

The role of trust in e-commerce relational exchange: A unified model

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Abstract:

Recently, studies of B2C e-commerce have used intention theory to understand the role of trust of Internet transactions but most have investigated only a component of e-commerce (e.g., initial adoption or continuance) and neglected the role of good relations with the consumer in ensuring a successful sustained relationship. Therefore, a model that went beyond intention and included key relational concepts (satisfaction, value, loyalty, etc.) was developed. Trust and its components are a major part of this model, which was based on strong theoretical foundations. Fifteen hypotheses were formulated. Data on the constructs were collected from 420 respondents and analyzed using elliptical re-weighted least squares as the estimation method to test model validity and the hypotheses. An additional relationship between satisfaction and customer loyalty was investigated. Implications for researchers and practitioners are discussed.

Keywords: e-Commerce, Trust, Exchange relationship, TAM, Satisfaction, Value, Loyalty

Article:

1. Introduction

According to Gartner's survey [11] of 4770 Internet users across 18 countries, three regions, three educational levels, and three income levels, most people use the Internet only for email and search, while online banking ranks third. Moreover, sales of online retailers were only 2.2% of total goods sold in the U.S. in 2005 [25]. Analysts have predicted that even by 2011, online e-commerce sales would account for only 7%. Thus, the Internet is far from achieving its potential due to reluctance of consumers to engage in its use.

Lack of trust is the important deterrent. It is one of the fundamental requirements for establishing online exchange relationships. Since its medium of transaction is a web site, the consumer's perception of technology also affects its use: the web site is an IT application. Prior studies, however, have not examined the impact of trust, technology attributes, and intentions on customer relationship development. In order to develop and maintain loyal customers, e-commerce companies must build good relationships with their consumers for long-term mutual benefit. Therefore, a unified model was developed to aid in understanding trust in the context of Internet enabled exchange relationships with consumers.

2. Theoretical background

2.1. Technology acceptance

TAM [6] assumed that system use was determined by behavioral intention (BI) to use it; this in turn was influenced by users' attitude (A), which was directly affected by beliefs about the system: perceived usefulness (U) and perceived ease of use (EOU). An additional relationship from U to BI assumed that intention was based on expected improvement in performance, regardless of attitude, and that EOU would influence U.

2.2. Trust and electronic commerce

Trust is crucial for any long-term business relationship. It is critical wherever risk, uncertainty and/or interdependence exist, as it mitigates risk. Web vendors are interested in building exchange relationships with consumers. Important precursors for the continuation of exchange relationships are consumer's beliefs and

intentions related to trust in the web vendor. Such beliefs depend on the level of risk perceived by consumers as well as their perceived level of control on the information that they must exchange with the web vendor. TRA [8] was a precursor to much of the behavioral work acceptance of various technologies and thus on e-commerce; it held that customers were rational; thus they were affected by their perception of trust in a vendor. Therefore consumers share personal and sensitive information with a web vendor only when they trust aspects of the site. Further, benevolence, integrity and competence become important in establishing trust.

