

Full Length Research Paper

Online store trustworthiness and customer loyalty: Moderating the effect of the customer's perception of the virtual environment

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This research seeks to determine which elements of trust, namely, ability, integrity and benevolence, influence customer loyalty. The study also examines how the customer's perception of the virtual environment influences the effect of the elements of trust on customer loyalty. It was found that only integrity and benevolence have a positively significant effect on customer loyalty and that the customer's perception of the virtual environment positively moderates the relationship between these two variables (integrity and benevolence) and customer loyalty. The results suggest that the online store should adjust the online transaction environment to maximize the effect of trust on customer loyalty.

Key words: Trustworthiness, online store loyalty, perception of the virtual environment, moderating effect.

INTRODUCTION

A consulting company, Bain and Company, has reported that an online store can make profit from a customer only when that customer has purchased products at least four times from that same online store (Baveja et al., 2000). Bain and Company (2000) also point out that an online store needs to retain a customer for at least 18 months to reach the break-even point. These findings show that retaining customers or making customers willing to repurchase plays a key role in the long-term profit of an online store. However, it is also obvious that customers can change their online store by incurring only a very low switching cost. This means that it is more difficult for an online store to build customer loyalty than a brick-and-mortar store.

Many studies have claimed that trust is one of the main factors influencing online customer loyalty (Flavian et al., 2006). However, trust is a complicated concept. People

should deeply understand how trust impacts the online customer loyalty building. A deeper understanding of this mechanism could advance the development of knowledge and benefit the practitioner.

THEORETICAL BACKGROUND AND RESEARCH HYPOTHESES

Loyalty

The loyalty issue has been studied extensively in the area of marketing and consumer behaviour. Knox and Denison (2000) define store loyalty as "the consumer's inclination to patronize a given store or chain of stores over time." Oliver (1996) claimed that loyalty formation could involve a sequence including cognitive loyalty, affective loyalty, conative loyalty, and action loyalty. Chen et al. (2009) further identified two kinds of loyalty which they referred to as attitudinal and behavioural loyalty. Chen et al. (2009) also found that behavioural loyalty, which referred to how consistently customers behaved in repurchasing services/products, was positively related to consumer expenditure as opposed to attitudinal loyalty. In

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this study, behavioural loyalty would be examined.

Trustworthiness and customer perception of a virtual environment

Many factors which have a significant impact on customer loyalty have been recognized in the literature including loyalty programs (Bolton et al., 2000), perceived risk (Johnson et al., 2006), word-of-mouth (Gauri et al., 2008), trust (Flavian et al., 2006), gender (Melnik et al., 2009), perceived value (Roig et al., 2009), service quality (Jamal and Anastasiadou, 2009) and so on. Among these factors which have been referred to in the literature, trust is one of the most important factors which can positively influence customer loyalty. The concept of trust has developed over a long period of time. The main studies can be divided into two streams according to Cry et al. (2005). Researchers in one of the streams treat the trust concept as a single-dimensional concept, while the other stream treats it as a multiple-dimensional concept. For example, Luo (2002) is one of the researchers who assert that the trust concept is a single-dimensional concept and identify characteristic-based trust, process-based trust and institution-based trust in relation to Internet transactions.

Of the other scholars who treat trust as a multi-dimensional concept and have proposed many sources of trust, Barber (1983) considers that the competence, persistence and fiduciary responsibility could form the trust inherent in a transaction. Butler and Cantrell (1984), Mishra (1996), Mayer et al. (1995) have proposed difference sources of trust in the literature. Among these researchers, the viewpoint of Mayer et al. (1995) which identified ability, integrity and benevolence as sources of trust is that most cited in trust-related research. In this study, sources of trust which are proposed by Mayer et al. (1995) were adopted.

On the other hand, it was found that some factors in previous research refer to the consumer's perception of a virtual environment, for example, word-of-mouth (Gauri et al., 2008) and perceived risk (Johnson et al., 2006). This means that the consumer's perception of a virtual environment also influences the consumer's loyalty. In this study, consumer's perception of a virtual environment was defined as a consumer's judgment for internet environment. The study simultaneously considers the impact of trust and the consumer's perception of the environment on customer loyalty.

