

IS THE INFLUENCE OF USABILITY AND SATISFACTION THE SAME FOR ALL THE ONLINE TRUSTING DIMENSIONS¹

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ABSTRACT

Previous literature has proposed that online consumer trust is composed by three different dimensions: honesty, benevolence and perceived ability. Trust is a key aspect in the electronic commerce and factors such as usability and satisfaction can improve the levels of online trust. This paper confirms a direct effect on the usability-ability link and satisfaction is found to exert a mediator role on both usability-honesty and usability-benevolence relationships.

Keywords: usability, trust, satisfaction, online consumer

L'USABILITÉ ET LA SATISFACTION INFLUENCENT-ELLES PAREILLEMENT TOUTES LES DIMENSIONS DE LA CONFIANCE?

ABSTRACT

La littérature a manifesté que la confiance du consommateur on-line est composée de trois dimensions: honnêteté, bienveillance et habileté perçue. La confiance est un aspect clé pour le commerce électronique que peut être amélioré pour facteurs comme l'utilisabilité et la satisfaction. Cet article confirme le effet direct de la connexion utilisabilité-habilité et le papier médiateur de la satisfaction sur les relations utilisabilité-honnêteté ainsi que usage et bienveillance.

Mots clés : utilisabilité, confiance, satisfaction, consommateur on-line

INTRODUCTION

Few concepts are more important for marketing than trust. This variable has been widely analysed (Corritore *et alii*, 2001) in many fields related to business (Koehn, 1996). Regarding trust in an online environment, we may state that it is a concept difficult to define (Husted, 1998), but online trust turns out to be essential due to several motives. More specifically, the high level of perceived risk and vulnerability on this medium makes it necessary to build trust (e.g. Mayer, 1995; Hosmer, 1995), as well as the need for getting and retaining customers (e.g. Gefen, 2002; Reichheld and Schelefter, 2000) in this difficult environment.

Thus, in order to increase the knowledge about the antecedents of online trust, we set up two models including two precursory factors of trust: website usability (e.g. Casaló *et alii*, 2007) and customer satisfaction (e.g. Bauer *et alii* 2002). With this we pursue three aims: (1) to analyze the relationship between website usability and the three dimensions that traditionally have been considered to form the concept of online trust: honesty, benevolence and ability (e.g. Schlosser *et alii*, 2006), (2) to compare this initial model to a model that includes customer satisfaction as a mediating factor, and (3) to explain and understand in a greater extent the complex process of trusting in the online context. To analyze the chosen study field, online commerce, we employ a representative sample of an online bookshop's customers.

The paper has the following structure: Firstly, we carry out an in-depth review of the marketing literature concerning the variables included in the study and their possible relationships. Secondly, we set up the hypotheses according to this previous theory. Thirdly, we explain the process of data collection and measures validation. Finally, we present the results and conclusions of the study, outlining possibilities for future research and explaining the limitations of the study.

LITERATURE REVIEW

After a deep, exhaustive review of the previous literature, we define and describe the three variables included in our research: website usability, trust and satisfaction.

Usability

Usability is referred to how well users can manage a certain system (a website in this case), finding little difficulties (Davis, 1989). Following Nielsen (1994), usability concerns several aspects, such as the ease with which the user is capable of learning to manage the website, the ease of memorising its basic functions, the grade of efficiency with which the site has been designed, the degree of error avoidance and the general satisfaction of the user in terms of manageability. Greater usability favours minor searching costs (e.g. Bakos, 1997) and a better comprehension of the contents and tasks in a website (Brinck *et alii*, 2002). As a result, several studies link aspects of usability to online-trust (e.g. Igarria *et alii*, 1997; Nielsen *et alii*, 2000).

As it has been previously noted, usability plays a great part in a business success (Lee and Kim, 2002; Flavián *et alii*, 2006), having an evident influence on metrics such as ROI or amount of sales (Goto and Cotler, 2002) and explaining online customer behaviour (Casaló *et alii*, 2007).

To sum up, we aim to link usability to other key variables in online marketing, as customer satisfaction. In addition, we try to explain the effect of high levels of usability on the different dimensions of trust. In this field, little research has been done before, especially from the customer point of view.