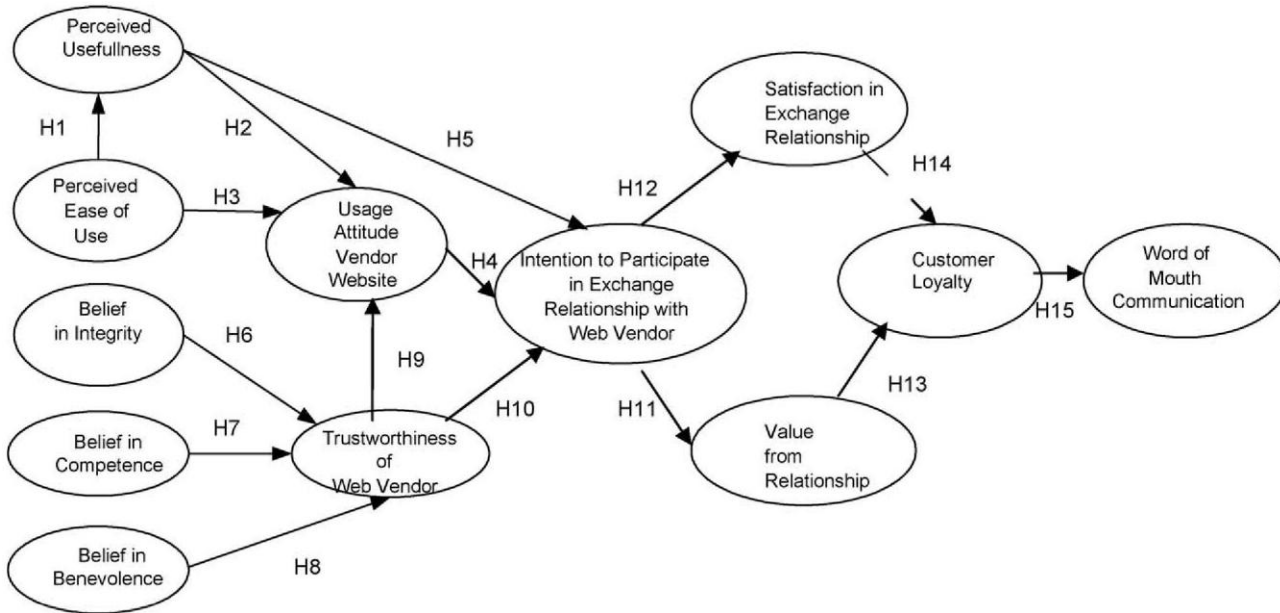


Fig. 1. A unified model for e-commerce relational exchange.

2.3. Relationship development

Participating in an e-commerce relationship results in some customer dependence on the web vendor for products and services. While web site usefulness and EOU promote intention to use and actual use, trust mechanisms help people cope with risks in some types of relationships, which may be transactional (short-term) or relational (long-term) and depend on their degree, for example, shallow vs. deep dependence [9,22]. While shallow dependence is founded on deterrence-based mechanisms, deep dependence involves obligation-type mechanisms. Many factors have been discussed about these relationships to e-commerce: value, equity, commitment satisfaction, loyalty, and word of mouth.

Value is a consumer’s overall assessment of the utility of a product or service based on perceptions of what is received versus what is given. It is considered to be a higher level abstraction than specific benefits and costs [4,16] and is a precursor to loyalty and commitment [1]. Equity results from satisfaction with a well-defined service. Indeed, user satisfaction has been seen in as a surrogate for system success. The marketing literature is replete with examples of this in studies of buyer–seller relationships and relational exchange. Satisfaction in e-commerce involves customer satisfaction with the entire experience: user information satisfaction and end-user computing satisfaction. Customer satisfaction thus refers to the customer’s perception of the transaction experience as a whole, and is the affective response to experience with the vendor and its site.

Commitment is a customer’s psychological attachment to a vendor [3] or “an implicit or explicit pledge of relational continuity” [18]. Luarn and Lin [16] tested a model in which satisfaction and value were antecedents to commitment, and it was an antecedent to loyalty, which is generally considered to be the dependent variable in marketing research. Several authors have investigated loyalty in e-commerce [10].

An important consequent of loyalty is word-of-mouth [5], where customers recommend the vendor to others. Organizations strive for customer loyalty, because strong loyalty can help them weather fierce competition and sustain long-term growth.

In addition, there are other factors such as: dependence, cooperation, acquiescence, identity salience, and continuity.

3. Conceptual development

In our view, an integrated model is needed to combine both antecedents and consequents. Below, we propose and evaluate a unified model for e-commerce relational exchange (Fig. 1). It was based on four important research streams: TAM, theories on trust and relational dependence, and the integration of these via TRA. In developing the model, we kept it parsimonious: therefore, only the most important variables were retained.

3.1. TAM-related hypotheses

The top left part of the proposed model deals with TAM-related variables. The focus is on current and future exchange behavior; intention is considered a good surrogate for actual behavior [26]. The model preserves the original TAM in the context of e-commerce relational exchange. Accordingly, we have the following hypotheses:

- H1 Perceived ease of use is positively related to perceived usefulness.
- H2 Perceived usefulness is positively related to usage attitude for the vendor web site.
- H3 Perceived ease of use is positively related to usage attitude for the vendor web site.
- H4 Attitude for the vendor web site is positively related to the intention to participate in exchange with the web vendor.
- H5 Perceived usefulness is positively related to the intention to participate in exchange with the web vendor.

