Toward a Theory of Online Buyer Behavior Using Structural Equation Modeling

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Abstract

This paper develops a theory of online buyer behavior to explain the process buyers go through while making an online purchase in the digital marketplace. The theory has been empirically tested with primary data collected from mall-intercept systematic sampling and analyzed with structural equation modeling. The results indicate that buyers' attitudes to online shopping are shaped by their perceptions of value, ease of use, and the usefulness of online buying. The actual online purchase is influenced by their intention to use this option, which, in turn, is determined by their attitude toward online shopping. An actual online purchase was also found to give buyers an online shopping experience that significantly shaped their trust in online shopping and future intention to buy things online. Implications of the findings are also presented along with the recommendations.

Keywords: theory of online buyer behavior, online shopping, structural equation modeling

1. Introduction

Development of the Internet has increased the popularity of online shopping (Lian & Lin, 2008). Indeed, a substantial growth and steady increase in online sales has stimulated great interest in understanding buyer behavior in the digital marketplace (Hassan, 2010). Cheung, Chan and Limayem (2005) reported that online buyer behavior had become an emerging area of research with an increasing number of publications every year.

A close examination of the literature in this field reveals that most studies have applied traditional theories of buyer behavior while studying online buying (Hansen, Jensen, & Solgaard, 2004; Hsu, Yen, Chiu, & Chang, 2006; Lim & Ting, 2013b). But traditional theories cannot be applied without modification, as the Internet's distinct characteristics as a purchasing medium have to be taken into account.

Other studies have examined the effects of some homogenous sets of variables on online purchase intention (e.g. buyer characteristics (Dholakia & Uusitalo, 2002), motivation (Rohm & Swaminathan, 2004), and risks (Forsythe & Shi, 2003)). Nonetheless, these investigations remained too focused (domain-specific), thus failing to provide a clear understanding of the online purchasing process as a whole.

With electronic commerce–Internet as a digital marketplace–becoming a crucial aspect of marketing strategy and customer relationship management, there is a growing need for developing new knowledge, models, and theories relating to online buyer behavior. This paper attempts to do that. The proposed theory contends that online buyers go through a purchasing process governed by their perceptions of value, ease of use, and usefulness of online shopping.

2. Conceptual Framework

Traditional theories of buyer behavior (e.g. theories of reasoned action and planned behavior) suggest that a person's behavior is determined by his or her intention to act in a certain manner, and that intention, in turn, is determined by how his or her attitude is shaped (based on perceptual beliefs) for the behavior (Ajzen, 1991; Fishbein & Ajzen, 1975). The outcome of an action is said to equip people with experience that influences the likelihood of the action being repeated in future (Kotler, 1968; Hellier, Geursen, Carr, & Rickard, 2003). In addition, the experience gained has also been seen to influence the creation of trust, which can also affect the prospect of the behavior being repeated (Chiou & Droge, 2006; Doney & Cannon, 1997). The conceptual links between attitude, intention, actual behavior, experience, and trust are supported by a number of prominent marketing and consumer behavior scholars (Dennis, Merrilees, Jayawardhena, & Wright, 2009).

Based on the extant literature, three perceptual beliefs of online shopping appear to be the most prominent–perceived value, perceived ease of use, and perceived usefulness. Forsythe, Liu, Shannon, and Gardner (2006) conclude that online shoppers perceive online buying as providing benefits of product selection, ease/comfort of shopping, and enjoyment. Davis (1989) stresses that people confronted with some form of new technology (or information systems) are likely to evaluate its ease of use and usefulness in deciding for or against it. These findings are also in accordance with the works of Chang and Wang (2011), Gefen, Karahanna, and Straub (2003), Kim, Zhao, and Yang (2008), Lim and Ting (2012a), and Van der Heijden, Verhagen, and Creemers (2003).

Based on this premise, the theory of online buyer behavior posits that the purchasing process that buyers encounter in online shopping starts by online buyers developing an attitude toward online shopping, whereby this attitude is shaped by the perceptual beliefs of value, ease of use, and usefulness. Favorable attitudes are most likely to lead to enhanced online shopping intentions (e-shopping intentions), while unsatisfactory experience is sure to lead in the opposite direction. Consumers desirous of making an online purchase are likely to become buyers in the digital marketplace. But much will depend on their experience of shopping on the Internet, which will either create or ruin their trust in the system, depending on the nature of the experience. Both online shopping experience (e-shopping experience) and trust directly influence the prospects of making online purchases, whereby good online shopping experiences and high trust are likely to reinforce online buyers' intentions to make purchases over the Internet, and vice versa. To test the model fit for the theory of online buyer behavior (see Figure 1), the following hypotheses are advanced:

H1 Online buyers' perceived value of online shopping is significantly related to their attitude toward online shopping.