Trust

During last years, marketing literature has studied the concept of trust (e.g. Morgan and Hunt 1994; Ganesan, 1994) as a key aspect for improving marketing relationships (e.g. Moorman *et alii*, 1992; Berry, 1995). For Dwyer *et alii* (1987), it is seen as the belief that the other part will keep its promises in a context of interchange. In the Internet transactions, trust is seen as necessary as the consumer perceives risk when operating through this medium (Forsythe and Shi, 2003). Indeed, bearing in mind the diversity of users in the online context (Tarafdar y Zhang, 2005), it is necessary to improve the levels of understanding the online customer trust and behaviour (e.g. Gefen, 2000; Liu *et alii*, 2004; Schlosser *et alii*, 2006).

In the literature, trust has been analysed from two different perspectives (Geyskens *et alii*, 1996; Kumar, Scheer and Steenkamp, 1995). In the first one, trust is considered as a behavioural element, referred to the intention to behave in a certain way, meaning with this the security that a party has on the other one (Geyskens *et alii*, 1996; Siguaw *et alii*, 1998). The second perspective, the more used in the literature (Coulter and Coulter, 2002), analyse trust as a cognitive element, associated to a set of beliefs that will determine the degree of trust (Anderson and Narus, 1990; Doney and Cannon, 1997). Concretely, three types of different perceptions constitute the beliefs for this perspective.

The first one, honesty, refers to the belief in sincerity and the keeping of promises (Gundlach and Murphy, 1993; Doney and Cannon, 1997). The second dimension, benevolence, is linked to the absence of opportunistic behaviors (Larzelere and Huston, 1980), the mutual interest on the well-being of the parts (Sanzo *et alii*, 2002) and the search for mutual benefits (Doney and Cannon, 1997). Lastly, due to the specific characteristics of the Internet, some authors (e.g. Flavián *et alii*, 2006) include a third dimension in the concept of online trust, the perceived skills or knowledge that one part has about the other. These skills will determine the ability of the other party to continue successfully with the relationship (Mayer *et alii*, 1995).

Satisfaction

While in electronic commerce it is difficult to measure the success of an interface (Galletta and Lederer, 1989), customer satisfaction is one of the most widely used measures from the user point of view (Zviran and Erlich, 2003). Defined as the degree to which previous expectations are confirmed (Bhattacharjee, 2001), it may

originate other positive outcomes such as word of mouth, increased number of sales and revisits (Aaker, 1992; Anderson *et alii*, 1994; Fornell, 1992).

Regarding the two main perspectives of satisfaction, (Geyskens *et alii*, 1999) *economic* and *psychological*, we choose the second one, as our aim is to measure the historical transactions amount customers and the firm. From this psychological perspective, satisfaction is the result of previous transactions and, as a result, it supposes a global evaluation of the relationship history between the parties (Shankar *et alii*, 2003). This means that satisfaction is a dynamic variable that changes during a relationship, due to the feedback received after each transaction, whether positive or negative. Broadly speaking, from the customer point of view, satisfaction is a global perception of the relationship (Severt, 2002).

HYPOTHESES FORMULATION

Among other factors, usability plays a great role in achieving customer satisfaction (Cox and Dale, 2001; Li *et alii*, 2002). Concretely, aspects related to the ease of use, intuitiveness of the interface, reduction of searching costs and global design (Yang *et alii*, 2005; Lohse and Spiller, 1998; Iwarriken *et alii*, 2004) are seen as enhancers of the communication and improvers for the relationships. Besides, the Technology acceptance model (TAM) (e.g. Davis 1989), presents perceived ease of use of an interface as a key antecedent of satisfaction. Therefore, we propose our first hypothesis:

H1: Perceived usability in a commercial website has a direct and positive influence on the online consumer satisfaction.

For relationship marketing (Berry, 1983), the important aim resides on establishing and maintaining successful relationships (Grönroos, 1997). For this task, trust and satisfaction should be built (e.g. Bauer *et alii*, 2002; Ganesan, 1994). Generally, in a purchasing process, the customers build in his mind expectation about the product or service. Later, he compares these previous expectations to the evaluation. If expectations are met, the customer will show satisfaction (e.g. Oliver, 1980). As a result, s/he will see the firm as trustworthy and capable of keeping its word and commitments (*honesty*), and may perceive that the firm is an effective partner (*ability*) that is not taking advantage of the relationship (*benevolence*) (Ganesan, 1994).

Thus, a positive link can be established between satisfaction and trust in the online context, as can be seen in our second hypothesis:

H2: User satisfaction has a direct and positive influence on online trust in terms of: (a) honesty, (b) benevolence, and (c) ability perceived in a website.

