MEDIATING ROLE OF INITIAL TRUST ON THE RELATIONSHIP BETWEEN WEBSITE QUALITY AND PURCHASE INTENTION

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ABSTRACT

This paper proposes a model of the mediating role of initial trust on the relationship between website quality and customers' purchase intention in the context of business-to-consumer (B2C) e-commerce. The model predicts that website quality (measured as functionality and appearance) affects initial trust (measured as competence trust and goodwill trust) which subsequently affects purchase intention. An empirical test was conducted to examine the model. The functionality construct failed to meet the validity test and, as a result, was dropped from the empirical model. The remaining constructs showed acceptable levels of validity and reliability. The structural model revealed that goodwill trust had a negative effect on purchase intention, and thus an alternative model is proposed in which competence trust is a mediating variable between website quality and purchase intention. The alternative model fits the data better than the original model, and the implications of the results are discussed.

Keywords

Website quality (functionality and appearance), initial trust (competence and goodwill), trusting beliefs, purchase intention

INTRODUCTION

This paper reports an initial result of the study that conceptualizes the mediating role of initial trust on the relationships between website quality and purchase intention. Online retailers use websites to sell products. If customers can find a product of their interest only in an unknown retailer website, they are likely to depend on initial trust before deciding to purchase the product from the website. Since the company is unknown, the only way with which customers can develop initial trust is through the website. In this sense, customers would experience the website, develop initial trust, and have intention to purchase, which is likely to result in actual purchase.

This study uses multi-dimensional website quality and initial trust to test their effects on purchase intention. This approach (i.e., using multi-dimensional constructs) is used to find more detailed information on the constructs and their relationships that might not have been discovered in previous studies of B2C e-commerce. In the following section, previous studies of purchase intention and its predictors are reviewed. Next, a research model that includes these constructs is presented with relevant hypotheses, followed by analysis of the model, discussions, and conclusion.

LITERATURE REVIEW

Previous studies propose two important key factors that are likely to affect purchase intention: website quality and initial trust (e.g. McKnight, Choudhury, and Kacmar, 2002). Website quality is important because customers visit websites to find and purchase products from online retailers. Simple experience of a website, however, is not likely to affect purchase intention unless the online retailer (rendered as a website) is considered trustworthy. This line of logic implies that a customer experiences (navigates) a website and develops trust before purchasing products.

Website Quality

Previous studies propose or analyze website quality with one dimension (e.g., Lowry et al., 2008), two dimensions (e.g., Wang et al., 2009), three dimensions (e.g., Cyr, 2008), five dimensions (e.g., Xie and Barnes, 2008-2009), or twelve dimensions (e.g., Loiacono et al., 2007). The dimensions proposed by previous studies can be categorized into two dimensions as shown in Table 1. As shown in the table, the two dimensions (appearance and functionality) capture the key features of website quality. Furthermore, these dimensions are relevant to this study because the focus is customers' perceptions, i.e., how customers feel about website quality. For instance, customers would not worry about the technical aspect of website quality (e.g., how many misspelled words or grammatical errors are in a Web page, how many seconds a Web page takes to load completely). Instead, customers would care if a website is attractive and functioning well. Furthermore, This approach of understanding website quality (as customers' perceptions) with two dimensions has been

adopted by many researchers (e.g., Hampton-Sosa and Koufaris, 2005; Parboteeah, Valacich, and Wells, 2009; Wang, Hong, and Lou, 2009). Therefore, in this study, these two dimensions are used for website quality which is defined as customers' perceptions about the appearance and functionality of a website.

Author(s)	Appearance or Appealing	Functionality	Others
Barnes and Vidgen (2003)		Usability Information quality Service interaction	
Cyr (2008)	Visual design	Navigation design Information design	
Hampton-Sosa and Koufaris (2005)	Website appeal	Website usability	
Loiacono et al. (2007)	Visual appeal Emotional appeal Consistent Image	Info/fit-to-task Tailored Information Online completeness Relative advantage Ease of understanding Intuitive operations Response time	Trust Innovativeness
Mithas et al. (2007)		Website structure Website content Website functionality	
Parboteeah et al. (2009)	Perceived enjoyment	Perceived usefulness	
Treiblmaier and Pinterits (2010)	Enjoyment	Usefulness Ease of use	
Wang et al. (2010)	Web aesthetics	Web usability	
Xie and Barnes (2008-2009)	Website design Playfulness or enjoyment	Usability Service quality Information quality	
Yoo and Donthu (2001	Aesthetic Design	Ease of Use Processing speed	Security
Zhang and von Dran (2002)	Clear layout of information	Easy to navigate Search tool Accuracy of information Comprehensiveness of information	

