

DEVELOPING A MEASUREMENT INSTRUMENT FOR DISCERNING CONSUMERS' E-COMMERCE PURCHASE PERCEPTIONS

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ABSTRACT

This paper describes the development and testing of a survey instrument that is useful in assessing different aspects that, when taken together, form the perceptions that retail consumers rely upon when making electronic commerce purchase decisions. The survey instrument is designed using proven market research techniques and knowledge of consumer behavior. This survey instrument is offered to the research community as a tool to conduct further research in the burgeoning e-commerce retail marketplace.

Keywords: e-commerce, purchase decisions, consumer purchase perceptions

INTRODUCTION

The growth and maturation of electronic commerce has spawned demands for changes in web-based application software in an effort to capture increasing shares of a growing marketplace. New languages and new strategies have evolved to support this effort. As the number of e-commerce web sites proliferates, consumers are able to locate particular goods and services available from multiple vendors. This creates a purchase situation referred to in the marketing literature as a *commodity purchase*. Unless vendors differentiate their product offerings from other vendors, purchase decisions are based solely on price. This suffices for those vendors who wish to depend solely on offering the lowest price to win consumers' purchase decisions. Marketing literature also tells us that many vendors prefer to compete based upon other factors such as range of selection, customer service, easy of purchase, and safety of the purchase transaction.

Numerous studies have sought to discern which relationships cause consumers to select one shopping site over another. Four specific determinant groups that influence consumers' purchase decisions have been identified in the literature (10, 16). They are: product perception, shopping experience, customer service, and consumer risk. Product perception is one determinant of where consumers choose to shop (7). The most influential product perception factors cited in the literature are price, product quality, and product variety (1, 2). The second group of determinants is shopping experience, often described in terms of time, convenience and product availability (4, 5); effort (3); lifestyle compatibility (13); and playfulness or enjoyment (8) of the shopping process. Customer service is frequently identified as the third dimension that determines shopping choice (2). Consumer adoption of new retail innovations, such as e-commerce purchasing, is influenced by perceived risks. Economic, social, performance, personal and privacy risk dimensions are typically considered (10,14).

The objective of this study is to develop a measurement instrument for the four factors identified in the literature as affecting purchase decisions (product perception, shopping experience, customer service, and perceived risk) to e-commerce purchases.

REVIEW OF LITERATURE

Each of the four factors believed to influence consumers' purchase decisions has historically been researched and documented in the context of traditional consumer behavior literature. For the purposes of this research, existing research findings are used to construct a basis for examining how each of the factors applies to e-commerce purchases.

Product Perception

Perceptions of the products to be found at a given retailer are one key determinant of where consumers choose to shop (7). The most influential factors cited in the literature are perception of price, product quality, and product variety (1, 2).

Price is defined as the total monetary cost to the consumer for the purchase. New pricing strategies are now being applied to goods and services sold over the Internet. Dynamic pricing, a pricing strategy where prices change over time, across consumers, or across product bundles can be easily executed on the Internet (11).

Product quality is defined as the distinguishing characteristics inherent in the product or service that differentiate it from competitive product or service offerings. Service refers to the service that is being purchased and should not be confused with customer service, which is treated as a separate factor. A third variable, product variety, is defined as the assortment or range of similar or complimentary goods available from the retailer.

Shopping Experience

The shopping experience is a mixture of effort (3), lifestyle compatibility (13), and playfulness (8, 9). When engaged in e-commerce purchases over the Internet, effort is primarily mental as opposed to physical; shoppers work at their keyboard instead of having to plan for and travel to shopping sites. For e-commerce shopping, the dominant components of effort are ease of use and ease of placing and canceling orders (4, 5). Compatibility considers the consumers' lifestyle and shopping habits (16). The shopping tools must be easy to use and must provide the customer with all of the information required to make a purchase decision. Playfulness takes into account the shopper's overall satisfaction with the shopping experience. Realistically, all shoppers are seeking a shopping experience that is as convenient, lifestyle compatible, and an enjoyable activity as possible.