Analyzing more in-depth the relationship of website usability and customer trust, it seems reasonable to think that not every trusting belief will be directly associated to usability. In this way, usability is more

associated to the perceived ability as it reduces the likelihood of errors (Casaló *et alii*, 2007) and simplifies the transaction process (Corritore *et alii*, 2003). Broadly speaking, website usability helps to communicate more efficiently information about the website ability rather than about the other two dimensions of trust (Schlosser *et alii* 2006).

Regarding the other two trusting beliefs, honesty and benevolence, it is possible to state that they are more related to customer satisfaction since satisfaction may be a sign of the website's goodwill, ethics, values or intentions. Therefore, although website usability is positively related to the three dimensions of trust (honesty, benevolence and perceived ability), we propose that the usability-honesty and usability-benevolence relationships will be mediated by satisfaction. Bearing these considerations in mind, we propose the following hypotheses:

H3: Perceived usability in a website is positively related to the online trust in terms of: (a) honesty, (b) benevolence, and (c) ability perceived in a website.

H4: Online consumer satisfaction will mediate the relationship between website usability and the online trust in terms of: (a) honesty and (b) benevolence perceived in a website.

DATA COLLECTION

Data were obtained through a web-survey among Spanish consumers of a well-known online bookshop. Concretely, subjects had to answer to several questions about their levels of perceived usability, website satisfaction and online trust. All questions were measured on a 7-points Likert scale (see Annex I). We finally obtained 156 valid questionnaires after eliminating atypical cases, repeated responses and incomplete questionnaires. Besides, Web surveys are becoming quite popular so that this technique is consistent with the habitual research practice in the online context (e.g. Bagozzi and Dholakia, 2006; Steenkamp and Geyskens, 2006).

MEASURES VALIDATION

Content and face validity

Scale development was based on the review of the most relevant literature on e-marketing, as can be seen in Table 1. For this task, an initial set of items was proposed after reviewing the relevant researches and adapting the scales. This adaptation had the objective of guaranteeing the face validity of the measurement instruments. Face validity is defined as the degree that respondents judge that the items are appropriate to the targeted construct and is usually confused with content validity. However, content validity is the degree to which items correctly represent the theoretical content of the construct and it is guaranteed by the in-depth literature review. In order to test face validity, a variation of the Zaichkowsky's method (Zaichkowsky, 1985) was used.

This method implies that each item is qualified by an experts panel as “clearly representative”, “somewhat representative” or “not representative” of the construct of interest. In line with Lichtenstein *et alii* (1990) each item was retained if a high level of consensus was observed among the experts.

TAKE IN TABLE 1

Exploratory analysis of reliability and dimensionality

The validation process started with an initial exploratory analysis of reliability and dimensionality (Churchill, 1979; Anderson and Gerbing, 1988). By using the Cronbach alpha indicator we assessed the initial reliability of the scales, considering a minimum value of .7 as suggested in the literature (Cronbach, 1970; Nunnally, 1978). The item-total correlation was used to improve the levels of the Cronbach alpha, considering a minimum value of .3 (Nurosis, 1993). For these initial tasks we used the statistical software package SPSS v.14.0. All items were adjusted to the required levels.

In the next step, we proceeded to evaluate the uni-dimensionality of the proposed scales by carrying out a principal components analysis. Factor extraction was based on the existence of eigen-values higher than 1. Besides, it was required that factorial loadings were higher than .5 points and a significant total explained variance (Hair *et alii*, 1998). Only one factor was extracted from each of the five scales: usability, satisfaction, honesty, benevolence and ability.

Confirmatory Analysis of Dimensionality

In this part, a Confirmatory Factor Analysis (CFO) was performed (Steenkamp and Geyskens, 2006). Each CFO included the five constructs in a single confirmatory factor model. Statistical software EQS version 6.1. was used. The estimation method selected was Robust Maximum Likelihood since it affords more security in samples which might not present multivariate normality. Items' retention was based on the criteria proposed by Jöreskog and Sörbom (1993):

- The weak convergence criterion means eliminating indicators that do not show significant factor regression coefficients ($t\text{-student} > 2.58$; $p = .01$).
- The strong convergence criterion involves eliminating non-substantial indicators, that is, those indicators whose standardized coefficients are lower than .5.
- Finally, we also eliminated the indicators with least contribution to the explanation of the model, taking $R^2 < .3$ as a cut-off point.