Table 1. Selective Studies of Website Quality

Initial Trust and its Relationships with Website Quality

Initial trust is "trust in an unfamiliar trustee, a relationship in which the actors do not yet have credible, meaningful information about, or affective bonds, with each other (McKnight et al, 2002, p. 335, referring to Bigley and Pierce, 1998)." It has been measured with the trusting belief construct (McKnight et al, 2002). In previous studies, trusting belief or similar constructs are proposed as three dimensions (competence belief, benevolence belief and integrity belief by McKnight et al., 2002), two dimensions (competence trust and goodwill trust by Das and Teng, 2001), or one dimension (e.g., Gefen, 2000). In this study, the two-dimension model of initial trust is used (competence trust and goodwill trust) because it depicts the key aspects of trusting beliefs in a parsimonious way.

Competence trust is a customer's perception that a company has the ability to complete transactions with customers successfully and serve them well. This definition is consistent with the ability construct defined by Mayer, Davis, and Schoorman (1995): "Ability is that group of skills, competencies, and characteristics that enable a party to have influence within some specific domain (p. 717)."

Goodwill trust includes the benevolence and integrity dimensions proposed by Mayer et al. (1995) and McKnight et al. (2002). Benevolence and integrity can be distinguished theoretically, but they reflect the same domain. Integrity is a trustor's perceptions that the trustee does what he/she should do, nothing more, nothing less. On the other hand, benevolence is a trustor's perceptions that the trustee goes beyond what he/she should do. In this sense, benevolence is based on altruism

(McKnight et al., 2002, p. 339) and "aside from an egocentric profit motive (Mayer et al., 1995, p. 718)." From a customer's perspective in the B2C e-commerce context, both are about the customers' perceptions that the company (trustee) cares about the customer actively (benevolence) and passively (integrity). In other words, both dimensions are about a company's eagerness (or goodwill) to serve customers well.

According to Fishbein and Ajzen (1975), beliefs are formed "[o]n the basis of direct observation or information received from outside sources (p. 14)." In this study, websites are the "outside sources" that customers mainly use for online transactions, and thus customers' perceptions about websites are likely to affect customers' trust (trusting beliefs) in the online companies. Previous studies also found that website quality has an effect on trust (e.g., McKnight et al., 2002).

An appealing or attractive website (i.e., website appearance) is likely to draw customers' attention more effectively, and thus they will have more opportunities to identify the website's competence and goodwill. A well-organized and attractive appearance of the website is also an indication that the company has competence and goodwill. Previous studies of trust also support this logic of appearance affecting trust. Gordon (1983) found that a communicator's physical attractiveness (e.g., a person's pleasing-to-observe face) had a positive relationship with perceived trust. In the e-commerce setting, Cyr (2008) found evidence that visual design affects trust. Therefore, the following hypotheses are proposed:

> H1: Customers' perceptions about an e-business' website appearance are positively related to customers' perceptions about the company's competence.

> H2: Customers' perceptions about an e-business' website appearance are positively related to customers' perceptions about the company's goodwill.

Website functionality is also an important aspect of website quality because it can form and/or strengthen trust development. Website functionality implies performance which is likely to affect trust. In the context of advertising agency-client relationships, LaBahn and Kohli (1997) found that agency performance increased client trust. The rationale for this effect is that a person (or object) that performs (or functions) well indicates the person's (or the object's) competence and goodwill. In the e-commerce context, Koufaris and Hampton-Sosa (2004) found that website functionality (i.e., perceived usefulness, perceived ease of use, and perceived security control) affects initial trust. Cyr (2008) also found that website functionality (measured with navigation design and information design) had significant effects on customers' trust. Therefore, we propose:

> H3: Customers' perceptions about an e-business' website functionality are positively related to customers' perceptions about the company's competence.

> H4: Customers' perceptions about an e-business' website functionality are positively related to customers' perceptions about the company's goodwill.

Initial Trust and Purchase Intention

Customers' purchase intentions have been considered as an important success index for e-commerce, especially B2C e-commerce (Gefen, 2000; Wang et al., 2010). In previous studies of purchase intention, sometimes different labels were used (e.g., willingness to purchase by Kim et al., 2009; willingness to transact by Bhattacherjee, 2002; e-loyalty by Cyr, 2008), or a purchase intention item was included with other items in the initial trusting intention construct (Lowry et al., 2008). In all these studies, purchase intention is treated as a unidimensional construct or as an item.

