 (44)	3.422			

($p^* < .05$ $p^{**} < .01$ $p^{***} < .001$)

Table 4: Attitude of Those That Have Made Recent E-C and E-C Textbook Purchases

E-C Purchases in the last 6 months ($F=3.21$, $Sig.=.014^*$)	Number (Percent)	Mean Attitude
Made zero E-C purchases	40(23.7)	3.725
Made 1-2 E-C purchases	60(35.5)	3.360
Made 3-6 E-C purchases	50(29.6)	3.180
Made 7 or more E-C purchases	19(11.2)	3.621
E-C vendor textbook purchases in the current semester ($F=11.216$, $Sig.=.001^{***}$)	Number (Percent)	Mean Attitude
Made zero E-C textbook purchases	143(84.6)	3.526
Made 1 E-C textbook purchases	15(8.9)	2.787
Made 2 E-C textbook purchases	6(3.6)	3.133
Made 3 E-C textbook purchases	2(1.2)	2.200
Made 4 or more E-C textbook purchases	3(1.8)	3.067

($p^* < .05$ $p^{**} < .01$ $p^{***} < .001$)

semantic differential scale with 1 reflecting a positive perception, 4 signifying a neutral perception, and 7 indicating a negative perception.

Data for both e-commerce purchases during the past six months and for e-commerce textbook purchases during the most recent semester were recoded. The recoded data compared students making no purchases to those making 1 or more purchases. This resulted in more uniform sample sizes for each purchase category and more clearly distinguished differences in mean attitudes. This data is presented in Table 5.

T-tests were used to determine differences for each purchase category. Students with at least one shopping experience in the last six months had a significantly better attitude toward using the Internet to purchase a textbook ($t(40) = 2.287, p = .023$), than did students that had previously purchased one or more textbooks from an e-commerce vendor ($t(143) = 3.349, p = .001$).

How Demographic Characteristics Affect E-commerce Textbook Purchases

A regression model was used to determine the demographic characteristics that most influenced an e-commerce textbook purchase decision. As evidenced by Table 6, the only demographic characteristic that was a predictor of an e-commerce textbook purchase was a previous Internet purchase. Academic level, gender, years of computer use, computer ownership, and self-evaluated general-computer, email and Internet search expertise do not appear to influence e-commerce textbook purchase decisions.

Purchase Perceptions Affecting an Electronic Commerce Purchase Decision

Paired T-tests were used to determine the mean differences for each of the four purchase perception factors. The mean of the three consumer risk items (4.48) and the mean of the five customer service items (4.57) were both found to be more influential for electronic commerce textbook

purchases than the mean of the two product perception items (3.39) and the mean of the two shopping experience items (3.18).

An analysis of variance was used to locate purchase perception response differences for academic level, gender, self-evaluated computer skills, and previous Internet purchase experience. No significant differences were found based upon the student's academic level.

Gender differences were evident for consumer risk. The sample contained 95 males and 73 females. An analysis of variance indicated a significant effect for consumer risk ($F(2, 166) = 3.173, p = .044$). Males (mean of 4.27) were influenced less by consumer risk (i.e., forms of payment, confidentiality, and credit card security) than were females (mean of 4.79).

Self-evaluated computer skills differences were found for product perception. There were six self-evaluated novices (mean of 3.3, but they were not included due to their small sample size), 31 self-evaluated average users (mean of 2.63), 119 self-evaluated experienced users (mean of 3.4), and 13 self-evaluated experts (mean of 5.11). An analysis of variance indicated that computer skill experience level had a significant effect upon product perception ($F(1, 167) = 21.336, p = .000$). Experts were influenced by product perception (i.e., price and quality) more than average users ($t(42) = 3.942, p = .000$) and experienced users ($t(130) = 3.183, p = .002$).

Previous e-commerce purchase experience differences were found for product perception and for shopping experience. Forty students (24%) indicated that they had not yet made an

Table 5: Attitude of Those That Made Recent E-C Purchases and E-C Textbook Purchases

E-C Purchases in the last 6 months ($t = 2.287, \text{Sig.} = .023^*$)	Number (Percent)	Mean Attitude
Made zero E-C purchases	40(23)	3.725
Made 1 or more E-C purchases	129(76)	3.329
E-C vendor textbook purchases in the current semester ($t = 3.349, \text{Sig.} = .001^{***}$)	Number (Percent)	Mean Attitude
Made zero E-C textbook purchases	143(85)	3.526
Made 1 or more textbook purchases	26(15)	2.854

($p^* < .05$ $p^{**} < .01$ $p^{***} < .001$)

Table 6: Demographic Characteristics Influencing E-commerce Purchase Decisions

Variable (Regression Model)	t score	Significance
Academic level	.251	.802
Gender	1.198	.233
Years of computer use	.484	.629
Computer ownership	1.629	.105
Self-reported computer expertise	1.646	.102
Self-reported Internet search expertise	.547	.585
Self-reported email expertise	.487	.627
Previous Internet purchase*	2.499	.013*