Research hypotheses

According to prior research, online store trustworthiness positively influences customer loyalty. In the research model, the study further adopt the trust sources framework proposed by Mayer et al. (1995) to understand how online store trustworthiness impacts customer loyalty. The main hypotheses regarding trustworthiness and loyalty

are thus listed:

H₁: The ability of the online store is positively associated with customer loyalty.

H₂: The integrity of the online store is positively associated with customer loyalty.

H₃: The benevolence of the online store is positively associated with customer loyalty.

H₄: The customer's perception of the environment is positively associated with customer loyalty.

Flavian and Guinaliu (2006) pointed out that an individual's loyalty is closely linked to the levels of trust and the trust in the internet is influenced by the security perceived by consumers. In the research, Flavian and Guinaliu (2006) did not further explore how consumers' perception influences the relationship between trust and loyalty. In the research, it is also very interesting in knowing how trustworthiness and the customer's perception of the virtual environment interact. The study treats the customer's perception of a virtual environment as a moderating variable to establish other relevant hypotheses such as H₅, H₆ and H₇:

H₅: The customer's perception of the virtual environment positively moderates the relationship between the ability of the online store and the customer's loyalty. The higher the customer's perception of the virtual environment, the stronger is the relationship between the ability of the online store and the customer's loyalty.

H₆: The customer's perception of the virtual environment positively moderates the relationship between the integrity of the online store and the customer's loyalty. The higher the customer's perception of the virtual environment, the stronger is the relationship between the integrity of the online store and the customer's loyalty.

H₇: The customer's perception of the virtual environment positively moderates the relationship between the benevolence of the online store and the customer's loyalty. The higher the customer's perception of the virtual environment, the stronger is the relationship between the benevolence of the online store and the customer's loyalty.

MATERIALS AND METHODS

To test the research model, the study conducted a cross-sectional survey study. Questionnaire were designed using a 5-point Likert Scale from the literature, and designed the questions for each single construct by pre-testing without appropriate measurement in the literature, for example, the customer's perception of the virtual environment.

The reliability of each measurement was confirmed by means of the pretest. 230 questionnaires were distributed to college students who have online shopping experience and 220 questionnaires were returned. The return rate of this survey is 95%. Overall, more than 90% of the students were between 20 and 25 years old. They all had experience of internet shopping. After deducting 16 invalid questionnaires, there were 204 valid questionnaires available for the study analyses.

Table 1. Measurement model.

Constructs	Indicators	Standardized factor loadings	t-statistic	Composite reliability	Average variance extracted
Ability	Abi 1	0.733	7.848***	0.82	0.61
	Abi 2	0.824	12.967***		
	Abi 3	0.783	9.104***		
Integrity	Int 1	0.895	38.200***	0.85	0.67
	Int 2	0.787	14.430***		
	Int 3	0.768	12.413***		
Benevolence	Ben 1	0.815	15.432***	0.87	0.69
	Ben 2	0.809	11.890***		
	Ben 3	0.867	22.891***		
Customer's perception of the virtual environment	Ep 1	0.870	6.834***	0.79	0.56
	Ep 2	0.657	3.945***		
	Ep 3	0.703	4.860***		
Loyalty intention to an online store	Loy 1	0.815	19.490***	0.84	0.64
	Loy 2	0.796	18.466***		
	Loy 3	0.803	20.647***		

***Significant at the 0.001 level.

The dataset was analyzed using Lohmoller's (1989) partial least squares (PLS) algorithm. PLS is a useful tool for estimating the measurement model of latent constructs by means of linear combinations of their empirical indicators and the structural models between constructs. Because PLS has flexible assumptions for a sample distribution, the smaller sample size required for model estimation is the crucial advantage of PLS when only a relatively small sample size is available (Chin and Newsted, 2003).

RESULTS

The partial least square (PLS) analysis may be divided into two parts—the measurement model and the structural model. The analysis of the measurement model ensures that a reliable measurement scales to observe the latent variables were implemented. After ensuring and implementing a reliable measurement scale, the structural model is then analyzed to test the research hypothesis.