Customer Service

Customer service determines shopping choice through responsiveness, assurance, and reliability attributes (2). Responsiveness is embodied in the way that the service provider anticipates and responds promptly and effectively to customer needs and requests. Assurance is exemplified by the degree to which the service provider reduces customers' uncertainty by instilling confidence that the transaction will occur as the consumer expects it will. Reliability occurs when the customer perceives that there is a high probability that the service provider can be counted on to deliver all of what is being promised.

Consumer Risk

Consumer adoption of a retail innovation is influenced by perceived risks. The risk dimensions typically considered are economic, performance, personal, (14) and privacy (10). Economic risk encompasses monetary losses associated with poor purchase decisions, the inability to return a product, and the non-receipt of a product ordered (12). Performance risk involves the consumer's perception that a product or service may fail to meet expectations (6). The possibility of harm to the consumer resulting from either the product or the shopping process is referred to as personal risk. Credit card security is a key personal risk factor when participating in an e-commerce transaction (10). Privacy risk occurs when confidential information becomes available to unauthorized parties as a result of the consumer engaging in an e-commerce transaction (10).

SURVEY INSTRUMENT AND DATA COLLECTION

An initial survey of e-commerce purchase perceptions was created by the authors using the literature presented above. This survey consisted of 15 word/phrases related to general purchase perceptions and representing the four determinants of the buying experience. To improve the survey's content validity, these items were then subjected to a review by a focus group of fifteen e-commerce professionals. Some phrases were revised and three additional phrases were added. The final version of the survey contained 18 randomly listed items. Respondents were instructed to circle a number on a seven-point semantic distance scale to show how well they felt each word or phrase described an Internet purchase. The extremes were labeled "Not at all" and "Very influential".

The data were collected in a survey of 200 adults from the general public, most of who lived in the Mid-Atlantic States. To avoid the high non-response rate typical of mail surveys, the data were collected by approximately 20 college students who delivered and retrieved the self-administered questionnaires from field-worker selected locations (shopping malls, neighborhoods, etc.). The self-administered questionnaire was completed anonymously and without compensation. Each student field-worker was assigned a flexible quota of ten respondents to avoid bias. The process was monitored closely and a small fraction of responses were verified by telephone to ensure reliability.

STATISTICAL METHODS

As discussed earlier, to provide content validity for the variables gathered, all questionnaire items were originally drawn from the general purchase perceptions literature. These 15 items were reviewed by a focus group of e-commerce professional for corrections, additions, and deletions. Eighteen scaled items reflecting product perception, shopping experience, customer service, and consumer risk were ultimately included on the survey. Table 1 depicts each of the e-commerce product perceptions and also shows (represented with an *) where the traditional consumer purchasing literature would expect each perception would be present.

The initial investigational factor validity was assessed by performing a factor analysis on the 18 product perception, shopping experience, customer service, and consumer risk scale items using principal component extraction and varimax rotation (16). The rotation converged in nine iterations identifying the four principle components with an Eigen value of at least 1. The four components corresponded with the four purchase perceptions variables outlined in the literature (product perception, shopping experience, customer service, and consumer risk). Two scale

items (Delivery time and acceptable payment method) did not appear to be related to any one of the four purchase perception components. One scale item (amount of time spent shopping) was evident in two components (Table 1).

Table 1: Investigational Construct Validity (Factor Analysis)

Scale Items	Customer Service	Product Perception	Shopping Experience	Consumer Risk
Vendor warranty/guarantee	.754		*	
Return policy	.719			
Return convenience	.682			
Product Variety	.674			*
Product Quantity	.644			
Lifestyle compatibility		* .794		
Physical effort to shop		* .754		
Ease of Internet shopping		* .685		
Enjoyable activity		* .655		
Amount of time spent shopping	.561	.584		
Delivery time				
Forms of acceptable payment				
Customer service/responsiveness	*		.795	
Vendor reliability	*		* .790	
Confidentiality of personal data			* .722	
Credit card security			* .538	
Price				* .833
Quality				* .807

Table 1 Notes: Asterisks indicate where traditional consumer purchase literature would expect product perceptions to appear.

Factors evident below the .5 cutoff are not included in Table 1.

The scale items that did were absent from any of the four purchase perception components were removed and a second factor analysis was performed. The scale item that loaded on two components (*Amount of time spent shopping*) remained. For the second factor analysis, limits were set to a maximum of 4 components in order to force each word phase into each of the given multi-item variables. *Amount of time spent shopping* loaded into the shopping experience component (Table 2).

