ONLINE SHOPPING FREQUENCY
Adding e-Tailing Quality to the Mix

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Abstract: A logistic regression model is developed to predict the frequency with which consumers make online purchases. Using survey responses from a national sample of U.S. online consumers, we categorize respondents as high and low frequency Internet shoppers. We include as predictor variables demographics (age, gender, education level and income), frequency of Internet browsing, product type (search versus experience), and seven empirically derived dimensions of e-tailing quality (reliability, accessibility, ordering services, convenience, product content, assurance and credibility).

1 INTRODUCTION

A growing body of literature has been devoted to understanding the factors that motivate consumers to shop online. Empirical studies have examined the impact of demographics, external environment, personal characteristics, vendor/service/product characteristics and website quality on the attitudes and behavior of online consumers (Li and Zhang, 2002). Another stream of research has focused on defining e-tailing (electronic retailing) quality more broadly. Acknowledging that consumers' experience with online retailers goes beyond the website interface, some argue that e-tailing quality includes every aspect of purchasing via the Internet (e.g., Wolfinbarger and Gilly, 2003). Given the likely link between e-tailing quality and online shopping satisfaction, we suggest that all dimensions of e-tailing quality be included when examining the factors that motivate consumers to purchase online.

1.1 e-Quality Dimensions

Early work identifying the dimensions associated with e-quality (electronic quality) often used service quality as a reference point (e.g., Cox and Dale, 2001). Some (e.g., Long and McMellon, 2004), found that quality aspects perceived to be important in website design, website use, and online retailing corresponded directly to SERVQUAL (Berry and Parasumaran, 1991). Others, such as Madu and Madu (2002), borrowed from both service and product quality to propose a more comprehensive conceptual e-quality framework. For instance, they identify the following 15 dimensions: performance; features; structure; aesthetics; reliability; storage capability; serviceability; security and system integrity; trust; responsiveness; product/service differentiation and customization; web store policies; reputation; assurance; and empathy.

Some researchers also included factors typically associated with traditional retailing. For example, Cho and Park (2002) included customer service, purchase and delivery results in developing an e-commerce user-consumer satisfaction index. Similarly, in a study measuring perceived satisfaction with online retail shopping, Kim and Eom (2002) included scale items related to physical retailing. They found that issues such as guaranteed on-time delivery and hassle-free return affected online consumer satisfaction.

A number of empirical studies focused on the underlying constructs (or dimensions) of e-quality. Yoo and Donthu (2001), in developing SITEQUAL, identified the following four e-quality dimensions: (1) ease of use; (2) aesthetic design; (3) processing speed; and (4) security of personal and financial information. Wolfinbarger and Gilly (2003), in developing their scale eTailQ, reduced 40 attributes to four underlying dimensions: (1) fulfillment/reliability; (2) website design; (3) customer service; and (4) security/privacy. Equally comprehensive in their approach is the work of Parasumaran, Zeithaml and Malhotra (2005) in developing E-S-QUAL. The

22 items of E-S-QUAL resulted in the following four dimensions: (1) efficiency (ease of using the site); (2) fulfillment (extent to which the site promises are fulfilled); (3) system availability (correct technical functioning); and (4) privacy (degree of protection).

1.2   e-Tailing Quality Framework

Our goal in this study is to include the potential impact of e-tailing quality dimensions to predict the frequency with which consumers purchase via the Internet. The e-tailing dimensions we use in our model are derived empirically from a set of attributes that comprise our own e-tailing quality framework. Previously used to benchmark real online transactions for a sample of online retailers (Tamimi, Rajan and Sebastianelli, 2003), these attributes are organized along the four phases of a consumer's online shopping experience: (1) encountering the online retailer's homepage; (2) selecting a product from the online catalog; (3) completing the order form; and (4) customer service and support.