Measurement model: Validity and reliability

To construct the convergent validity, there are two sufficient conditions that are needed in partial least square (PLS). The first is that the t-value for each items should be statistically significant at the $p < 0.001$ level. The second is that the average variance extracted (AVE) calculated using PLS should be greater than 0.5 (Anderson and Gerbing, 1988). The study summarizes

the detailed results regarding the measurement model in Table 1. Each item has a significant t-value at the $p < 0.001$ level, and the average variance extracted for each construct is also greater than 0.5 (Table 1). In the partial least square (PLS) analysis, the discriminant validity means that each construct can clearly be distinguished from other constructs. The study has tested the discriminant validity based on Fornell and Larcker (1981) criterion. This criterion points out that the discriminant validity is established if the square root of the average variance extracted from each construct is greater than the correlation between the construct and the other constructs. Table 2 shows the correlation for each construct and the square root of the average variance extracted.

Besides the validity, the composite reliability is also verified by the results of the partial least square (PLS) analysis in Table 1. In the PLS analysis, it is required that the composite reliabilities of each construct be more than 0.6. Each construct in the research qualifies for this criterion. Overall, the results for the convergent validity, discriminant validity and composite reliability suggest that the measurement model meets the standard of having good explanatory power.

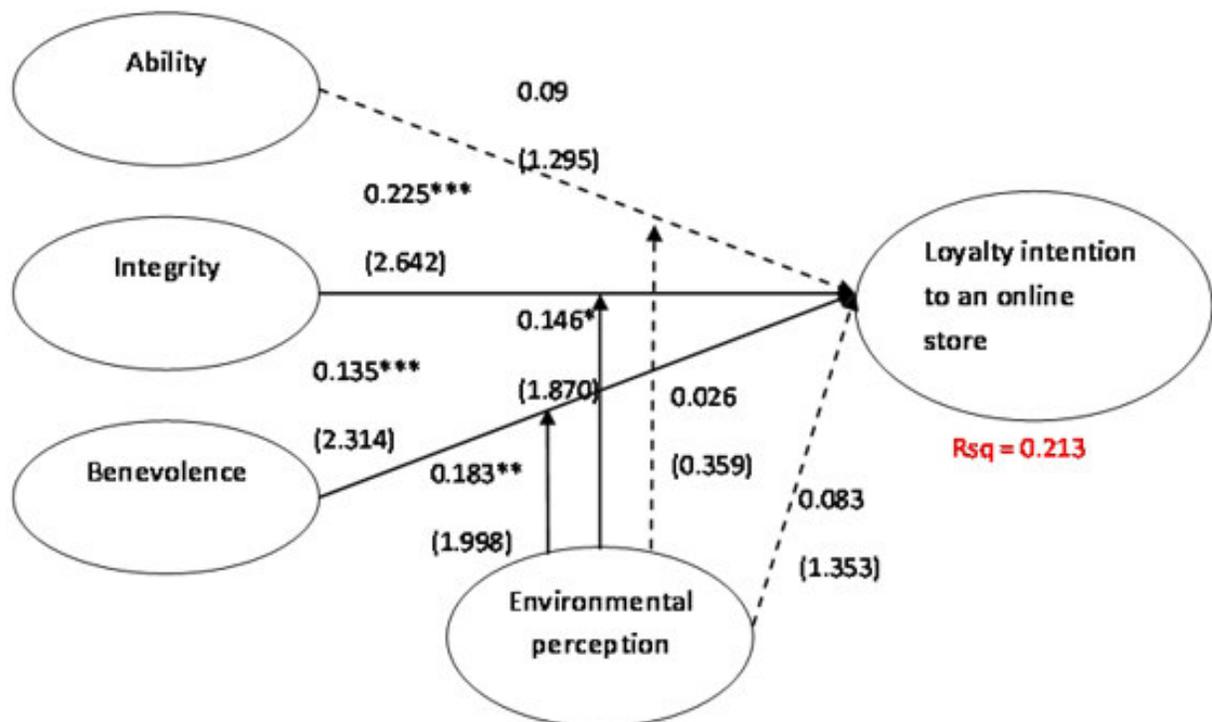
Structural model results

As predicted, the estimates obtained using the structural model support the view that intergrity ($\beta = 0.225$, $p < 0.01$)

Table 2. Correlation and the square root of average variance extracted from constructs.

