

RESEARCH ARTICLE

Buyers, Trust Perceptions on Electronic Commerce: An Inter-temporal Perspective

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Abstract

Each year, electronic commerce gains more relevance in retail scenario, what brings along new tendencies for retailers. In this virtual transaction, trust assumes an important role for study, since it's fundamental to viable buyer-seller transaction. Hence, 43 trust attributes embedded in e-commerce literature review were used as independent variables to verify which ones play significant role in buyer's trust construction and perception. Utilizing multiple linear regression analysis, results demonstrated that there're eight variables that better justify buyers trust perceptions: trust in utilized technology; positive experience in previously transactions; belief in seller's competence; influence of other's opinions; maintenance of buyer's privacy; deception over the whole Internet mechanisms; pre-disposition to trust on sellers; product information available on website. These results demonstrate, first of all, variables the better explain trust perception on the e-commerce, pointing out where managers should invest their resources to increase this trust. Therefore, the study shows that in the developed model that some variables are from buyer's past experiences, denoting the existence of inter-temporal perspective for buyer's trust in e-commerce transactions.

Keywords: *Electronic commerce, E-commerce, Inter-temporal perspective, Trust.*

Introduction

According to data from [1], there is near 2.4 billion Internet users in the world, what represents approximately 34% of whole world population. In this scenario, Brazil is included, where there were more than 80 millions of users at the end of 2011, representing a penetration on 42% of national population [2]. This trend has been increasing in last years in such a way that changed people behavior, what includes business and commercial relations [3]. In this context, organizations are affected also and the use of virtual environment gain such proportion that the e-commerce comes as a useful sales tool. This modal is defined as the purchasing and sales operations through Internet, as well as any communication from these business relations (information exchange) done by electronic means [4].

Observing the Internet usage expansion through commercial relations, it can be said that electronic commerce is still increasing around the world [1]. In Brazil, for example, data from [5] apud [6]

estimates that e-commerce sales was increased more than 20 times since 2001 to 2011, representing a change in the national consumer behavior. i.e. instead of using traditional market channels, people are using also electronic commerce.

It is an economic transaction modal that has been increasing over the last few years because the more common and diffused is the technology for these transactions, higher are the gains and the economic efficiency of this market [7]. Hence, managers have to deal new paradigms in this context where there is not only a virtual value chain to be considered in their decisions, but also new relations with clients, suppliers and competitors. Business relationships are not taken personally anymore, but virtually.

This reality brings along a crucial issue from these new negotiations and relational forms of retail market that is the existence of trust between involved actors. In a personal contact

where there is no physical involvement, there is distrust on the viability and the security of a smooth economic transaction. The information asymmetry involved in these transactions can also put forward market inefficiencies [8] since full available information is important to propel trust among involved agents. So, negotiations and operations assume new roles and require trust among agents when there're no physical contacts. Based on this, a recent challenge for IT (Information Technology) and Marketing researchers and managers is to identify variables engender buyer's trust in Internet shopping [9], and the level of influence of each variable in buyer's consumer's trust perceptions. So, the objective of this study is to verify, among persons who have already bought products through e-commerce in Brazil, which variables have significant impact in their trust perception in this kind of retail.

Trust Concepts

Defend the idea that trust is structured in individual's dimensions of emotional (sentiments) and cognitive (rational expectations) bases, as in behavioral social institutions [10]. So, there're expectations about other's behavior that can stimulate trust between persons. Consider trust exist when there's a generalized expectation on another's word, promise or report (written or oral) [11]. Agrees saying [12] that trust is an individual's expectation over another one related to competence, sincerity and goodwill. say that trust is related in the belief that individual that other part will matter with him and act in respectful way during transaction, no matter what can happen on future[13].

Cite three factors that can explain individual's trust: predictability, fidelity and goodwill. This last is the only one that's not related with previous experiences of individuals' relations. Hence, there're expectations related not only with previous perceptions of first transaction, but also related with the observed results from it [13].

It's evident that interaction historical between agents is an important factor to trust construction, existing trust before-interaction, initial-interaction trust and trust through repeated interactions [14]. The most critical moment to build trust between agents is in the beginning of interaction [15] when expectations have greater influence.

On organizations, trust is built through abilities of the trust receiver, as his benevolence and integrity [16]. However, trust factors presented here that secure trust in a transaction are from

individual's perceptive nature. There's a demand of explicit factors that ensure competence and benevolence that stimulate the origin of laws that secure the fulfillment of both parts. So, when there's no familiarity neither cultural similarity between parts in a relation, institutional trust turns important [17].

Trust Attributes Embedded in Electronic Commerce

Individuals are averse on trusting other persons who they only deal virtually [18]. That is why the major barrier of the e-commerce lies on security and on buyers' distrust [19]. In this risky environment, trust between agents of an online transaction is a condition to purchase action viability [20], and trust can be only achieved through security mechanisms between both parts of transaction (buyers and sellers). [20] alleges that it is only possible to establish trust in this relation when involved parts understand existent risks, identify threats and vulnerabilities, and then agree in establishing security means that can protect both them. So, considering that a successful organization is that one that can better adapt itself to the scenario where it is embedded [21], it can be concluded that the successful organization in e-commerce is the one that can better deal with trust issues from their buyers. In this context, trust construction can come from different aspects, such as: seller characteristics; buyer's perception over sellers; buyer's personal characteristics; technological characteristics; extern factors; temporal aspects.

