A Network-Service-System (NSS) Framework for Analyzing and Measuring the Relationship between Trust's Antecedents, E-Trust, and Purchase Intention in E-Commerce

Abstract

Purpose

– This research aims to *analyze* and *measure* the relationship between trust's antecedents, e-trust, and purchase intention using the main model of e-trust supported by a network-service-system framework. Specifically, measuring the effect that trust's antecedents have on e-trust and simultaneously the effect of e-trust on purchase intention (where trust is used as a moderating dimension).

Design/methodology/approach

– The research design is based on causal research. Initially diverse causal relations have been studied between trust antecedents and e-trust where trust behaved as a dependent variable. Successively has been studied the relation between e-trust (in this case as independent variable) and purchase intention. Another causal relation studied is between trust antecedents and purchase intention. Data is gathered through online questionnaire composed by descriptive and behavioral questions using the Likert scale. The convenient sampling is used with a sample size of 295 participants from the Turkish market. A regression analysis was implemented between dimensions to measure the relationships. Regarding the theoretical approaches, firstly the *Network Theory and Many-to-Many Marketing* are used for understanding the complex relationships in e-commerce (B2B, B2C, C2C, and C2B) between e-market actors (i.e. business and consumer). Because every actor of the e-marketplace is a service provider, than the *Service-Dominant Logic* is used for conveying the concept of value (i.e. value proposition, value acceptance, value co-creation, and value in context). Relying on the *Information Variety Model* of the *Viable Systems Approach*, the concept of value is seen from a systems perspective in which the so called *categorical values* serve as determinants for creating the conditions of consonance and harmonic relations among e-market actors. Consequently, the trust has been described as a categorical value with a relevant impact (both emotional and behavioral) on consonance, value co-creation, and purchase intention.

Findings

– The effect of trust in e-commerce approved. Brand power and brand reputation resulted as the most important antecedents for e-trust. Important results about Turkish e-commerce users (both descriptive and behavioral) achieved. The effect of e-trust on purchase intention was verified, reinforcing previous studies made in different countries and giving unique information about Turkish market. It was also discovered that antecedents of trust have a direct impact on purchase intention without using e-trust as moderating dimension, but in this case the effect was not as strong as in the case in which e-trust served as a moderating dimension.

Research limitations/implications (if applicable)

– Mostly used 6 antecedents from literature were chosen for the main model but not all antecedents studied in the literature (around 20). Even though in the literature different dimensions were studied (separately but not jointly) as consequences of trust, we chose only purchase intention to simplify the task (to choose one consequence is a tendency of literature).

Originality/value

– It is one of the pioneering studies to examine the whole e-trust model in Turkey, fulfilling some gaps in literature and offering unique data for Turkish market, as well as other insights for generalizing the model in other markets.

Keywords: Antecedents of Trust, E-Trust, Value Co-Creation, Consonance, Purchase Intention

Paper type: Research paper

Introduction

Actually, online retailing has been evaluated as the next generation of lifestyle retailing way back. The spread of online shopping reminds us that this platform is used for B2B transactions more efficiently before consumer markets (Korper and Ellis, 2001; Timmers, 2000). In these relationship networks created over the online platform the focus is shifted from a transactional to a relational view (Lambe, Spekman, and Hunt, 2000; Gummesson, 1999), giving rise to social contracts based on mutual trust and value co-creation (Vargo, Lusch, and Malter, 2006). However, the online platform provides elements of uncertainty in relationship networks created between e-market actors. One element, for example, is the risk. Generally, researches are of the same opinion about the main three risks categories related with online purchasing: personal risk because of address declaration; product risk because of buying the item without seeing; financial risk because of providing account information (Morgan and Hunt, 1994; Mayer *et al.*, 1995). Technological improvements for protecting customers from these risks are not zeroing the threats. As a consequence, the importance of e-trust is increasing beyond the technical aspects of exchange that occur in e-commerce.

E-commerce is a common topic for IT and Business literature. Unfortunately, E-trust as a focal component in e-commerce relations is mainly studied by IT researchers, and the marketing perspective has been mostly ignored. Apparently, IT researchers seem to be interested in technical perspective of e-trust (Coetzee and Eloff, 2005; Hwang and Kim, 2007; Jarvenpaa, Tractinsky, and Vitale, 2000). These technical features are also important for marketers, but this is not enough. In the context of e-retailing, marketing focuses primarily on consumers' perception about trust (Merrilees and Frye, 2003; Mukherjee and Nath, 2007; Garbarino and Lee, 2003). IT literature has not recognized perceptual elements like brand power and reputation as antecedents of e-trust, but this is impossible at marketing perspective. As the origin of the topic starts from IT literature, marketing researchers didn't study enough the preceding antecedents and their relation with e-trust. This gap is relatively fulfilled by the present study that aims to prove the strong influence of brand power and reputation over trust perception in e-retailing.

