HOW E-TAILER ATTRIBUTES AFFECT ONLINE SHOPPING INTENTION: THE MODERATING EFFECTS OF AGE, GENDER AND PRIOR EXPERIENCE

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ABSTRACT

A conjoint study is carried out to examine the relationship between specific e-tailer attributes (*reputation of e-tailer*, *site usability*, *security*, *delivery*, and *customer support*) and online shopping intention. Further, we investigate the moderating effects of customer characteristics on this relationship. Our results indicate that the most important attribute affecting the likelihood of online purchase is *security*, followed by *reputation of e-tailer* and *site usability*. Moreover, we find that age and prior online shopping experience significantly moderate how these attributes affect online purchase intention.

Keywords: *conjoint; e-shopping; e-tailer attributes; moderator variables.*

INTRODUCTION

The growth in e-commerce has been extraordinary, with many of today's business transactions being conducted online. A recent report by the U.S. Census Bureau estimates retail e-commerce sales for the 2nd quarter of 2013 at $64.8 billion. This represents an increase of 4.9% over the 1st quarter of 2013, and an increase of 18.4% over the 2nd quarter of the previous year. Given how e-commerce sales growth has outpaced that of total retail sales, retailers need to understand what influences online purchase decisions.

We design an experimental study to investigate how select e-tailer attributes impact consumers' online shopping intentions. We use conjoint analysis, a method long used in marketing research but relatively new to e-commerce, that decomposes overall judgments into "part-worths" showing the relative contribution of each attribute to online purchase likelihood. Within this context, we investigate the extent to which specific customer characteristics moderate the relationship between these e-tailer attributes and intention to shop online. We consider age, gender and consumers' prior online shopping experience. Understanding the moderating effects of demographic and/or behavioral variables on consumers' online purchase decisions can help e-tailers develop targeted strategies to increase e-sales.

RELEVANT LITERATURE

E-Tailer Attributes

There has been considerable attention in the e-commerce literature devoted to both identifying e-tailer attributes as well as investigating how these attributes (or dimensions) affect customer perceptions, satisfaction, and willingness to transact online. Service quality, in particular the well-known SERVQUAL scale [1], has been the starting point for a number of researchers interested in this line of

inquiry. SERVQUAL dimensions remain pertinent and appear in many e-commerce research studies, in particular the attributes of *reliability* and *assurance* referred to as "security" (e.g., [4]).

Two scales that focus on attributes related exclusively to the website interface are SITEQUAL [16] and WebQual [6]. SITEQUAL identifies four e-quality dimensions: (1) *ease of use,* (2) *aesthetic design*, (3) *processing speed,* and (4) *security of personal and financial information*. WebQual reveals the following 12 dimensions: (1) *informational fit-to-task,* (2) *interactivity,* (3) *trust,* (4) *response time,* (5) *ease of understanding,* (6) *intuitive operations,* (7) *visual appeal,* (8) *innovativeness,* (9) *flow/emotional appeal,* (10) *consistent image,* (11) *online completeness,* and (12) *better than alternative channels*.

Other scales have been developed to go beyond the website interface and include all aspects of purchasing online. eTailQ [13] identifies four underlying e-tailing dimensions: (1) *fulfillment/reliability,* (2) *website design*, (3) *customer service,* and (4) *security/privacy*. Similarly, E-S-QUAL [7] uncovers four e-tailing attributes: (1) *efficiency,* (2) *fulfillment,* (3) *system availability,* and (4) *privacy*. And E-RecS-QUAL [7] reveals the e-customer service attributes of *responsiveness, compensation,* and *contact*.

Trust has also been studied extensively as a factor affecting willingness to purchase online. Gefen *et al.* [2] argues that online shopping involves not only interacting with an e-tailer's website but also with the e-tailer itself. Among the antecedents to trust is *familiarity with the e-vendor*.