H2 Online buyers' perceived ease of use of online shopping is significantly related to their attitude toward online shopping.

H3 Online buyers' perceived usefulness of online shopping is significantly related to their attitude toward online shopping.

H4 Online buyers' attitude toward online shopping is significantly related to their intention to make an online purchase.

H5 Online buyers' intention to make an online purchase is significantly related to their actual online purchase.

H6 Online buyers' actual online purchase is significantly related to their online shopping experience.

H7 Online buyers' online shopping experience is significantly related to their intention to make an online purchase.

H8 Online buyers' online shopping experience is significantly related to their trust in online shopping.

H9 Online buyers' trust in online shopping is significantly related to their intention to make an online purchase.
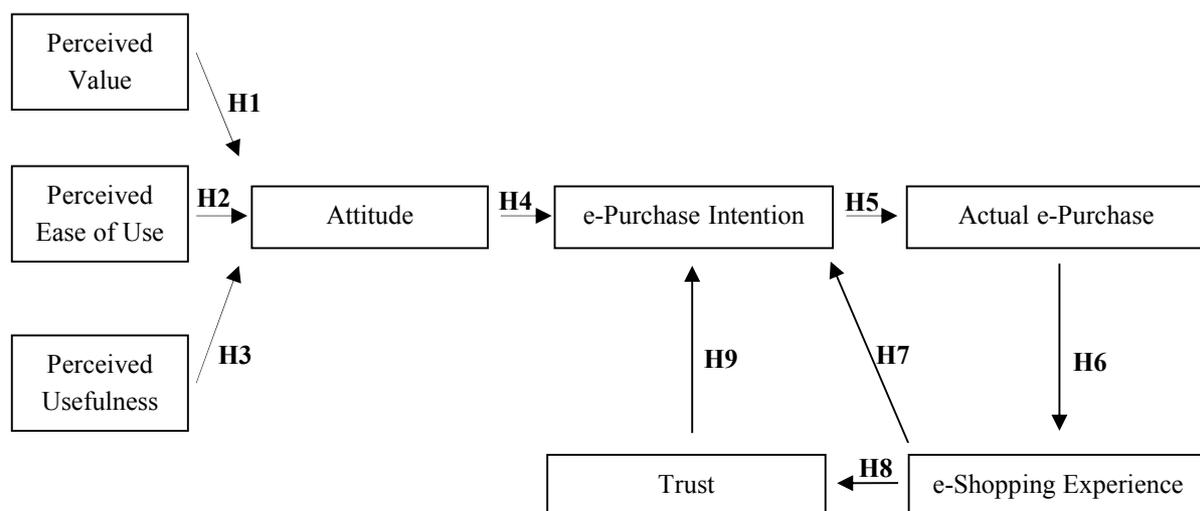

Figure 1. Conceptual model

3. Methods

This study did a survey to collect data. Survey data was collected through self-administered questionnaires distributed among 350 consumers (who had experience in online shopping in the past year [screening criteria]) in shopping malls within Klang Valley, Malaysia. This location consist of residents who come from all the 14 different states in Malaysia and, thus, the strategic choice of sampling from consumers in Klang Valley enhanced the generalizability of results to all Malaysians (Lim & Ting, 2012a, 2012b). A list of shopping malls around the area was prepared, and a simple random sample method was used to select shopping malls as sites for this study (Lim & Ting, 2012c). Upon selection of locations, systematic sampling was done to select participants and to distribute the questionnaire. To minimize sample bias, questionnaires were distributed during low-, medium-, and high-peak shopping hours and days over a four-week period. Participation was voluntary and no incentives were offered to any respondent. It took about an average of 20 minutes for each participant to complete the survey, which was part of a larger study.

The questionnaire comprised two sections. The first asked respondents to answer seven socio-demographic questions pertaining to gender, age, marital status, income, occupation, highest academic qualification, and race. The second asked them to answer 24 questions, using a five-point Likert scale measuring the research constructs under study. These questions were adopted from previous studies in the existing consumer behavior and online consumer behavior literature (see Table 1). Data collected from the questionnaire were analyzed using SPSS v.18 (for descriptive analysis, reliability testing, and exploratory factor analysis) and AMOS v.18 (for confirmatory factor and path analyses).