The relation between e-market actors in electronic platforms is by default network, service, and systems oriented. On the other hand, the main component of e-commerce relationships (i.e. trust) has not been studied holistically through a network-service-system framework. Even when attempts are made, those are focused on the dyadic relation that each of the paradigms has with the concept of trust (Barile, 2011; Brodie, Glynn, and Little, 2006; Kowalkowski, 2011; Gummesson, 2008).

Both in business and consumer online markets trust is a crucial factor which is obvious from observation and scientifically approved by several studies (Gefen and Straub, 2004; Cazier, Shao and Louis, 2006), even though these studies are not satisfactory for understanding the scope of the topic (Dung, 2008; Pennanen, 2009). Therefore, the concept of "trust" must be studied more and more under different conditions and cultural perspectives. Thus, considering the present gaps of the literature, this study focuses the attention on the main e-trust model applied to the Turkish online market for understanding relationships between trust antecedents, e-trust, and purchase intention.

Theoretical framework

What is trust?

Literature about the trust shows that exist a multidimensional perception related with the concept. Several disciplines have investigated the trust phenomenon. Also several definitions have been developed for it. For example, one way of defining trust is the following: "*Trust is a belief that trustee (trusted person) will not behave out of expectations*" (Shaw, 2001; Barber, 1983; Mayer et al., 1995). Trusting makes trustor (trusting person) vulnerable, not because of being under the risk, but because of accepting the risk (Ambrose and Jonson, 1998).

However, considerations about trust differ from discipline to discipline. Worchel (1979) summarized these views as follows:

Dispositional Trust - Psychologists view – Trust is person specific issue which derives from experiences. Trust is mainly belief and expectation.

Organizational Trust - Sociologists view (which is also shared by economists) – Trust is an organizational phenomenon that doesn't exist outside organizations.

Interpersonal Trust - Social psychologists view – Trust is related with interpersonal relationships. Trust starts when there is a trustor and a trustee. Commune life effects individuals trust toward each other and community.

Trust has been studied also in areas such as cultural studies (e.g. Harris and Dibben 1999; Zabkar and Brencic, 2004), politics (e.g. Kaasse, 1999), communication (e.g. Loomis, 1959), philosophy (e.g. Baier, 1986, Herzberg, 1988). Management science also studied trust under several headlines: e.g. organizational decision making (Barile, 2011; Barile et al., 2011; Driscoll, 1978), manager staff relationships (Larson, 1992; Atkinson and Butcher, 2003), leadership (Gillespie and Mann, 2004) etc.

Trust in the marketing literature

In the marketing field researches on trust are executed during last 25 years. Marketing literature approaches on trust shift from interpersonal to organizational perspectives. Main areas studied are as follows: trust and commitment (Morgan and Hunt, 1994; Kingshot and Pecotich, 2007); buyer seller relationships (Anderson and Narus, 1990; Ganesan, 1994; Morgan and Hunt, 1994; Garbarino and Jonson, 1999; Dwyer et al., 1987; Corritore et al., 2003); antecedents of trust to company (Doney and Cannon, 1997), benevolence (Sichtmann, 2007); consequences of trust – involvement and performance (Grayson and Ambler, 1999), relationship marketing (Moorman *et al.,* 1992, Buchanan and Gills, 1990; Gale and Chapman, 1994; Gordon, 1999; Gummesson, 2008, 2009), trust and distribution channels (Young and Wilkinson, 1989; Anderson and Narus, 1990; Canning and Hammer-Lloyd, 2007).

The consumer research view is less rich in literature. Very few studies done, like for example: trust and brand preference (Erdem and Swait, 2004), trust and brand loyalty (Delgado-Ballester and Munuera-Aleman, 2001), brand trust (Elliot and Yannoupolou, 2007; Chaudhuri and Holbrook, 2001; FitzPatrick *et al.,* 2005), trust and WOM (Sichtmann, 2007). As it was mentioned above there is a huge gap in marketing literature regarding the concept trust, especially when it comes to the electronic trust (e-trust).