Consumer Characteristics

Numerous studies have explored the impact of consumer characteristics, such as gender, age, ethnicity, and prior internet experience, on online purchasing behavior. Some findings have been quite consistent. For instance, higher comfort with and frequency of use of the internet is positively related to likelihood of online purchasing [15]. However, findings with regard to gender and age have been mixed. Early studies observed significant differences. For example, males reported a more emotionally satisfying online shopping experience than females; females did not trust e-commerce to the same extent as males [11]. Further, older individuals were found to be more likely to avoid uncertainty and less accepting of new ideas [12]. Recent findings suggest more complex underlying relationships. Passyn, Diriker and Settle [10] find that women report less enjoyment shopping online than do men and that seniors report more concern about information security as compared to younger consumers, but acknowledge that the statistically significant differences are not dramatic. Moreover, Hernández, Jiménez, and Martín [3] find that differences due to gender and age are nonexistent among e-shoppers who are "experienced."

METHODOLOGY

Design

In order to balance the need to include important e-tailing attributes while keeping the number of judgments manageable for participants, we use five attributes to describe e-tailers. The first attribute is *reputation of e-tailer* because of its association with trust and SERVQUAL. We use *site usability* and *security* since each has been included in previous scales (e.g., SITEQUAL). We include *delivery* (to represent fulfillment from eTailQ and E-S-QUAL) and *customer support* (to represent e-customer service dimensions from E-RecS-QUAL). Each of these is conceptualized at two levels (see Table 1). Using the complete set of attributes yields 32 (2×2×2×2×2) e-tailer profiles. We used a ½ fractional factorial design in order to reduce respondent fatigue. This reduced the number of judgments required by each participant from 32 to 16.

TABLE 1

Attribute	Levels
Reputation	0 = Lesser known, small specialty retailer. 1 = Widely recognized, established retailer.
Site Usability	0 = Web interface is not user-friendly. 1 = User-friendly web interface.
Security	0 = No visible assurance of secure transactions. 1 = Encryption technologies to assure secure transactions.
Delivery	0 = Order tracking number provided. 1 = Excellent record for on-time delivery.
Customer Support	0 = Toll free number is available for customer service. 1 = Live person chat support available for customer service.

Data Collection

Research participants were recruited from a university setting to take part in an experimental study about "online shopping." Flyers were used to publicize the study and to give details about compensation and session times. The study was carried out over multiple sessions, each session involving several tasks.

The participants' main conjoint task was to rate their likelihood of shopping with each fictitious e-tailer. Participants were presented with 16 cards, each describing an e-tailer in terms of the five attributes: *reputation of e-tailer*, *site usability*, *security*, *delivery*, and *customer support*. They were asked to "rate the likelihood of shopping online with the retailer" on a 5-point Likert scale (1 = definitely would not, 2 = probably would not, 3 = might/might not, 4 = probably would, 5 = definitely would).

Moderating Effects

Conjoint analysis is used to decompose participants' judgments about intention to shop online with specific e-tailers into estimated "part-worths" for the attributes. Since shopping intention (dependent variable) is measured on a 5-point Likert scale (ratings data), we use ordinary least squares regression for estimation. The e-tailer attributes were coded as indicated in Table 1. Hence, the magnitude of each estimated regression coefficient also indicates the attribute's relative importance.

The main objective of this study is to test for potential moderating effects on the relationship between e-tailer attributes and online shopping intention of age, gender and prior online shopping experience. To do this, we build three separate regression models – each one focusing on a particular moderator variable. Each regression model includes all five e-tailer attributes, the moderator variable of interest, and the resulting five interaction terms (i.e., e-tailer attribute × moderator variable). Using regression models with interaction terms is a well-established way to identify significant moderator variables [8].

RESULTS

Respondent Profile

A total of 122 participants took part in the study. Participants included undergraduate students, graduate students, and professional staff. Respondents range in age from 19 to 66, with an average of 27.2. Most

(65%) are female and employed at least part-time. Over 62% have made between 1 and 6 online purchases in the last 3 months; almost 80% make at least 6 purchases from online retailers, on average, per year. The majority (almost 75%) report frequent browsing of e-tailers on a daily or weekly basis.

Age as Moderator

Based on self-reported age, participants were divided into two groups: "younger" (≤ 25, $n_y = 94$) and "older" (≥ 26, $n_o = 28$). To investigate the moderating effect of age, we estimated a regression model that included age (0 = younger, 1 = older), all five e-tailer attributes, and the five e-tailer × age interactions as independent variables. The five e-tailer attributes and age were forced into the model. The interaction terms were added to and/or dropped from the model based on significance testing using stepwise regression. The results are reported in Table 2.