Table 1. Source of measurement items

Factors	Number of measurement items	Sources
Perceived value	3	Broekhuizen and Huizingh (2009)
Perceived ease of use	3	Lim and Ting (2012a)
Perceived usefulness	3	Lim and Ting (2012a)
Attitude	3	Broekhuizen and Huizingh (2009)
e-Purchase intention	3	Broekhuizen and Huizingh (2009)
Actual e-purchase	3	Sihombing (2007)
e-Shopping experience	3	Lee, Kang, and Choi (2009)
Trust	3	Broekhuizen and Huizingh (2009)

4. Analyses and Results

4.1 Sample Description

A total of 350 online buyers participated in the survey. Over 69 percent were female. The participants ranged from 18 to 51 years in age; 57 percent of them were between 21 and 30 years. Approximately 64 percent were single; 34 percent, married, while the rest were divorced. In terms of employment, approximately three quarter of the participants was full time employees. With regards to income, most participants earned between a combined income range of RM2,000 and RM4,000 (USD$1 = RM3.32 as of 15 August 2013). The sample also consisted of 49 percent undergraduate participants, while 44 percent had studied up to high school, and only 7 percent had postgraduate qualification. This suggests that a large majority of the participants had a graduate background. Finally, in terms of race, the Chinese accounted for 49 percent of the sample, while Malays and Indians represented 46 and five percent of the sample respectively. Overall, these findings are in line with those of Alam, Bakar, Ismail, and Ahsan (2008) in terms of the current population of Malaysian Internet users.

4.2 Exploratory Factor Analysis

The dimensionality of online buyer behavior was examined using exploratory factor analysis in SPSS v.18. The analysis yielded eight factors with eigenvalues greater than 1, explaining 74 percent of the variance. No items that did not load strongly on any factor (below 0.5) or had cross-loadings were found. Factor loadings for each item ranged from .89 to .97. The final research constructs and corresponding measurement items are presented in Table 2.

4.3 Confirmatory Factor Analysis

The identified factor structure was then validated by confirmatory factor analysis using AMOS v.18 (see Table 2). The results provided satisfactory support for the eight dimension model (χ^2 (350) = 382.57, $p < 0.000$; χ^2/df ratio = 1.71; GFI = .99; AGFI = .99; RMSEA = .07). Factor loadings associated with each of the eight dimensions all exceeded .60 and the t-values of all indicator loadings exceeded the critical values at the .05 significance level (Hair, Anderson, Tatham, William, & Black, 1998).

Table 2. Factor analysis

Factors and items	Mean (SD)	Factor loading Exploratory	Factor loading Confirmatory	Cronbach's α
Perceived value				.96
I require less effort in searching for what I want when shopping online.	4.02 (.97)	.96	.96	
The prices of products sold online are lower than of products sold in brick-and-mortar retailers.	4.45 (.50)	.91	.88	
Shopping online is very convenient.	4.08 (1.08)	.97	.86	
Perceived ease of use				.93
I find most online shopping sites easy to use.	4.05 (1.00)	.95	.93	
I find it easy learning to use most online shopping sites.	4.01 (.98)	.95	.96	
I find it easy to use most online shopping sites to find what I want.	3.97 (.89)	.89	.80	
Perceived usefulness				.93
I am able to accomplish my shopping goals more quickly when I shop online.	4.04 (1.02)	.90	.81	
I am able to improve my shopping performance when I shop online (e.g. save time or money).	4.23 (1.07)	.96	.95	
I am able to increase my shopping productivity when I shop online (e.g. make purchase decisions or find product information within the shortest time frame).	4.22 (1.09)	.91	.94	
Attitude				.90
I am comfortable to shop from online retailers.	4.04 (.84)	.91	.86	
I like to purchase what I need from online retailers.	4.02 (.94)	.92	.90	
I find it very desirable to shop online.	3.84 (.95)	.90	.83	
e-Purchase intention				.89
I prefer to shop online.	3.74 (.99)	.90	.84	
I plan to do more of my shopping via online retailers.	3.99 (.91)	.91	.85	

When I need to buy a particular product, I would search for an online retailer which has the product.	3.98 (1.04)	.93	.90	
Actual e-purchase				.94
I make online purchase frequently.	3.94 (.78)	.96	.97	
I make online purchases intensively.	3.91 (.76)	.97	.95	
Overall, I have made many online purchases.	4.02 (.84)	.91	.82	
e-Shopping experience				.90
I usually have a fruitful time shopping online.	3.95 (.96)	.92	.88	
I am pleased with my shopping activity.	3.97 (.99)	.93	.90	
I have a safe (secure) shopping experience over the Internet.	4.04 (.98)	.90	.82	
Trust				.92
I am confident to buy what I want from secured online retailers.	4.27 (.87)	.91	.85	
I feel safe to purchase at online retailers who protect my privacy.	3.95 (.96)	.92	.86	
I feel safe in my transaction at online retailers who provide security measures.	4.38 (1.25)	.96	.95	

4.4 Reliability and Validity Tests

Cronbach's alphas (α-coefficients) were calculated for each of the factors to assess each factor's internal consistency (reliability testing). The α-values ranged from .89 to .96, indicating high internal consistency for all eight factors. Discriminant validity among the eight factors was assessed by comparing correlations between constructs. Results indicated that the correlation between constructs ranged from .48 to .69, with the correlations of no pair of measures exceeding the criterion of .90 and above (see Table 3; Hair, Anderson, Tatham, William, & Black, 1998). Hence, the analysis supported the convergent and discriminant validity of the measures.