These validations allow us to obtain acceptable levels of convergence, R^2 and model fit for both models.

Composite Reliability

Although the Cronbach alpha indicator is the most frequent test to assess reliability, some authors consider that it underestimates reliability (e.g. Smith, 1974). In order to solve this problem, the use of composite reliability (CR) has been suggested (Jöreskog, 1971), using a cut-off value of .65 (Steenkamp and Geyskens, 2006). The results were satisfactory.

Construct Validity

Construct validity was assessed by considering two different kinds of criteria: convergent and discriminatory validity. The first one, as can be seen in Table 2, shows if the items that compose a determined scale converge on only one construct. This was tested by checking that the factor loadings of the CFO model were statistically significant (level of .01) and higher than .5 points (Sanzo *et alii*, 2003).

TAKE IN TABLE 2

Regarding the discriminatory validity (see Table 3), it checks if a determined construct is significantly distinct from other constructs. We tested discriminatory validity in two different ways. Firstly, verifying that the correlations between the variables in the CFO model were not higher than .8 points (Bagozzi, 1994) and secondly, checking that the value of the unity did not appear in the confidence interval of the correlations between the different constructs. Results showed an acceptable level of discrimination since all pairs of constructs satisfied both criteria.

TAKE IN TABLE 3

RESULTS

With the aim of testing the proposed hypotheses, we developed a structural equations model and used the “Partial Least Squares” technique. This technique uses a principal component-based approach, being as a result more predictive than the methods based on covariances (Brown and Chin, 2004). Indeed, Partial Least Squares offers three main advantages (Brown and Chin, 2004): the technique presents a predictive nature (Chin and Newsted, 1999; Joreskog and Wold, 1982), requires fewer statistical specifications and constrains (EQS, LISREL, and AMOS), and is a robust technique for small to moderate sample sizes (Cassel *et alii*, 2000). For this study, we used PLS-Graph software in its version 3.00.

To be precise, we evaluate the structural equation model by examining the R^2 levels and the size of the path coefficients (Johnson *et alii*, 2006). Furthermore, to check the stability of the parameters, we used the t-statistics obtained from a bootstrap test. This technique consists on the generation of a great number of random samples, about 500, from the original dataset by sampling with replacement (Brown and Chin, 2004). Thus, path coefficients are re-estimated with each random sample and, at the end, mean parameter estimates and standard errors are calculated considering the total number of samples (Brown and Chin, 2004).

In a first model, we analyze the usability-trust relationship. According to the results (see Figure 1), the three dimensions of trust, honesty ($\beta = .615$; $p < .01$), benevolence ($\beta = .623$; $p < .01$) and ability ($\beta = .662$; $p < .01$), are positively and significantly influenced by usability.

TAKE IN FIGURE 1

However, a second model that also includes customer satisfaction shows that usability has a positive influence on satisfaction ($\beta = 0.792$, $p < .01$). Besides, we found a positive effect of satisfaction on the three trusting beliefs: honesty ($\beta = 0.642$, $p < .01$), benevolence ($\beta = 0.557$, $p < .01$), and ability ($\beta = 0.519$, $p < .01$). But regarding the effect of usability on trust, we can observe that now only just one relationship remains significant: the influence of usability on perceived ability ($\beta = 0.251$, $p < .01$). Thus, it is possible to state that satisfaction mediates the relationship between usability and both honesty and benevolence. Finally, in this second model the explained variance of the three trusting beliefs was improved: honesty ($R^2 = .379$ vs. $R^2 = .527$), benevolence ($R^2 = .389$ vs. $R^2 = .499$) and ability ($R^2 = .483$ vs. $R^2 = .538$). As a consequence, we have found support for the hypotheses included in our research model.

CONCLUSION

Trust is a key variable to establish and maintain long-term oriented relationships with customers (e.g. Morgan and Hunt, 1994) and, therefore, its development should be an aim for every firm, especially in the online medium due to the high levels of perceived risk by the consumer. For this reason, we try to shed light regarding the relationships between usability, satisfaction and the different online trusting beliefs. Besides, by proposing two models, one without satisfaction, we observe changes in the significance of the relationships and draw consequences on the formation process of the different aspects that compose customer trust: honesty, benevolence and ability. Besides, we gather data from customers of an online bookshop and develop a structural equation model, managed with Partial Least Squares.