In this study, purchase intention is defined as customers' willingness to buy products from a website of an online company. Customers are willing to purchase products to benefit from it. There are many types of benefits (e.g., low price), but a more important benefit is risk reduction because online transactions are considered risky (Hoffman et al., 1999; Keen 1999). Trust is one of the factors that can mitigate customers' perceptions about risk, and thus initial trust is likely to affect purchase intention.

This logic is based on the social exchange theory (Homans, 1958, 1974). There are different interpretations of the theory, but in principle, the theory posits that a person performs actions to receive rewards (or increase value). In the B2C e-commerce context, by developing initial trust, online retailers can help customers receive rewards (because customers will feel safe) and thus perform or intend to perform actions (i.e., purchase or purchase intention).

Many studies of e-commerce trust also found that trust affects purchase intention (Bhattacherjee, 2002; Cyr, 2008; Gefen, 2000; Kim et al., 2009; McKnight et al., 2002). With the supporting evidence from the previous studies as well as the theoretical support, we propose:

H5: Customers' perceptions about the company's competence are positively related to customers' intention to purchase products from the company.

H6: Customers' perceptions about the company's goodwill are positively related to customers' intention to purchase products from the company.

Research Model

Figure 1 summarizes the hypotheses. It is logical that customers experience (navigate) websites, develop trust, and have an intention to buy products from the websites. This implies that initial trust (measured as competence and goodwill) is a mediating variable between website quality and purchase intention. This model is empirically tested and the details are explained in the next section.
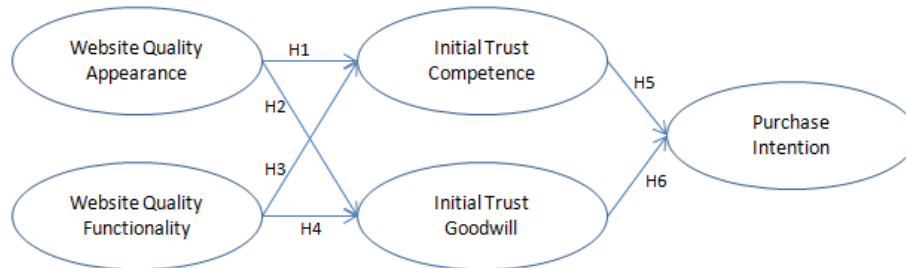

Figure 1 Research Model

METHODOLOGY AND MODEL TESTING

To examine the research model, first, a survey questionnaire was developed according to previous studies and logical reasoning. The competence trust scale has five items while the goodwill trust scale has six items. The website design scale by Wolfinbarger and Gilly (2003) was used for the website quality scale. Their original website design scale includes 13 items that were identified through exploratory factor analysis (Wolfinbarger and Gilly, 2003, p. 190). Careful review of the items revealed two dimensions: appearance (items 1, 3, 4, 6, 9, and 11) and functionality (items 2, 5, 7, 8, 10, 12, and 13). Our initial pretest supported this classification, and thus the classified dimensions were used in the questionnaire. Purchase intention was measured with a single item (All the items are listed in Appendix I). The survey questionnaire includes the items for the scales as well as other questions (e.g., demographics) and was used in a series of survey sessions (each session was arranged in a computer lab where the participants can use computers to access the Internet).

Several real websites of online retailers were reviewed to be used in the survey sessions. These websites were deemed to be relevant to the participants and further screened in such a way that they are not likely to be visited by the survey participants before any survey sessions. Each of the websites was to be assigned randomly to each participant of the survey.

In each survey session, every participant (a college student) was asked to visit a website (online retail store that had been randomly assigned to each participant), browse it for approximately 15 minutes, and complete the survey questionnaire. The first batch of the survey sessions generated 151 usable cases (responses from the participants who had previously visited the assigned websites were removed). The sample consists of 73 females and 77 males (1 unidentified) and is within the 18-30 age range. Most of them use the Internet everyday (90.6%), more than 60 percent have purchased products online, and thus they are considered to be either current or potential e-commerce customers.