3.2. TRA-related hypotheses

The consumer-web vendor relationship is affected by attitudes and subsequent intentions toward the web vendor. Based on TRA, trusting beliefs determine the formation of trust. McKnight et al. [17] showed that three trusting beliefs (in integrity, competence, and benevolence) lead to trustworthiness, which in turn was an antecedent of consumer's intention to participate in an exchange relationship with a vendor. Thus, the hypotheses:

- H6 Belief in the integrity of the web vendor is positively related to the trustworthiness of the web vendor.
- H7 Belief in the competence of the web vendor is positively related to the trustworthiness of the web vendor.
- H8 Belief in the benevolence of the web vendor is positively related to the trustworthiness of the web vendor.

Trust has been shown to increase a user's intention to use a vendor's web site and that it reduced uncertainty [12]. In the context of an Internet shopping mall, customers' attitude was shown to rely on trust [13] and thus related to intention to use a vendor [7] due to its influence on attitude and intention [27]. Thus, the hypotheses:

- H9 Trustworthiness of the web vendor is positively related to usage attitude for the vendor web site.
- H10 Trustworthiness of the web vendor is positively related to the intention to participate in exchange with the web vendor.

3.3. Relational dependence hypotheses

In the interest of parsimony, only four constructs related to relational dependence, were included in our model: value, satisfaction, and loyalty, and word of mouth. In prior literature, the first three were seen as the most

important determinants of relational dependence. Word of mouth was added to help in determining the potential of adding new customers as a result of loyalty of existing customers.

It is only through participation in an exchange relationship that customers gain experience and derive value and satisfaction from the relationship. Intention is widely regarded as a surrogate for actual use, but we believed that usage was an important intermediate variable between trust and relational dependence variables; indeed, without it customers cannot experience value or satisfaction. We therefore included two hypotheses.

H11 Intention to participate in exchange with the web vendor is positively related to customer value.

H12 Intention to participate in exchange with the web vendor is positively related to customer satisfaction.

Perceived value has been shown to be an important antecedent to loyalty [4] both directly and indirectly, as mediated by satisfaction. Agustin and Singh [1] postulated value to be a direct antecedent of loyalty, while trust and satisfaction were antecedents. Luarn and Lin [16] offered several arguments for a value-loyalty linkage. Sirdeshmukh and Singh [24] emphasized the role of value as a critical mediating variable between consumer trust and loyalty. A customer who received significant value was expected to stay with the vendor and be less inclined to switch vendors. We hypothesized:

H13 Customer value is positively related to customer loyalty.

Several studies have shown a relationship between satisfaction and loyalty, although a direct relationship is not always postulated [4,5,15,19,23] Agustin and Singh [1] investigated both a direct relationship and one mediated by trust and value. Since there is lack of universal support for this link, it was treated as a weak hypothesis and included as part of additional analysis. It was postulated as:

H14 Customer satisfaction is positively related to customer loyalty.

The link between customer loyalty and word of mouth, to the best of our knowledge, has not been explored in the e-commerce context. In the general marketing literature [5,14], a correlation was established, though a bad experience may obviously have a negative effect. The relationship between loyalty and word of mouth may not be straightforward, but it seemed worth exploring; thus:

H15 Customer loyalty is positively related to word of mouth.

4. Methodology

A positivist survey methodology was used. An instrument was prepared to measure the proposed constructs, with questionnaire items taken from prior studies as identified in table of the [Appendix](#), but adapted to fit the context of e-commerce. The survey first asked the respondents to specify an online vendor whose site they visited and then to answer the questions using it as a benchmark. The questionnaire was pretested by faculty members and graduate students. A pilot was also conducted using undergraduate students; these efforts resulted in only minor modifications to the survey instrument.