Table 2: Construct Validity (Factor Analysis)

Scale Items	Customer Service	Shopping Experience	Consumer Risk	Product Perception
Vendor warranty/guarantee	.718		*	
Return policy	.691			
Return convenience	.686			
Product Variety	.665			*
Product Quantity	.647			
Lifestyle compatibility		* .792		
Physical effort to shop		* .737		
Ease of Internet shopping		* .662		
Enjoyable activity		* .700		
Amount of time spent shopping		.562		
Customer service/responsiveness	*		.805	
Vendor reliability	*		* .794	
Confidentiality of personal data			* .710	
Credit card security			* .524	
Price				.872
Quality				.815

Table 1 Notes: Asterisks indicate where traditional consumer purchase literature would expect product perceptions to appear.

Factors evident below the .5 cutoff are not included in Table 2.

Cronbach's alpha was used to assess inter-item reliability for each of the multi-item variables (16). As reported in Table 3, Cronbach's alphas were .8557 for product perception, .8486 for shopping experience, .8762 for customer service, and .8610 for consumer risk. These alpha scores exceed the .80 recommended in the literature for acceptable inter-item reliability, indicating that the factors within each multi-item variable are, in fact, inter-related (16).

Table 3: Inter-Item Reliability (Cronbach's Alpha)

Variable	Alpha
Product perception	.8557
Shopping experience	.8486
Customer service	.8762
Consumer risk	.8610

DISCUSSION AND CONCLUSIONS

The most significant finding of this research is the apparent discrepancy between what the traditional consumer behavior literature suggests will be the most important items relating to the four factors influencing consumer behavior and what the survey respondents indicate influence the e-commerce purchases. This difference is discussed in the context of each of the four factors believed to influence consumers' purchase perceptions.

Product Perception

The scale items that loaded with *Product Perception* were price and quality. This finding was consistent with what the traditional consumer purchase behavior literature would lead us to expect (1,2). Surprisingly, a third influencer that was expected to appear, Variety, appeared instead under *Customer Service*.

Shopping Experience

The scale items that related to *Shopping Experience* were lifestyle compatibility, physical effort to shop, ease of Internet shopping, enjoyable activity, and the amount of time spent shopping. The first four of these are explicitly discussed in the traditional consumer purchase behavior literature. The last one, amount of time spent shopping, can be easily related or combined with physical effort to shop and with ease of Internet shopping. Considering this, it is reasonable to conclude that all of the scale items line up closely with the theoretical literature for *Shopping Experience* (3, 4, 5, 8, 9, 13, 16).

Customer Service

Customer Service determines shopping choice through responsiveness, assurance, and reliability attributes (2). These attributes map to the concepts of customer service/responsiveness and vendor reliability. It is important to note that the five scale items that loaded on *Customer Service* (vendor warranty/guarantee, return policy, and return convenience, product variety, and product quantity) were not those concepts that the traditional consumer purchase literature suggested would be evident. This difference warrants further investigation and will be discussed later in this section. Two expected attributes, customer service/responsiveness and vendor reliability did not load into *Customer Service*, but instead loaded under *Consumer Risk*.

Consumer Risk

The risk dimensions commonly found in traditional consumer behavior literature are economic, performance, personal, (14) and privacy (10). The risk dimensions are clearly presented in the scale items vendor reliability, confidentiality of personal data, and credit card security. Customer service/responsiveness was not expected, but did appear. Vendor warranty/guarantee was expected to appear but did not.

It is clear that consumers engaged in e-commerce are affected by different motivators than consumers engaged in traditional commerce, but that these differences are limited. This research provides evidence regarding what the differences are but does not document why the differences exist. The most significant difference exists in the area of Customer Service. One possible theory regarding why this difference exists would be to consider the effect that occurs when the consumer cannot see or touch the product and the vendor. This engenders a need to introduce the five items (vendor warranty guarantee, return policy, return convenience, product variety, and product quantity) into the purchase decision process. Future research should explore this and alternative theories to better understand why and how these considerations affect e-commerce purchases.

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