To represent quality in the first phase, encountering an online retailer's homepage, we identified the following twelve attributes: (1) *Meta tags* – website easily found by search engines; (2) *Home page title* – easily recognizable; (3) *Domain name* – unique; (4) *Speed of loading* – time it takes to download; (5) *Links* – number of bad links; (6) *Contact information* – visible on homepage; (7) *Timeliness of information* – recently updated; (8) *Privacy policies* – explicit on homepage; (9) *Search engines* – available on homepage; (10) *Translation to multiple languages* – ability to translate content into multiple languages; (11) *Navigational bars or site maps* – present on homepage for ease of use; (12) *Value added extra content* – such as product reviews.

Since an online retailer must provide sufficient realism to its customers in the online catalog, we identified the following seven attributes for this phase: (1) *Presence of product search engine* – allow search by category or price range; (2) *Price* – adjacent to the product in the catalog; (3) *Images* – clear color product images; (4) *Comprehensive product descriptions* – include size, dimension, weight, etc.; (5) *Labeling of out of stock items* – easy to find; (6) *Brands and models* – wide variety offered; (7) *Special offers* – coupons and discounts.

After product selection, an online shopper encounters an order form, typically integrated with an online shopping cart. Security and trust are key issues in this phase. Consequently, we identified the following eight attributes: (1) *Breakdown of overall costs* – includes all extra charges; (2) *Multiple payment options* – available; (3) *Shopping cart editing* – ability to add and remove items from the cart; (4) *Security* – presence of seals of approval logos or encryption technologies; (5) *Shipping options* – several available; (6) *Instructions* – helpful in completing the order form; (7) *Ease of transaction* – minimum number of clicks required to complete; (8) *Price calculation* – correct and accurate.

Finally, customer service and support are critical determinants of satisfaction. We identified the following ten attributes: (1) *Instant merchant notification* – instant automated notification of order receipt; (2) *Order tracking* – issuance of order tracking number; (3) *On-time delivery* – actual matches promised delivery date; (4) *Honest product representation* – product received matches online representation; (5) *Explicit return policy* – clear explanation of return policy and restocking charges; (6) *Order cancellation* – option to cancel submitted orders; (7) *Order changes* – option to change submitted orders; (8) *Product return* – hassle free; (9) *Customer help* – available online or toll free number; (10) *Accurate billing* – bill is accurate.

2   METHODOLOGY

2.1   Sample

Our sample consisted of Internet shoppers defined as those who are engaged in buying products or services online. The sampling frame, comprised of opt-in e-mails, was obtained from Martin Worldwide, a provider for direct mail and telemarketing leads. The link to the web survey was sent via e-mail to 6666 online consumers. Only one e-mail was sent to each consumer. In order to increase study participation, an incentive lottery was offered.

2.2   Survey Instrument

The online questionnaire consisted of three sections, two of which are relevant for this paper. The first gathered background information on online shopping behaviors and preferences (e.g., types of products and/or services purchased) and demographics. The second section consisted of statements representing all of the attributes in our e-tailing quality framework. These statements were

randomly ordered on the questionnaire (not grouped according to phase). Respondents were asked to rate how important each factor was in determining the quality of an online retailer using a five-point scale (1 = not important, 2 = slightly important, 3 = somewhat important, 4 = important, 5 = very important).

3 RESULTS

3.1 Respondent Profile

A total of 422 respondents completed the online survey for a response rate of 6.3%. With regard to gender, 59% of the respondents are female. The average age is 44. Of those responding, the majority is Caucasian (73%), employed full time (62%), and married (57%). The majority (59%) has an annual household income of less than $50,000 with 21% earning more than $75,000. In terms of online behaviors, 23% indicate that they have made at least 10 purchases online during the last six month period and 43% report browsing the Internet daily.