The questionnaire was administered to 496 undergraduate and graduate business students at a large university in the United States. The use of students in such studies is not uncommon, as they are experienced online customers and seem to share similar characteristics to general online users. It was important to draw respondents from a population that were experienced web users and who had developed a long-term exchange with a particular web vendor. In order to assure this, we discarded responses from subjects who had less than 2 months of experience with a vendor. We also discarded responses where the subject answered the questions based on a web site that did not sell any product or service (such as google.com). The usable sample size was then 420. The demographics of the subjects are shown in [Table 1](#); clearly they were experienced online shoppers in terms of years of experience and spending.

5. Analysis and results

5.1. The measurement model

Confirmatory factor analysis using EQS 6.1 was used to test the measurement model and establish convergent and discriminant validity of the constructs. The reliabilities of all constructs exceeded the minimum acceptable Cronbach's alpha level of 0.70, indicating internal consistency. Most of the scales had Cronbach's alpha greater than 0.90. Convergent validity was assessed using two criteria: a significant t-statistic (at the 0.05 level) for each item level path, and that each path loading had to be greater than twice its standard error [2]. These criteria were met for each construct and all t-statistics were significant at $p < 0.01$. All items had high loading on their respective factors, with most showing a loading greater than 0.70. The t-values and item loadings for selected constructs are shown in Table 2.

Table 1

Sample demographics.

Total usable responses	420
Gender	Female: 55% Male: 45%
Age	Mean: 22.5 years Standard deviation: 4.8 years
Years of college	Mean: 3.2 years Standard deviation: 1.2 years
Years of experience with the particular vendor	Mean: 2.4 years Standard deviation: 4.8 years
Average amount spent	>\$100

Table 2

Measurement model statistics for selected constructs.

Construct	t-Value (measurement model)	Item loading	Items
Intention to participate in exchange relationship	16.1	0.805	I would feel comfortable seeking product/service information from this online vendor.
	13.2	0.701	I would feel comfortable receiving free product/service information from this online vendor.
	14.2	0.740	I would feel comfortable providing information to this online vendor in order to receive customized service.
	16.2	0.808	I would feel comfortable developing a valuable relationship with this online vendor.
Satisfaction	19.4	0.853	I did the right thing when I decided to use this online vendor
	19.5	0.857	I am very pleased with making purchases from this online vendor
Value	11.4	0.745	The time I spend in order to shop from this online vendor's site is highly reasonable.
	12.4	0.823	The effort involved in shopping at this online vendor's site is worthwhile.
	12.9	0.859	The Shopping experience at this online vendor's site is excellent.
	11.9	0.780	I found significant value by shopping at this online vendor's site.
Word-of-mouth	25.7	0.948	I tell my friends about this vendor
	17.0	0.761	I want my friends to buy from this vendor

5.2. Structural model and hypothesis testing

The structural model and the hypotheses were tested using EQS 6.1. Initial analysis indicated that the data had significant non-normality (as indicated by the high multivariate kurtosis with a normalized Mardia's Coefficient of 166). Under such severe non-normality, we followed the recommendations of Sharma, Darvasula and Dillon [21], who stated that for such data "we recommend the use of elliptical reweighted least squares (ERLS) as its performance is found to be superior for non-normal data". Therefore, we used this as the estimation method. Model II in Fig. 2 shows the theoretical model. Analysis of the structural model generated a Chi-Square value of 3097 (df = 1210). All fitness indicators for the ERLS method are in the accepted range. Bentler-Bonnet Normed Fit Index, Bentler-Bonnet Non-Normed Fit Index, Comparative Fit Index (CFI), and Bollen (IFI) Fit Index had values of 0.954, 0.970, 0.972, and 0.972, respectively.

All of the hypotheses were supported. All correlations were significant with t-statistic greater than 1.96 and p-value < 0.05 . The research model was able to explain 70.7, 52.2, 84.8, 48.2, and 56.2% of the variances in intention to participate in exchange relationship, satisfaction in exchange relationship, value from web vendor, customer loyalty, and word-of-mouth communication, respectively. Thus the relationships between the constructs of usage attitude, trustworthiness, intention, satisfaction, value, customer loyalty, and word of mouth were supported in the e-commerce context. The supported relationships were consistent with those reported in

prior studies in both traditional marketing and e-commerce contexts. One particular relationship between trustworthiness and attitude is worth noting: it turned out to be significant with a path coefficient of 0.57 and a t value of 8.2. The inclusion of this relationship significantly improved the model.