To sum up, we have found that usability is positively related to the three dimensions of trust included in the analysis: honesty, benevolence and ability. But, when satisfaction is included, the findings show that satisfaction mediates the influence of usability on both honesty and benevolence so that usability only exerts a direct effect on the ability dimension of trust, as well as in customer satisfaction. Therefore, although the direct influence of usability on honesty and benevolence become non significant, it still has an indirect effect on both dimensions of trust through satisfaction. Finally, the relevance of usability is evident since it allows to clearly explain the customer satisfaction with a website ($R^2 = .628$). Besides, the inclusion of satisfaction in the upgraded model helps to explain to a higher extent the three trusting beliefs included in the work: honesty ($R^2 = .527$), benevolence ($R^2 = .499$) and ability ($R^2 = .538$).

Regarding the hypothesis, we have found support for all of them and therefore, we can explain in a more detailed way the formation process of the different trusting beliefs. The logical sequence of trust

development implies that obtaining good levels of honesty, benevolence and ability depends on the management of the retailer website measured in perceived usability and design, as well on the levels of satisfaction with previous interactions.

Managerial Implications

Trust is essential in situations of vulnerability and risk (Corritore *et alii*, 2003). Therefore, trust is a crucial aspect in order to get, maintain and achieve successful relationships in the Internet (Papadopoulos, 2001). Besides, trust has a positive impact on purchase intentions (Schlosser *et alii*, 2006) and it can generate enough value to commit to the relationship for a long time (Molm *et alii*, 2000; Grayson and Ambler, 1999). At the same time, satisfaction also influences post-purchase attitude (Yi, 1990) and may present more favourable results such as positive word-of-mouth and repurchases (e.g. Anderson, 1998; Boulding *et alii*, 1993). Therefore, both trust and satisfaction may be considered as key determinants of the success of an e-business.

Thus, the findings of our research are especially relevant since they allow us to explain in some extent the processes of customer trust and satisfaction development. For this task, website usability has turned out to be a vital point to achieve both customer trust and satisfaction. In other words, online relationships relationship between companies and consumers can be improved, in terms of trust and satisfaction, by focusing on website design and improving the levels of usability of the website.

Future Research

First of all, it would be interesting to obtain data from other sources as well as including qualitative methods of research in order to generalize the results of this study. In a similar vein, a good route to extend the investigation would be to test our relationships using different typologies of commercial websites and Internet access methods (e.g. mobile phone, digital TV, etc.). This could shed more light about the role of usability in consumer behaviour.

In order to improve the levels of R^2 and to complete the model, some other variables could have been included. To be precise, it is reasonable to include the online customer behaviour, in terms of purchase intentions, in the research model. In this respect, we may expect that the ability beliefs would be a stronger driver of these online purchase intentions (Schlosser *et alii*, 2006) since it refers to the perceived skills of the website to complete successfully a transaction. In addition, other relevant outcomes such as the establishment of more personal links and a long-term oriented relationship with the website or the positive communication and word of mouth among customers (Brown *et alii*, 2005; Anderson, 1998, Bearden and Teel, 1983; Bailey, 2004) may also appear in the model.

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ANNEX I: MEASUREMENT SCALES

USABILITY	
USAB1	In this website everything is easy to understand
USAB2	This website is simple to use, even when using it for the first time.
USAB3	It is easy to find the information I need from this website.
USAB4	The structure and contents of this website are easy to understand.
USAB5	It is easy to move within this website.
USAB6	When I am navigating this site, I feel that I am in control of what I can do.
SATISFACTION	
SAT1	I think that I made the correct decision to use this website.
SAT2	The experience that I have had with this website has been satisfactory
SAT3	In general terms, I am satisfied with the way that this website has carried out transactions
SAT4	In general, I am satisfied with the service I have received from the website.
TRUST (HONESTY, BENEVOLENCE AND ABILITY)	
HON1	I think that this website usually fulfils the commitments it assumes
<i>HON2</i>	<i>I think that the information offered by this site is sincere and honest</i>
<i>HON3</i>	<i>I think I can have confidence in the promises that this website makes.</i>
<i>HON4</i>	<i>This website does not make false statements.</i>
HON5	This website is characterised by the frankness and clarity of the services that it offers to the consumer
BEN1	I think that the advice and recommendations given on this website are made in search of mutual benefit.
BEN2	I think that this website is concerned with the present and future interests of its users.
BEN3	I think that this website takes into account the repercussions that their actions could have on the consumer.
<i>BEN4</i>	<i>I think that this website would not do anything that can damage its users</i>
BEN5	I think that when the services of this website were designed, they kept in mind the users needs and desires.
BEN6	I think that this website is receptive to the needs of its users.
ABI1	I think that this website has the necessary abilities to carry out its work
ABI2	I think that this website has sufficient experience in the marketing of the products and services that it offers
ABI3	I think that this website has the necessary resources to successfully carry out its activities.
<i>ABI4</i>	<i>I think that this website has enough knowledge about users so can offer customized products and services</i>

Note: Items in italics were eliminated during the refinement process.