Analysis of the Measurement Model

Initial analysis of the scales revealed that the website functionality scale was problematic with reliability and validity, and therefore it was removed from further analysis. The remaining scales were analyzed using structural equation modeling. Some items were removed due to the cross-loading and measurement problems. The final scales with their items are shown in Figure 2 (Appendix II), and the statistics for reliability and validity are listed in Table 2 (Appendix II). The overall fit indexes imply acceptable fit of the model (Chi-square = 43.503, df = 30, p = 0.053; GFI = 0.948; NFI = 0.947; CFI = 0.983; RMSEA = 0.055, 90% confidence interval: 0.000 ~ 0.088, p = 0.384).

Cronbach's α and composite reliability (ρ) were used to test each scale's reliability, and all the scales revealed acceptable levels as shown in Table 2 (Appendix II). The validity of each scale was examined by judges (face validity) who agreed on

the constructs with their relevant items. In addition, the average variance extracted (AVE) and correlation squared were used to examine convergent and discriminant validity (Fornell and Larcker, 1981). All the scales have AVEs greater than 0.5 (convergent validity), and the AVEs are greater than the correlations squared (discriminant validity). Accordingly, we further analyzed the structural model.

Analysis of the Structural Model

As hypothesized, the research model (Figure 1) was tested, and the result is shown in Figure 3 (Appendix II). The fit indexes show evidence that the model fit the data well (Chi-square = 65.999, df = 32, p < 0.001; GFI = 0.921; NFI = 0.920; CFI = 0.956; RMSEA = 0.084, 90% confidence interval: 0.055 ~ 0.113, p = 0.029). The path of purchase intention regressed onto goodwill trust, however, had a negative value (-0.03) and was not statistically significant. This result is not consistent with the proposed hypothesis (H6) and implies that the model should be modified. Accordingly, an alternative model (Figure 4) was considered based on theoretical ground (the reasoning is discussed later in the Discussions section).
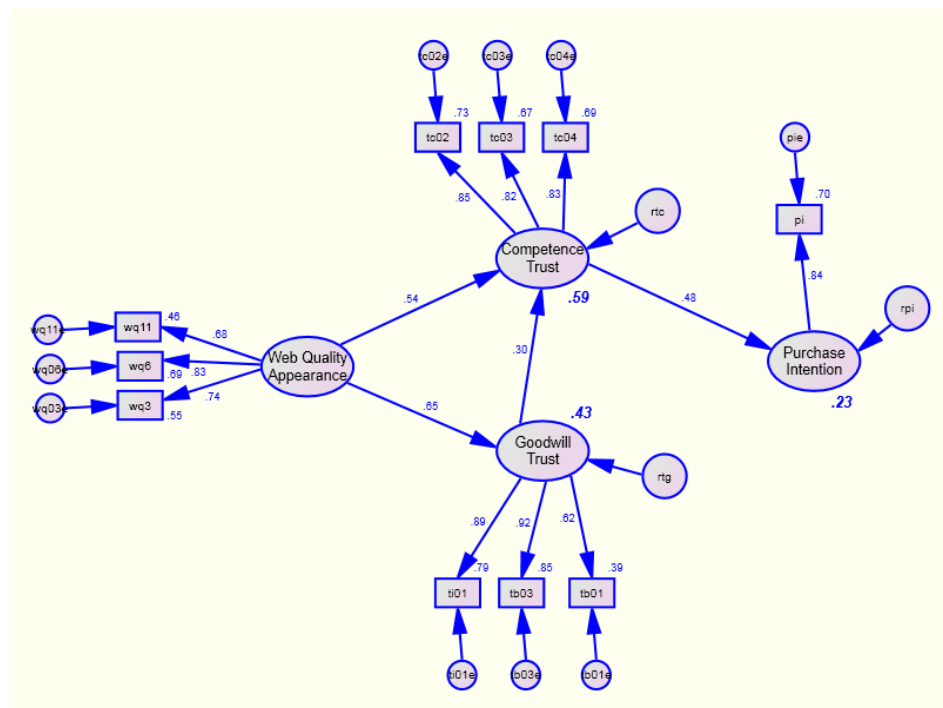
Chi-square = 58.276, df = 32, p = 0.003;
GFI = 0.931; NFI = 0.929; CFI = 0.966; RMSEA = 0.074, 90% confidence interval: 0.043 ~ 0.104, p = 0.096
Squared Multiple Correlations: Competence Trust - 0.59; Goodwill Trust - 0.43; Purchase Intention: 0.23