Anderson and Gerbing [2] recommended assessing the model of interest by estimating a series of nested models that represented plausible alternate specifications. A model M_1 is nested within model M_2 if its set of freely estimated parameters is a subset of those estimated in M_2 . This is specified as $M_1 < M_2$. A model M_u is less constrained than model M_c , if in M_u one or more parameters constrained in M_c are estimated. Thus M_1 is more constrained than M_2 . Accordingly, the proposed research model (Model II) is compared with two alternates: Model I (constrained model M_c) and Model III (unconstrained model M_u). Such nesting not only evaluates the explanatory power of the theoretical model, but also allows examination of alternate explanations of the underlying variance in the data and exploration of alternate hypotheses to those of the initial model. The testing of the nested models was accomplished by using a set of sequential Chi-squared difference tests.

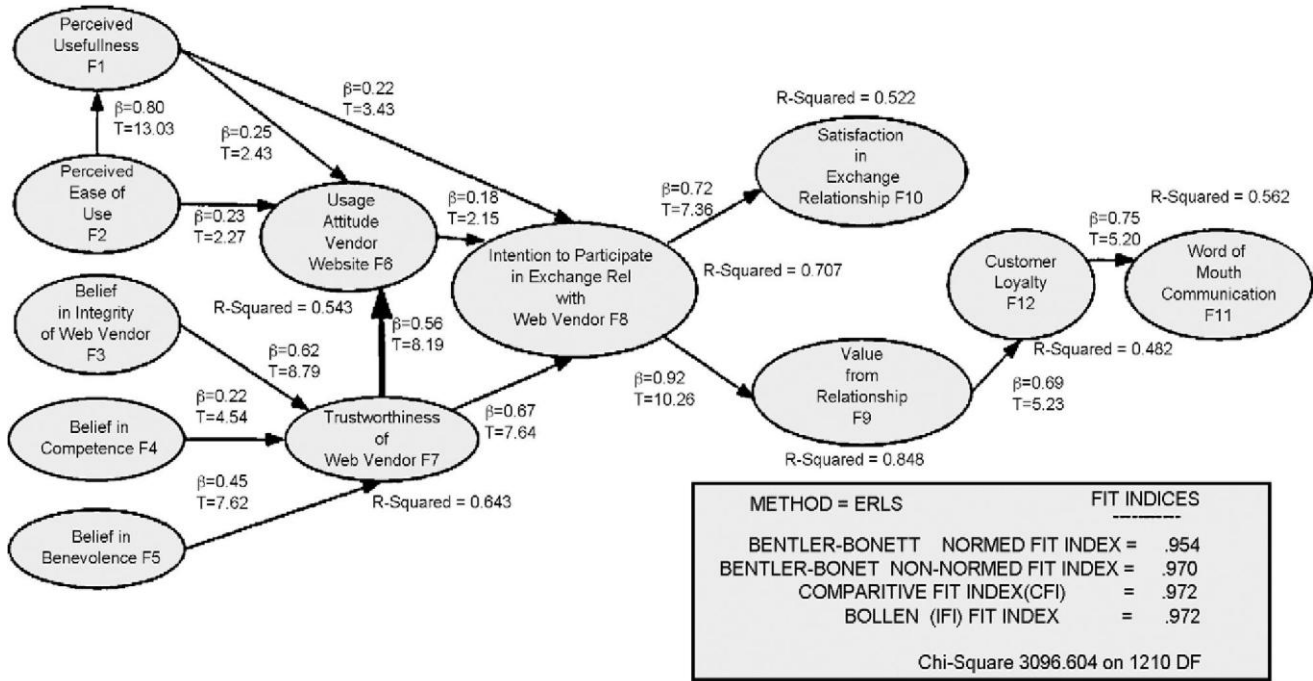


Fig. 2. Model II: theoretical model.