Constructs	Scale mean	S.D.	1	2	3	4	5
Ability	3.51	0.59	0.78				
Integrity	3.58	0.61	0.48**	0.81			
Benevolence	3.44	0.65	0.46**	0.46**	0.83		
Customer's perception of the virtual environment	3.41	0.66	0.19**	0.36**	0.13	0.74	
Loyalty intention to an online store	4.03	0.48	0.26**	0.32**	0.25*	0.18**	0.80

**Correlation is significant at the 0.01 level (2-tailed). *Correlation is significant at the 0.05 level (2-tailed).

**Figure 1.** Structural model. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

environment ($\beta = 0.083$, $p > 0.1$) cannot be found to have significant effects in relation to the customer's loyalty intention from the study data. In the PLS analysis, H_2 and H_3 are supported and H_1 and H_4 cannot be supported in relation to the customer's loyalty intention.

In H_5 , H_6 and H_7 , it was predicted that the customer's perception of the virtual environment will positively moderate the relationship between ability, integrity and benevolence and the customer's loyalty intention. According to the results obtained, these hypotheses are partially supported. It was found out that the customer's perception of the virtual environment has positive moderating effects on integrity ($\beta = 0.146$, $p < 0.1$) and benevolence ($\beta = 0.183$, $p < 0.05$) in relation to the customer's loyalty intention. The moderating effect in terms of the relationship between ability and the loyalty

intention is non-significant ($\beta = 0.026$, $t = 0.359$). Therefore, H_6 and H_7 are supported by the study data set and H_5 is not supported. The research results are summarized in Figure 1.

DISCUSSION

The results of the study show that the ability of an online store has a non-significant effect on customer loyalty. Similar results have been provided by Gefen (2002). Gefen (2002) finds that the ability has a non-significant effect on the formation of online store trustworthiness.

According to the prior literature, it was known that the online store trustworthiness positively influences the customer's loyalty. By connecting Gefen (2002) finding with the prior literature, it is implied that the ability of the

online store cannot improve the customer's loyalty as the research results indicate. On the other hand, the research could also highlight the importance of integrity and benevolence to online customer loyalty vis-à-vis the ability of the online store.

The moderating effect of the consumer's perception of the virtual environment is also tested in this research. The study found that the consumer's perception of the virtual environment has a significant moderating effect in relation to the integrity and benevolence toward the customer's loyalty intention. It means that the online store could improve the customer's perception of the transactions environment in order to increase the effect of integrity and benevolence on the customer's loyalty intention.

Therefore, it can be concluded that trust could improve customer loyalty through the integrity and benevolence of an online store. The customer's perception of a good virtual environment can increase the impact of integrity and benevolence on customer loyalty. To sum up, the results imply that the online store should adjust the online transaction environment in order to maximize the effect of trust and thereby retain the customer's loyalty.

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APPENDIX A

Measurement scale

Ability

The online store I often use understands its market very well.
The online store I often use has professional skills in relation to its products or services.
The online store I often use always knows how to improve its products or services.

Integrity

The online store I often use always realizes its commitment.
I would not suspect the online store I often use.
I expect that the online store I often use will fully exercise its commitment to me.

Benevolence

The online store I often use has prepared all I possibly need.
The online store I often use is always benevolent towards me.
The online store I often use always has a good intention toward me.

Environment perception

My experiences in the Internet environment are positive.
I always feel uneasy in the Internet environment.
I always hold a negative attitude regarding everything in the Internet environment.

Loyalty intention toward an online store

I am loyal to the online store I often use.
For a similar product or service, I prefer to buy it from the online store I often use.
I would like to try similar online stores that I have never used.