(p* < .05 p** < .01 p*** < .001)

e-commerce purchase, while 129 (76%) indicated that they had. Those students with at least one electronic commerce shopping experience were more likely to be influenced to make an e-commerce purchase by product perception (mean= 3.75, $t(167)= 4.619$, $p= .000$) and by the shopping experience (mean= 3.35, $t(167)= 2.747$, $p= .007$) than those that had not yet purchased something electronically (product perception mean= 2.22; shopping experience mean= 2.63). This implies that other influencers may contribute to shape purchase perceptions for individuals with no Internet shopping experience.

Discussion

This research explored the attitudes of students toward the purchase of a textbook, a common commodity purchase, via an e-commerce vendor using reliable behavioral attitude measurement scales and found strong inter-item reliability between four purchase determinants, taken from the literature, that were considered (Ajzen & Fishbein, 1980; Davis, 1989, 1993). The findings confidently demonstrate that no noteworthy attitudinal differences between genders, academic grade levels (sophomore, junior, or senior), and students' computer ownership were present. Nor did this research discern behavioral attitudinal differences between students that self-reported different levels of expertise with Internet search and e-mail skills; no self-reported level of expertise (beginner, novice, average, experienced, or expert) with either of these computer software activities

varied far from 3.4 (ranging from 3.398 to 3.490), the mid-range in the 7-point semantic rating scales.

The only behavioral attitude that fluctuated from the mid-range of the 7-point scales was the general self-reported computer skills (beginner, novice, average, experienced, or expert), ranging from 3.231 to 4.167. Since the sample size of the novice users was only 6 students, the data was recoded to regroup the novices with the self-reported average users and the experienced users with the experts. The more experienced users exhibited a more positive attitude toward an e-commerce textbook purchase. Existing literature cites attitude as a predictor of behavior (Davis, 1989, 1993). This study concurs with those findings and more specifically predicts that students who have identified themselves as experienced or expert computer users will be more inclined to participate in the Internet purchase of commodity products.

Students' previous e-commerce buying experience emerged as a second attitudinal affect or predictor of e-commerce commodity purchases. Students who have purchased a textbook or other product over the Internet expressed a much more favorable attitude toward making an e-commerce textbook purchase. "Previous Internet purchase" was the only demographic characteristic that predicted an e-commerce textbook purchase when the eight demographics characteristics examined in the study were placed into a model to forecast influential e-commerce purchase decision factors.

Students experienced at making e-commerce purchases were also more likely to be influenced by the product perception (quality and price) and by the shopping experience (lifestyle compatibility and enjoyment). Bhatnagar, Misra, and Rao (2000) had similar findings, but their study did not differentiate between shoppers with and without e-commerce shopping experience. Those that had already made an online purchase were less concerned with customer service (vendor knowledge, responsiveness, reliability, return convenience and policy) or consumer risk issues (form of payment, credit card security, and confidentiality).

Specific factors that were more influential to students that have made e-commerce purchases

include the product perception (price and quality), and the positive aspects of the shopping experience (lifestyle compatibility and enjoyment). This finding is consistent with that of Jarvenpaa and Todd (1996-97) who proposed that vendors should emphasize product perception and shopping convenience factors when developing web sites. Experienced online shoppers find the activity to be enjoyable and amenable to their lifestyles. In a similar vein, students who rated themselves as experts in general computer skills were also heavily influenced by the price and/or quality of the product.

As students report higher computer skill levels, their concerns regarding consumer risk, customer service, and the shopping experience diminishes while their concern regarding product perception increases. The shopping experience was less influential than the opportunity to find a product at a low price or of high quality. The authors recognize that this observation may be related to the type of product, in this case a commodity (textbook) purchase. Future research is needed to examine this observation in more detail.

In summary, this research examined whether the four factors that influence a consumer's purchase decision in general, as identified by Jarvenpaa and Todd (1996-97), also apply to a specific type of commodity e-commerce purchase. This research finds that they do. This research also demonstrated that e-commerce commodity purchasers were less influenced by four—shopping time, delivery time, physical effort, and item in stock—of Jarvenpaa and Todd's (1996-97) initial seventeen items contained within the four purchase perception factors. Additionally, this research provides evidence that e-commerce commodity purchasers associate one item (return policy) more closely with customer service than with consumer risk, as was originally proposed by Jarvenpaa and Todd.

This research also presents evidence that shoppers are more likely to continue to make e-commerce purchases as they achieve higher levels of comfort with their general computer skills and as they gain increased experience making e-commerce purchases. Additionally, this research found that traditional college-age students report that they

apply considerable importance to the price and the quality of a product when making an online commodity (textbook) purchase.

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