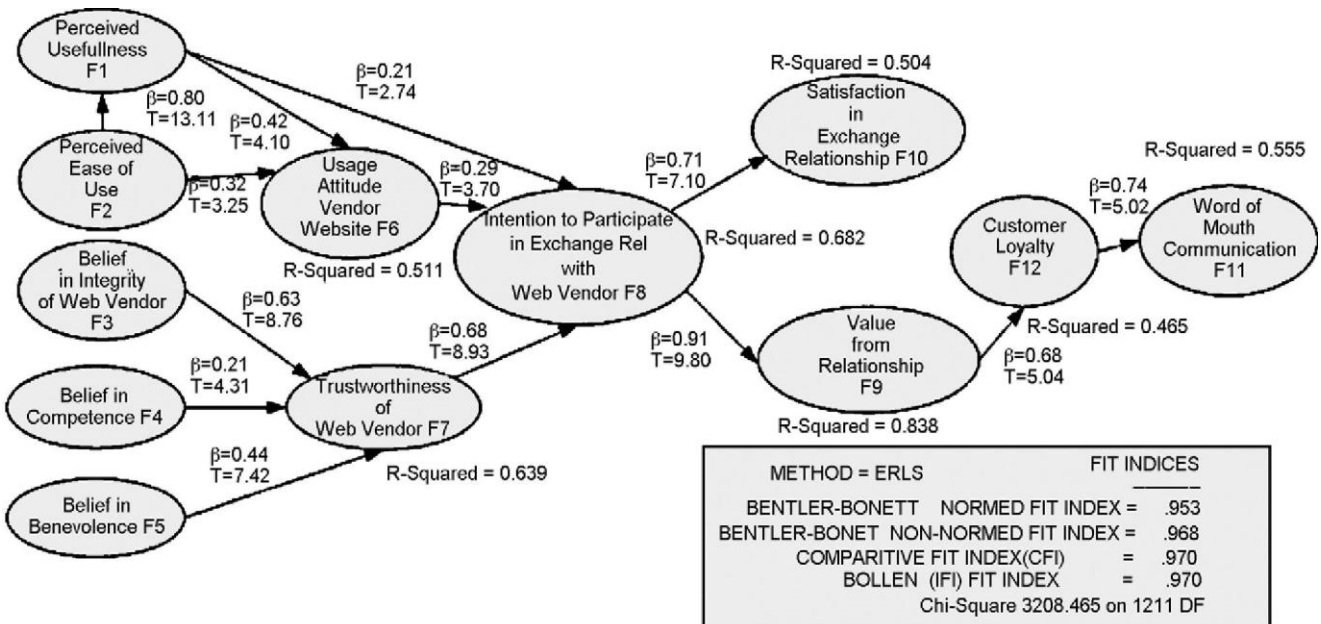


Fig. 3. Model I: constrained model.

In Model I (Fig. 3), the relationship between usage attitude and trustworthiness was removed. By definition, the statistics for model II will show improvement over model I; the question is whether it is significant. The Chi-square difference between models I and II is 112 with 1 degree of freedom, and it is significant. Thus, our new model was superior to the constrained model I, and the relationship between trustworthiness and usage attitude was strongly supported.

In the unconstrained model III (Fig. 4), the weak link between satisfaction and loyalty (Hypothesis 14) was added to the theoretical model. The Chi-square difference between models II and III was only 2.1 with 1 degree of freedom, and was nonsignificant. Thus model III does not provide any significant improvement over model II.

In light of the above, our theoretical model II provides the best explanatory power: all of its hypotheses were fully supported.

6. Findings and discussion

6.1. Theoretical importance

The primary contribution of our study was the unified model of e-commerce relational exchange. It was fully supported by the data collected for the study. In the quest for long-term relationships in e-commerce, it is important for organizations to both develop and continuously nurture consumer trust.