TABLE 2

Predictor	Coefficient	Coefficient SE	T	P
Constant	1.52533	0.04881	31.25	0.000*
Reputation	0.80851	0.04147	19.50	0.000*
Site Usability	0.82181	0.04147	19.82	0.000*
Security	1.64628	0.04147	39.70	0.000*
Delivery	0.01947	0.03640	0.53	0.539
Customer Support	0.02561	0.03640	0.70	0.482
Age	-0.19073	0.08656	-2.20	0.028*
Reputation x Age	-0.48262	0.08656	-5.58	0.000*
Site Usability x Age	0.19158	0.08656	2.21	0.027*
Security x Age	0.21533	0.08656	2.49	0.013*

**Significant at the 0.05 level.*

The regression model has an R-squared value of 62.0%. In addition to interacting significantly with *reputation*, *usability*, and *security*, age alone is a significant predictor of online shopping intention and manifests itself with a negative coefficient. Because the older group of respondents is coded as "1," this suggests that older consumers have a lower intent to shop online, regardless of e-tailer attributes.

Gender as Moderator

Using the same approach to examine the potential moderating effect of gender, we coded male ($n_m = 43$) as "0" and female ($n_f = 79$) as "1." Again, the three e-tailer attributes of *reputation*, *site usability*, and *security* are significant at .05 level. The resulting R-squared value is 60.6%. However, neither gender alone nor any gender × e-tailer attribute interaction terms are found to be significant.

Prior Experience as Moderator

Participants provided information about prior online shopping experiences by estimating the average number of online purchases they make per year. The five intervals for average number of purchase per year were *0-5*, *6-12*, *13-20*, *21-36*, and *>36*. Based on the distribution of responses, we eliminated the *6-12* category to create more separation between frequent and infrequent online shoppers. This reduced the sample size to 85. Consequently, the two groups used for the regression analysis were "infrequent online

shoppers" (*0-5* purchases per year, n_i = 26) and "frequent online shoppers" (*13+* purchases per year, n_f = 59), coded 0 and 1, respectively. The regression results are shown in Table 3. The resulting regression model has an R-squared value of 59.0% and indicates that prior online purchasing experience interacts with *e-tailer reputation* and *site usability* to significantly affect online shopping intention.

TABLE 3

Predictor	Coefficient	Coefficient SE	T	P
Constant	1.50314	0.08207	18.31	0.000*
Reputation	0.80288	0.08293	9.68	0.000*
Site Usability	0.71635	0.08293	8.64	0.000*
Security	1.70147	0.04587	37.10	0.000*
Delivery	0.02500	0.04587	0.55	0.586
Customer Support	0.02206	0.04587	0.48	0.631
Annual Online Purchasing Frequency	0.00395	0.08621	0.05	0.963
Reputation x Annual Online Purchasing Frequency	-0.19695	0.09954	-1.98	0.048*
Usability x Annual Online Purchasing Frequency	0.20315	0.09954	2.04	0.041*

**Significant at the 0.05 level.*

DISCUSSION AND IMPLICATIONS

The results from our conjoint study indicate that the most important attribute affecting online shopping intention is *security*, followed by *reputation of e-tailer* and *site usability*. Moreover, we find that age and prior online shopping experience (specifically annual online purchasing frequency) significantly moderate how these three e-tailer attributes affect consumers' likelihood of shopping online. Gender was not found to be a significant moderator variable.

Age interacts significantly with all three most important e-tailer attributes in predicting likelihood of online shopping. The interactions with security and site usability result in positive regression coefficients. This indicates that a visibly secure and easy-to-use interface is more important to older consumers, a finding which is consistent with previous research [10]. Interestingly, the regression coefficient for the interaction term *age* × *reputation* is significant but negative. This suggests that older consumers consider the *reputation of an e-tailer* less important in determining intent to shop online than do younger consumers, all else being equal. Admittedly, this result seems counterintuitive. It may point to the presence of interactions between consumer characteristics unaccounted for in the model or perhaps due to the cutoffs used to define age categories.