Seller's Characteristics

Since buyers have to trust in seller in order to turn the transaction able, it's important to seller to have a positive reputation [22]. That's why the virtual organization has to worry about its historical to maintain its reputation [23]. There shouldn't be information asymmetry between seller and buyer. That's why it's important that seller offers as much information about the transitioned product as it cans [24]. This lack of information can also cause risks related to pre and post transaction. Buyer fears the lack of security, integrity and privacy from seller, as the misuse of given information. Before it, sellers have to offer guarantees to certify and protect buyer from losses [23].

Seller can also creates dependence ties with buyer, what is built under buyer's physical and environmental security, availability and psychological integrity [25]. To maintain these items it's important that seller doesn't use nicknames and show he's available and

responsible with the transaction [26]. At last, when buyer perceives the store as huge and large, it can also engender trust [27].

Buyer's Perception over Seller

Say that [28] buyers have to perceive competence (capacity of the firm to accomplish deals), integrity and benevolence in order to trust on seller. Along with these, predictability may also have an important role in buyer's trust formation [15]. Elements related to predictability can also be found on item 2.6.

Buyer's Personal Characteristics

According to [28], buyers can have two types of trust, the emotional trust (related to intuition) and cognitive trust (related to rational decisions). Buyer has also to have pre-disposal to trust [15] in seller and in the electronic commerce. The perception of risks involved in electronic commerce is also something that can bring trust do buyer [29]. Finally, the perception of economic advantages before traditional retail may be a trust stimulator [30].

Technological Characteristics

There must be trust in the technology used by buyer [29], and the Internet structure must transmit trust [15]. So, security and certification policies may be taken by sellers [31]. It's important that buyer has familiarity and the perception of technology ease of use too [32]. That's why the comprehension of technology functions can also help on trust formation [33].

As for the website, according to [34], it should contain to engender trust: specific content; quality content; appearance; technical appearance. The website should demonstrate privacy, security and pleasure to buyer [35]. Nevertheless, website can contain an interface that stimulates buyer's reality [36] and anthropomorphic characteristics [37].

External Factors

The presence of certification institutions that guarantee security may also be a factor of trust formation [22], as the presence of certifications emitted by external and independent institutions [31]. The presence of institutionalized laws that punish the non-complier part of transaction has its role in this context too [36].

Temporal Aspects

Predictability of seller actions in e-commerce can influence buyer's trust formation [15], what demonstrates the temporal effects of trust. Well

successful experiences have positive effect on trust formation too [22].

Methods

After joining all 43 variables encountered in specific literature, the following step was to test which of these are significant in buyer's trust perceptions. At first, an online questionnaire was tested by 25 specialist answerers who gave suggestions for improvement and explanation of the research instrument.

The sample was constituted by 387 persons who have already bought products through e-commerce in Brazil and accepted to answer an online questionnaire. The answers with missing values, outliers and evident incoherence were excluded from initial sample, remaining 312 questionnaires for analysis.

The questionnaire had two parts. The first one constituted in personal questions, followed by a question about the answerer overall trust in electronic commerce. The second part had 43 questions, which each question related with a specific variable lifted on literature review.

For the overall trust score, it was given a 1 to 10 scoreboard, where answerer could give himself a grade related to it. Since it's considered that individual's trust can have a degree rather than the person simply trust or don't trust (e.g. [38]), for trust variables, it was asked for answerers to give rates from 1 to 5 according to their trust degree, according to each question. There was given also the option of disagreement (rated as 0), to accomplish the fact when the answerer doesn't believe that that variable affect his trust on e-commerce.

Following this, a multiple linear regression was calculated through the SPSS 15 software on stepwise method. According to [39], the multiple linear regression is a technique to analyze the relation between a dependent variable and many independent variables as its predictors. So, it's was considered persons' overall trust level as dependent variable explained by trust increase elements presented as independent variables. The independent variables used are noted in the following table:

Results

With an adjusted R^2 valued at 46,3%, it shows that a multiple linear regression. This means that the model encountered here can explain 46,3% of dependent variable variance.