Table 3. Correlation matrix

	PV	PEOU	PU	ATT	EPINT	AEP	ESE	TRU
PV	1							
PEOU	.55**	1						
PU	.54**	.49**	1					
ATT	.60**	.56**	.49**	1				
EPINT	.57**	.54**	.55**	.65**	1			
AEP	.52**	.53**	.64**	.56**	.67**	1		
ESE	.53**	.57**	.48**	.59**	.59**	.53**	1	
TRU	.55**	.52**	.61**	.50**	.51**	.57**	.69**	1

Note: **Correlation is significant at the .01 level (two-tailed); PV = perceived value; PEOU = perceived ease of use; PU = perceived usefulness; ATT = attitude; EPINT = e-purchase intention; AEP = actual e-purchase; ESE = e-shopping experience; TRU = trust.

4.5 Structural Relationships of the Conceptual Model

To examine the model fit and predictive capability of the theory of online buyer behavior, structural equation modeling using the maximum likelihood technique was adopted. The overall fit statistics suggest that the model has a reasonable model fit to the data (χ^2 (350) = 486.33, $p < 0.000$; χ^2/df ratio = 2.04; GFI = .99; AGFI = .99; RMSEA = .69). The model fit indexes all exceed their respective common acceptable levels. Table 4 lists the structural parameter significance of the conceptual model. All conceptual links were found to be significant; thus, H1-H9 are supported, and the theory of online buyer behavior is empirically validated.

Table 4. Results of estimation structural model

Path to	Path from	*p*-value
Attitude	Perceived value	.024[*].
	Perceived ease of use	.000[**]
	Perceived usefulness	.000[**]
e-Purchase intention	Attitude	.000[**]
	e-Shopping experience	.000[**]
	Trust	.000[**]
Actual e-purchase	e-Purchase intention	.000[**]
e-Shopping experience	Actual e-purchase	.013[*].
Trust	e-Shopping experience	.000[**]

Note: [**]*p*-value is significant at the .01 level and [*]*p*-value is significant at the .05 level (two-tailed).

5. Discussion

In general, the results from the structural model analysis support the theory of online buyer behavior. This paper empirically validates the conceptual links established between perceived value, perceived ease of use, perceived usefulness, attitude, e-purchase intention, actual e-purchase, e-shopping experience, and trust. In other words, buyers' perceptual evaluation of value and ease of use and usefulness shaped their attitude toward online shopping, a significant predictor to online purchase intentions. The findings highlight how important it is for online retailers to ensure online market offerings-products, services, information, and experiences-that are of considerable value to attract and influence target customers to develop an inclination for online shopping. Besides, the technological interface of online shopping websites should be both useful and user-friendly. These sites can be made useful to potential buyers by providing shopping tools such as site maps and shopping carts, while web atmospherics are encouraged to be designed in a way that facilitates easy navigation between webpages. This should foster positive attitudes among potential buyers and, in turn, increase their urge to do online shopping.

A direct and significant link was also found between buyers' intention to make an online purchase and actually doing it. Online retailers should also note that the online buying process does not end at the point where buyers place their orders, for they keep evaluating their experience, which is found to influence their trust and subsequent desire to purchase online. In other words, online shopping experiences that are fruitful, safe, and secure give rise to trust and increase the likelihood of subsequent online purchases. Given this trait of buyer behavior, it is recommended that online retailers engage in follow-up activities to ensure buyers develop loyalty (e.g. go for repurchase). Fostering trust by making online shopping safe and secure is of paramount importance to triggering repurchase intentions among online buyers.

6. Future Research Directions

This paper positions the theory of online buyer behavior as a basic model to understand the process that buyers go through while making an online purchase in the digital marketplace. In view of its abstract nature, future studies are encouraged to extend this basic model by looking for significant predictors of online buyer behavior and testing for its generalizability across culture and market segments. Thus, building a knowledge base to understand online buyer behavior should be an ongoing and innovative process, instead of one that is definitive or confined.

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