Table 1. Content Validity

Variable	Adapted from
Usability	Flavián <i>et alii</i> (2006); Roy <i>et alii</i> (2001); Lin <i>et alii</i> (1997) and Kirakowski <i>et alii</i> (1998)
Satisfaction	Brockman (1998); Severt (2002); Janda <i>et alii</i> (2002) and Smith and Barclay (1997)
Honesty	Kumar <i>et alii</i> (1995); Sigauw <i>et alii</i> (1998); Doney y Canon (1997)
Benevolence	Kumar <i>et alii</i> (1995); Roy <i>et alii</i> (2001)
Ability	Jarvenpaa y Tractinsky (1999); Mcknight <i>et alii</i> (2002)

Table 2. Convergent Validity

Convergent validity			
Items	Factorial Loadings	Items	Factorial Loadings
USAB1	.820*	HON1	.797*
USAB2	.746*	HON5	.808*
USAB3	.826*	BENEV1	.817*
USAB4	.881*	BENEV2	.890*
USAB5	.872*	BENEV3	.819*
USAB6	.694*	BENEV5	.789*
USAB7	.684*	BENEV6	.767*
SAT1	.764*	ABI1	.880*
SAT2	.868*	ABI2	.945*
SAT3	.851*	ABI3	.750*
SAT4	.917*		

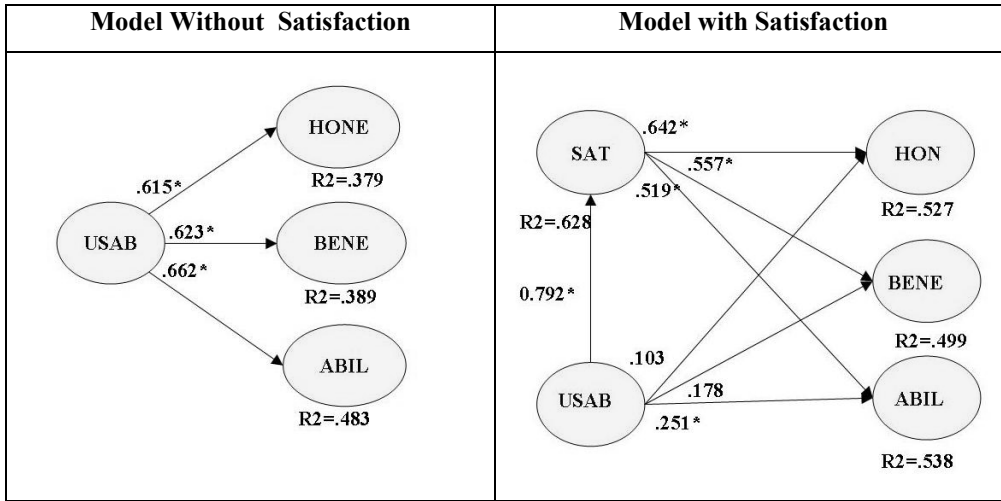
Note: (*) shows that the coefficients are significant at the .01 level.

Table 3. Discriminatory validity

Discriminatory validity				
Pair of Constructs	Correlation	Std. Dev.	95% Confidence interval	
USAB-SAT	.800*	.041	.71964	.88036
USAB-HON	.525*	.059	.40936	.64064
USAB-BENEV	.284*	.049	.18796	.38004
USAB-ABI	.550*	.054	.44416	.65584
SAT-HON	.670*	.063	.54652	.79348
SAT-BENEV	.397*	.049	.30096	.49304
SAT-ABI	.584*	.062	.46248	.70552
HON-BENEV	.741*	.044	.65476	.82724
HON-ABI	.395*	.053	.29112	.49888
BENEV-ABI	.481*	.077	.33008	.63192

Note: (*) shows that the coefficients are significant at the .01 level.

Figure 1. Structural models and solution



Note: () expresses that coefficients are significant at the level of .01*