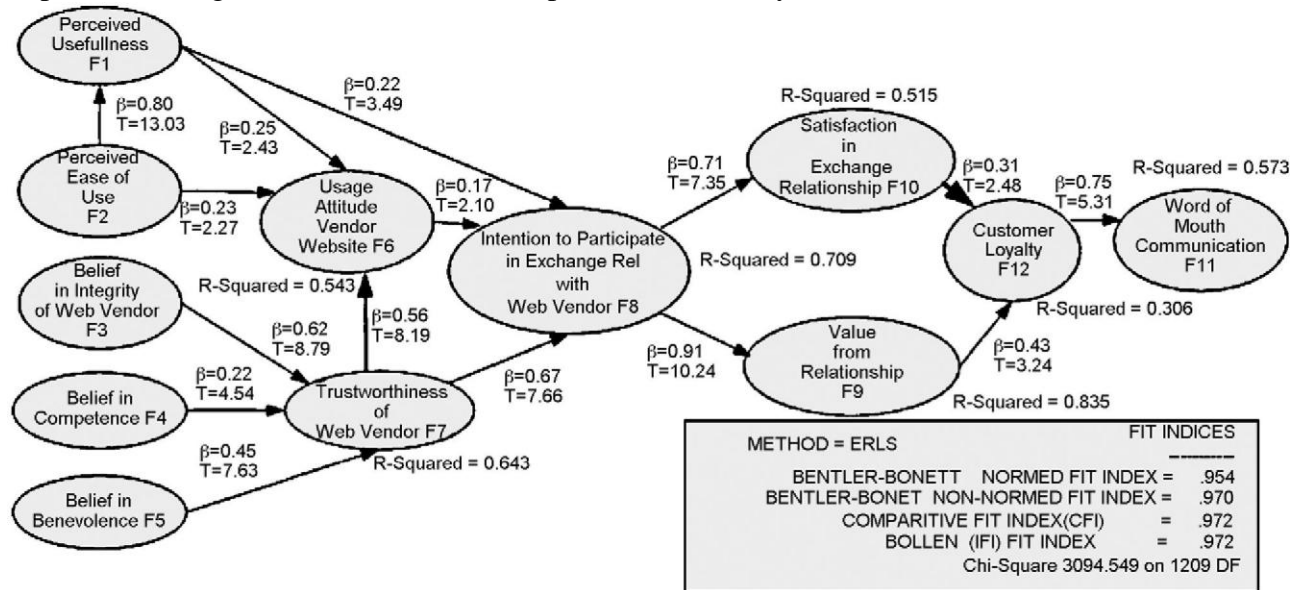


Fig. 4. Model III: unconstrained model.

6.2. Antecedents of intention/use

All hypotheses in the theoretical model were statistically significant. We found significant support that shared beliefs in the integrity, competence, and benevolence of the web vendor positively affected consumer's trust of a web vendor. Trusting consumers are then inclined to participate in an exchange relationship.

The relationship between trustworthiness and usage attitude deserves special attention. This was included in our model and significantly improved the model's performance. The important insight from this was that the usage attitude toward a web vendor's site was not only influenced by EOU and usefulness but also by the perceived trustworthiness of the web vendor. Furthermore, this and trust components had the dual effect on exchange relationship: directly on participation intention and indirectly on participation intention through usage attitude.

6.3. Consequents of intention/use

Among the consequents of intention, we explored satisfaction, value, loyalty, and word of mouth. As consumers use the web vendor's site, it leads to satisfaction and perceived value, which is an important in developing loyalty, willingness to continue the relationship, and recommending the site to provide new consumers.

A weak relationship was hypothesized from customer satisfaction to loyalty. While the relationship itself was significant in the unconstrained model, it did not significantly improve the model's performance. In the interest of parsimony, the theoretical model is superior. While both satisfaction and value were important at the one-time transactional level or the short term, value seems to have long-term impacts as it also leads to customer loyalty for future exchanges. Thus satisfaction appears to be a short-term attribute while value has long-term impact.

A positive relationship was found between loyalty and word of mouth, whose construct was made up of largely positive items. In the e-commerce context, loyal customers tend to engage in a higher degree of positive word of mouth. Whether dissatisfied or not-so-loyal e-commerce customers engage in negative word of mouth is an open question that remains to be explored.

6.4. Implications for practice

We found the role of trust and its components of extreme importance in the development of attitude and exchange intention on part of the consumers. It is clear that while it may not be essential to develop trust for a customer to visit the site, trust is indispensable if the customer has to engage in a transaction or in any other kind of ongoing relationship. In order to create long-term relationships, it is important for organizations to both develop and nurture consumer trust. Furthermore, firms need to address its specific components: competence, benevolence, and integrity.