Table 1: Variables Used on Survey

| Abbreviation | Variable | Abbreviation | Variable |
|------------------|---|----------------|---|
| Overalltrust | Overall trust in electronic commerce(Dependent Variable) | Reputation | Seller's reputaios |
| Benevolence | Seller's benevolence | Historical | Seller's trustful and ethical historical |
| Competence | Seller's competence | Guarantee2 | Guarantees offered by seller |
| Integrity | Seller's integrity | Avaiab | Seller avaiability |
| Emotional | Emotional trust | Info | Product information offering |
| Rational | Rational trust | Identification | Seller identification |
| Advantage | Advantage before traditional retail | Privacy2 | Website privacy |
| Sellerdisposal | Personal presumption to trust on seller | Pleasure | Website pleasure |
| Internetdisposal | Personal presumption to trust on Internet | Compatibility | Website compatibility |
| Riskpercept | Perception of involved risk on e-commerce | Persexperience | Website that reminds buyer's personal experiences |
| Laws | Trust in existence and function of laws against disorder agreements | Performance | Website technical performance |
| Guarantee | Presence of guarantees and certifications | Appearance | Website with visual appearance |
| Others | Others' opinion on seller | Opinions | Presence of other's opinion on website |
| Experience | Previous experiences | Avinfo | Product information available on website |
| Fidelity | Fidelity on seller | Language | Adequate language |
| Trustseller | Buyer can trust on seller's promises | Images | Presence of human images on website |
| Familiarity | Familiarity with seller | Security | Technology security |
| Dependence | Dependence on seller | Familiarity2 | Technology familiarity |
| Privacy | Existence of privacy on transaction | Easeofuse | Technology ease of use |
| Seltrust | If something goes wrong, buyer loses trust on seller | Utility | Technology utility |
| Inttrsut | If something goes wrong, buyer loses trust on internet | Dissemination | Dissemination of used technology |

Table 2: Determination coefficient

| R | R square | Adjusted R square | R |
|-----------------|----------|-------------------|---|
| R Square Change | F Change | Df1 | |
| ,691 | ,477 | ,463 | |

Predictors: (Constant), Tecntrust, Experience, Competence, Opinions, Privacy, Internettrust, Sellerdisposal, Avinfo.Dependent Variable: Overalltrust

The model also presented adequate significance, as demonstrated in Table 3. Besides, the model created can explain 491,051 errors from a total of 1029,074 possible errors if dependent variable was taken as its arithmetic mean for previsions: The stepwise method selected for the final model, eight independent variables as noted on Table 3.

Table 3: ANOVA

| Model | Sum of squares | df | Mean square | F | Sig. |
|------------|----------------|-----|-------------|--------|------|
| Regression | 491,051 | 8 | 61,381 | 34,568 | ,000 |
| Residual | 538,023 | 303 | 1,776 | | |
| Total | 1029,074 | 311 | | | |

As noted, t values are all accepted and all significances are under 5%. So, the coefficients of

final model stands according with data from Table 3 extracted from SPSS 15 software:

Table 4: Coefficients

| Model | Unstandardized coefficients | | Standardized coefficients | t | Sig. |
|----------------|-----------------------------|------------|---------------------------|--------|------|
| | B | Std. Error | | | |
| (Constant) | 2,821 | ,352 | | 8,018 | ,000 |
| Tecntrust | 1,899 | ,336 | ,264 | 5,644 | ,000 |
| Experience | 1,089 | ,358 | ,152 | 3,044 | ,003 |
| Competence | 1,177 | ,309 | ,182 | 3,810 | ,000 |
| Opinions | ,854 | ,294 | ,135 | 2,907 | ,004 |
| Privacy | ,888 | ,296 | ,142 | 3,000 | ,003 |
| Internettrust | -,775 | ,245 | -,138 | -3,169 | ,002 |
| Sellerdisposal | 1,085 | ,320 | ,153 | 3,396 | ,001 |
| Avinfo | 1,058 | ,404 | ,123 | 2,619 | ,009 |

a Dependent Variable: Overalltrust

The model encountered here is presented as it follows:

$$\text{OVERALLTRUST} = 2,8221 + 1,899 \text{TECNTRUST} + 1,089 \text{EXPERIENCE} + 1,177 \text{COMPETENCE} + 0,854 \text{OPINIONS} + 0,888 \text{PRIVACY} - 0,775 \text{INTERNETTRUST} + 1,085 \text{SELLER DISPOSAL} + 1,058 \text{AVINFO}$$

Conclusions and Discussions

The first important thing to note about the model developed here is that trust in electronic commerce is considered as a temporal element, with effects during, before and after transaction. The model encountered here presents eight most significant elements to form buyer's trust in e-commerce transactions. They're: trust in utilized technology; positive experience in previously transactions; belief in seller's competence; influence of other's opinions; maintenance of buyer's privacy; deception over the whole Internet mechanisms; pre-disposition to trust on sellers; product information available on website. Three of these eight elements (positive experience, maintenance of privacy and deception with Internet mechanisms – this last one with negative effect) come from previous experiences

on e-commerce, what prove the importance of inter-temporal and aspects when considering trust formation. So, it's important to denote that repeated transactions are important to maintain and conquer e-commerce buyer's trust. As limitations, it would be greater if the sample size was bigger than 312 cases. Results would be more representative with a bigger sample. Furthermore, if it was desired to make a factorial analysis from collected data, it would be recommended that the sample contained at least 645 cases because [39] suggest that for each variable, the sample should have at least 15 observations. Besides, it's also important to denote that, according to [40], questionnaires done through Internet can create bias due to the fact that answerers are Internet users, what can create specific characteristics of the sample. For future researches, it's recommended the application of the model developed here in other nations other than Brazil. It may have different results due to cultural dissimilarities, what have direct influence mainly in personal's perceptions. It's suggested that these studies and discussions take the direction of cross-cultural analysis.

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