Past online purchasing frequency interacts significantly with two of the three most important e-tailer attributes: *e-tailer reputation* and *site usability*. The regression coefficient for the interaction term *online purchase frequency* × *reputation* is negative, suggesting that *e-tailer reputation* has less influence on the intent to shop online for those with more prior online purchasing experience. Experienced internet shoppers are likely to perceive lower inherent risk in online transactions, even with a less reputable e-tailer [9]. The positive coefficient for the interaction of *site usability* with online purchase frequency indicates that an experienced internet consumer is more likely to shop with e-tailers that have highly usable website interfaces. The main reason such shoppers use the internet is probably convenience, therefore they may be more inclined to use e-tailers that facilitate efficient transactions.

Our study is not without its limitations. We restricted attention to only five attributes. There are obviously other e-tailing attributes that may have been considered. Moreover, we tested the moderating effects of age, gender, and prior experience independently (ignoring potential interactions among them) by categorizing respondents into two groups (based on categories that we defined). Finally, the way we selected our research subjects may have biased the sample toward individuals with more experience shopping online compared to the general population.

Our study not only contributes to research attempting to understand the impact of e-tailer attributes on consumers' decisions to purchase online, but goes further by exploring the interactions between select e-tailer attributes and specific consumer characteristics using conjoint analysis. These findings have implications for e-tailers wishing to develop effective targeted strategies to increase online sales among current customers as well as to attract potential new online shoppers.

REFERENCES

[1] Berry, L.L. & Parasuraman, A. *Marketing Services – Competing through Quality.* New York: The Free Press, 1991.

[2] Gefen, D., Karahanna, E. & Straub, D.W. Trust and TAM in online shopping: an integrated model. *MIS Quarterly*, 2003, *27* (1), 51-90.

[3] Hernández, B., Jiménez, J. & and Martín, M.J. Age, gender and income: do they really moderate online shopping behaviour? *Online Information Review*, 2011, *35* (1), 113-133.

[4] Jun, M., Yang, Z. & Kim, D. Customers' perceptions of online retailing service quality and their satisfaction. *International Journal of Quality and Reliability Management*, 2004, *21* (8), 817-840.

[5] Lee, G.G. & Lin, H.F. Customer perceptions of e-service quality in online shopping. *International Journal of Retail and Distribution Management*, 2005, *33* (2/3), 161-176.

[6] Loiacono, E., Watson, R. & Goodhue, D. WebQual: a measure of web site quality. *Marketing Theory and Applications*, 2002, *13* (3), 432-438.

[7] Parasuraman, A., Zeithaml, V.A. & Malhotra, A. E-S-QUAL: a multi-item scale for assessing electronic service quality. *Journal of Service Research*, 2005, *7* (3), 213-33.

[8] Park, D., Lee, J. & Han, I. The effect of on-line consumer reviews on consumer purchasing intention: the moderating role of involvement. *International Journal of Electronic Commerce*, 2007, *11* (4), 125-148.

[9] Park, J. & Stoel, L. Effect of brand familiarity, experience and information on online apparel purchase. *International Journal of Retail & Distribution Management*, 2005, *33* (2/3), 148-160.

[10] Passyn, K.A., Diriker, M. & Settle, R.B. Images of online versus store shopping: have the attitudes of men and women, young and old really changed? *Journal of Business & Economics Research*, 2011, *9* (1), 99-110.

[11] Rodgers, S. & Harris, M.A. Gender and e-commerce: an exploratory study. *Journal of Advertising Research-New York*, 2003, *43* (3), 322-329.

[12] Staughn, R. & Albers-Miller, N. An international investigation of cultural and demographic effects of domestic retail loyalty. *International Marketing Review*, 2001, *18* (5), 521-541.

[13] Wolfinbarger, M. & Gilly, M.C. eTailQ: dimensionalizing, measuring and predicting e-tail quality. *Journal of Retailing*, 2003, *79* (3), 183-98.

[14] Yoo, B. & Donthu, N. Developing a scale to measure the perceived quality of an internet shopping site (SITEQUAL). *Quarterly Journal of Electronic Commerce*, 2001, *2* (1), 31-46.

[15] Zhou, L., Dai, L. & Zhang, D. Online shopping acceptance model – a critical survey of consumer factors in online shopping. *Journal of Electronic Commerce Research*, 2007, *8* (1), 41-62.