Online companies need to strive to provide enhanced value to its customers by different means, such as additional features, services, and new economies. As our model shows, loyalty not only preserves existing customers but also attracts more customers by way of positive word of mouth.

6.5. Limitations

This study used student subjects; it would have reinforced the results if we had also used a sample of general e-commerce customers. Also the study did not consider the effect of industry sectors, size of the companies, and business strategies.

7. Conclusion

This study was conducted as a unified investigation of both the antecedents and consequents of intention to use a vendor's web site in developing long-term relationship with consumers. The research model incorporated key concepts from TAM, trust, and relational exchange, and integrated them via TRA. Trust seemed to have dual effect on the exchange relationship, directly as well as indirectly through its effect on attitude.

The relational development aspect of e-commerce exchanges has not received much prior attention. Among the consequents of intention to use, we included satisfaction, value, loyalty, and word of mouth. We found that as consumers use the vendor's site, they develop value and satisfaction. Value is important in the development of loyalty, and consumer willingness to continue in the relationship as well as recommend the site to others. These are important results. The unified view emphasizes the need for including both technology and trust factors in the development of long sustaining relationships.

Appendix A. Research constructs, items, and primary sources

Construct	Items	Primary Sources
Perceived usefulness	I find this web site useful. This web site is useful for searching products/services. This web site is useful for buying products/services. This web site enables me to search for products/services faster. This web site enables me to buy products/services faster.	[6]
Perceived ease of use	Learning to use this web site was easy for me. My interaction with this web site is clear and understandable. It is easy for me to become skillful at using this web site. I find this web site easy to use. The web site is flexible to interact with. It is easy to interact with this web site.	[6]
Belief in integrity	I believe this online vendor will not charge more for Internet shopping. I believe this online vendor is honest to its customers. I believe this online vendor acts sincerely in dealing with customers. I believe this online vendor will not overcharge me during sales transactions. I believe this online vendor is truthful in its dealings with me. I believe this online vendor would keep its commitments. I believe this online vendor is genuine.	[17]

Appendix A (Continued)

Construct	Items	Primary Sources
Belief in competence	I believe this online vendor has the ability to handle sales transactions on the Internet. I believe this online vendor has sufficient expertise to do business on the Internet.	[17]
Belief in benevolence	I believe this online vendor would act in my best interest. If I required help, I believe this online vendor would do its best to help me. In situations of conflict of interest, I believe this online vendor would put its interest over mine (reverse item).	[17]
Usage attitude	I like to use the web site of this online vendor. I like the layout of the web site of this online vendor. The web site of this online vendor is important to me. The web site of this online vendor is valuable to me. I like to visit the web site of this online vendor.	[6]
Trustworthiness	I like to trust this online vendor. I find this online vendor trustworthy. I like the reliability of this online vendor. I value the trustworthy characteristics of this online vendor. I like the trustworthiness of this online vendor compared to other online vendors.	[17]
Intention to participate in exchange relationship	I would feel comfortable buying products from this online vendor. I would feel comfortable seeking product/service information from this online vendor. I would feel comfortable receiving free product/service information from this online vendor. I would feel comfortable providing information to this online vendor in order to receive customized service. I would feel comfortable developing a valuable relationship with this online vendor.	[6]
Satisfaction	Overall, I am satisfied with this online vendor. I did the right thing when I decided to use this online vendor. I am very pleased with making purchases from this online vendor. I regret doing business with this online vendor (reverse item).	[14,20]
Value	The prices I pay for shopping from this online vendor represent a very good deal. The time I spend in order to shop at this online vendor's site is highly reasonable. The effort involved in shopping at this online vendor's site is worthwhile. The shopping experience at this online vendor's site is excellent. I found significant value by shopping at this online vendor's site.	[24]
Customer loyalty	I have a strong relationship with this online vendor. I am likely to switch to another vendor in the near future (reverse item).	[10,14]
Word of mouth	I often recommend this vendor to others. I tell my friends about this vendor. I want my friends to buy from this vendor.	[5,14]

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