Figure 4. Revised Structural Model

In the revised structural model, the problematic path (goodwill trust → purchase intention) was removed, and a new path of competence trust regressed onto goodwill trust (goodwill trust → competence trust) was added (based on the logic that customers may develop competence trust if they feel that a company has goodwill). Overall fit of the revised model was better (Chi-square = 58.276, df = 32, p = 0.003; GFI = 0.931; NFI = 0.929; CFI = 0.966; RMSEA = 0.074, 90% confidence interval: 0.043 ~ 0.104, p = 0.096) than that of the original model. In the revised model, the goodwill trust scale is accounted for approximately 43% by website appearance (squared multiple correlation, SMC, of goodwill trust is .43), the competence trust scale is explained 59% by website appearance and goodwill trust (SMC of competence is .59), and the purchase intention scale is explained 23% by competence trust (SMC of purchase intention is .23).

DISCUSSIONS

Three hypotheses were supported as proposed (H1, H2, and H5). These results imply that website appearance plays an important role in developing initial trust (H1 and H2). In other words, customers are likely to feel that the company is

competent and willing to serve them if they experience high quality website appearance. Furthermore, competence trust is also likely to affect customers' purchase intentions (H5).

The other aspect of website quality (i.e., website functionality) was not tested due to the problems of reliability and validity (i.e., H3 and H4 were not tested). This is one area that requires further analysis. Theoretically, it is reasonable that website functionality is likely to affect trust, and it has been supported empirically (e.g., Koufaris and Hampton-Sosa, 2004). Therefore, future studies are called for to examine this issue.

The failure of the mediating role of goodwill trust was unexpected, but the result shows that goodwill trust may not have significant effects on purchase intention at the initial relationship formation (e.g., Goodwill may be misinterpreted by customers as "window-dressing" in the initial stage). An empirical study by Schlosser, White, and Lloyd (2006) also found that "online purchase intentions were influenced by their ability beliefs rather than by their benevolence and integrity beliefs (p. 137)." This anomaly may be due to the fact that initial trust was considered in our model. In other words, customers may not depend initially on goodwill trust to develop purchase intention when they do not know much about the company (e.g., it is difficult initially to confirm the real intention of trustee). In this situation, competence trust may be a better predictor of purchase intention (e.g., it is relatively easy to recognize the competence of trustee).

Furthermore, the effect of goodwill may be dissolved into competence. In other words, customers may feel that many aspects of competence are derived from goodwill (e.g., competence can be developed from goodwill as well as others). In addition, there is evidence that goodwill trust influences competence trust (Sengun and Onder, 2011). This is an interesting finding and requires further examination to support this new hypothesis.

This study is still in progress, and thus a final conclusion cannot be reached until more studies replicate the results of this study (Another data set has been collected and tested. The additional analysis revealed a similar result which will be presented at the conference). If this model is supported in more studies, this study suggests that practitioners are encouraged to develop high quality websites to develop customers' trust which is likely to generate customers' purchase intentions. Specifically, this study suggests that online retailers develop highly attractive websites that are likely to generate trust, focusing on the competence aspect of trust with goodwill trust integrated carefully into competence trust.

Our study does have some limitations. First, we used student participants to collect data. It was necessary because we needed to control the survey processes more efficiently, and future research is expected to test the model with better samples. Second, we tested cross-sectional data, and thus the relationships are not pure causal effects. Longitudinal studies are expected to resolve this problem, and future studies are called for to improve the model.

CONCLUSION

There are many studies of B2C e-commerce that deal with the important factors (i.e., website quality, trust, purchase intention). This study also tests these factors, but it adds additional knowledge that has not been presented in a comprehensive way by previous studies. First, this study uses multidimensional key constructs in one model unlike previous studies that use unidimensional constructs. For instance, Everard and Galletta (2006) include website quality and trust in their model, but treat each of them as a unidimensional construct. By using multidimensional constructs, this study was able to reveal inner workings of each dimension of the constructs, if not complete.

Second, in conjunction with the multidimensional constructs, this study also used real websites of online retailers unlike some previous studies that used artificial (non-real) websites (e.g., Everard and Galletta, 2006). Using artificial websites is appropriate in some cases (e.g., to test technical aspects of website quality as in Everard and Galletta, 2006), but it may be better to use real websites when customers' perceptions of website quality are tested.

We believe that this study made an additional contribution to the e-commerce research field, and we hope that future studies improve the model to help better understand the nature of the important factors such as website quality, trust, and purchase intention.

ACKNOWLEDGMENTS

References and Appendixes (I and II) are available from the first author upon request.