3.2 Factor Analysis

Principal components factor analysis was used to extract the factors (dimensions) from the set of e-tailing quality attributes. Varimax rotation of the solution was employed to improve interpretability. The results, published elsewhere (Sebastianelli, Tamimi, and Rajan, 2008), are shown here in Figure 1. The seven e-tailing quality dimensions extracted from the attribute importance ratings are reliability, accessibility, ordering services, convenience, product content, assurance and credibility. Cronbach's alpha (a measure of reliability) as well as the specific attributes loading strongly on each are also provided for each dimension.

3.3 Binary Logistic Regression

Respondents were asked to indicate their number of online purchases during the last 6 months. Response categories were none, 1-3, 4-6, 7-9, or more than 10. We eliminated the middle category (4-6) and defined 3 or fewer purchases to be "low" and 7 or more to be "high" for the binary dependent variable.

We included demographics (age, gender, education level and income) as well as frequency of Internet browsing and product type as potential independent variables. We categorized respondents

Factor I – "Reliability" (Cronbach's alpha = .857)
Accurate calculation of total price when ordering.
Accurate billing.
Ability to add / remove items from the shopping cart.
Clear breakdown of overall cost.
Price displayed adjacent to the product in the catalog.
Labeling of items that are out of stock.
Issuance of order tracking numbers.
On time delivery of order.

Factor II – "Accessibility" (Cronbach's alpha = .843)
Ability to translate website into multiple languages.
Unique trademark.
A meaningful homepage title.
Search engines present on homepage.
Retailer website easily found by search engines.
Presence of navigational bars or site maps.
Timely information updates on homepage.

Factor III – "Ordering Services" (Cronbach's alpha = .825)
Options for canceling an order.
Ability to change a submitted order.
Availability of different shipping options.
Issuance of instant notification of order received.
Presence of instructions for completing the order form.
Availability of several payment options.

Factor IV – "Convenience" (Cronbach's alpha = .783)
Special offers such as coupons in the online catalog.
Value added extras on the homepage.
Presence of search engines in the online catalog.
Speed of page downloading.
Order form completed with minimum clicks.

Factor V – "Product Content" (Cronbach's alpha = .670)
Display of color images of products.
Providing complete product descriptions.
A wide variety of brands and models offered.

Factor VI – "Assurance" (Cronbach's alpha = .659)
Inclusion of privacy policies on the homepage.
Availability of online help or toll free number.
No bad links.
Security of orders (e.g., presence of seals or logos).

Factor VII – "Credibility" (Cronbach's alpha = .766)
Information on return policy and restocking charges.
Presence of contact information on homepage.
Accuracy of online product representations.
Hassle free product return.

Figure 1: Factor analysis results.

answers to the question "which product are you most likely to purchase online?" as being either search or experience based on the scheme provided by Girard, Korgaonkar, and Silverblatt (2003). Finally, we included all seven e-tailing quality dimensions using the factor scores as independent variables.

A stepwise model building procedure was used to develop the binary logistic model. Specifically, Forward Selection (Wald), a stepwise method for which independent variables are entered into the model based on the significance of the score statistic and removed based on the probability of the Wald statistic, was employed. The resulting model is shown in Table 1. Its overall accuracy in predicting correct group membership is 71.6%.

Table 1: Binary Logistic Regression Model.

Variable	B	S.E.	Wald	Sig.
Convenience	.322	.188	2.929	.087
Product Content	.585	.197	8.834	.003
Browsing	.871	.206	17.854	.000
Age	-.031	.017	3.226	.072
Income	.815	.179	20.666	.000
Constant	-4.260	1.147	13.804	.000

4 IMPLICATIONS

Our results indicate that two e-tailing quality dimensions, product content and convenience, along with income, age, and frequency of Internet browsing are significant predictors of online shopping frequency. Not surprisingly, consumers who frequently purchase products online tend to be younger, with higher incomes and spend more time browsing than less frequent online shoppers. While online retailers cannot control these predictors, they can control e-tailing quality dimensions. Our findings suggest that online retailers wishing to increase purchases from their Internet sites should focus on improving the quality of e-tailing attributes associated with product content and convenience.

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