Electronic trust – E-TRUST

Researches made during the last decade have shown that consumers mainly feel unsafe while using e-commerce. Considering that in every online purchase transaction there is a trustee (website), it is clear that these suspicion derives from distrust to e-retailers. As it was mentioned above trust is acceptance of being vulnarable. A study shows about 4 factors of vulnerability at e-commerce usage (Kim and Benbasat, 2003):
-    to be open to 'spams' and related content by providing e-mail address
-    to be open to undesirable visits by providing physical address information
-    to be open to fraud by providing financial information
-    to purchase the product without checking the quality

According to the current literature, the success of online trade depends on various factors. Among these we can mention trust, price, and delivering. Trust is not the most important but is one of the main factors affecting online trade (Doney and Cannonn, 1971). Trust is very important in stimulating online buying (Quelch and Klein, 1996). It can be said that trust is one of the main important barriers why online trade is not so common (Keen, 1997). According to a study made by Forrester Research, 35% of the participants was not using credit card because of the fear that sensitive information may be misused by others. On the other hand, 24% of the participants was not using credit card because of the fear of fraud activities (Kelley, Rhinelander, and DeMoulin, 2001). Another research made in Canada proved the effect of trust over online trade. 40% of the participants said that when buying online they would choose a company which keeps safe their information (Shaw, 2001).

Trust in e-commerce topic is important for industry as it is for the scholars. It seems that both parties already understood the importance of trust in online e-commerce. Studies in e-commerce especially become common at the end of 90s (Ratnasingham, 1998; Jaarvenpaa and Tractinsky, 1999). Generally these studies are concentrated mainly in the area of information technology (Gefen, Karahanna, and Straub, 2003; Pavlou, 2003). Consumer behaviour researchers also have shown an interest towards e-trust (Garbarino and Lee 2003; Yousafzai, Pallister, and Foxall 2005; Yang *et al.,* 2006). These studies besides defining the electronic commerce are grouped according to four main topics: (i) E-trust modelling studies (Tan and Thoen, 2001; Lee and Turban, 2001; McKnight, Choudhury, and Kacmar, 2002); (ii) Antecedents effecting e-trust (Garbarino and

Lee 2003; Gefen and Straub 2004); (iii) Effects/Consequences (So and Sculli, 2002; Yoon, 2002; Ratnasingham and Pavlou, 2003); (iv) E-trust and consumer behavior (Kolsaker and Payne, 2002; Gefen and Heart, 2006).

Literature review shows that many scholars tried to find a definition for e-trust. When doing this, scholars are referring to the advices of Hosmer in order not to create a mix of concepts and to put it as simple as possible (1995). Some e-trust studies take as referring point the definition of trust given by Mayer and his colleagues (1995). The main effect on defining e-trust is the approach brought by Garbarino and Lee (2003). For example there is a study trying to define e-trust in banking industry according to their approach (Yousafzai *et al.,* 2005).

E-trust definitions have their common points such as: trust exists in situation where risk also is present, trust has a psychological effect over the person trusting, and there are some factors creating trust like antecedents and consequences.

After defining e-trust, modeling is one of the most important issues regarding this topic. Works on modeling are obvious by many scholars (Gefen, Karahanna, and Straub, 2003; Jarvenpaa, Tractinsky, and Vitale, 2000). Nowadays e-trust studies and models are concentrating on different industries and markets, generating new available models. For example, the focus of the present study is to build and test a model of e-trust applied to the Turkish market.

When building a model of e-trust generally the antecedents effecting e-trust and the consequences are taken together. In some studies only one factor (Korper and Ellis, 2001), in some studies both of them (Gefen, Karahanna, and Straub, 2003), and in some other studies extra factors together with the personal characteristics of the trusting person are considered (McKnigh *et al.,* 2002). A summary of studies related to the factors affecting e-trust is shown in table 1.

Table1. A literature review summary on the factors affecting e-trust.

Research	Antecedents
Morgan and Hunt, 1994	Communication, common values, the opportunist behavior of e-seller
Donney and Cannon, 1997	Perceived reputation, perceived size, perceived personal intention
Hoffman, 2000	Privacy
Gefen, 2000	Trusting trend, awareness
Lee et al., 2000	Detailed information, common values, communication
Cheung and Lee, 2000	Perceived security control, perceived privacy control, perceived integrity, perceived competency, third party approval, legal framework, trusting stance
Lee and Turban, 2001	Technical capability, understanding the features, security sufficiency, certification activities from third parties, individual trusting stance
Pavlou and Chellappa, 2001	Privacy, security, reputation, the satisfaction from previous experiences
Bhattacherjee, 2002	Awareness
McKnight et all., 2002	Perceived website quality, perceived reputation of the seller, the security of the website
Suh and Han, 2002	Perceived usage availability
Yoon, 2002	Transaction security, website ownership, navigation, personal variables
Corbitt et al., 2003	Perceived market objective, perceived website quality, perceived technical security, perceived risk level, website experience of the user
Koufaris and Hampton-Sosa, 2004	Perceived reputation, perceived intention, perceived usage, perceived easy of usage, perceived security control, trusting trend
Koufaris and Hampton-Sosa, 2005	Website usage and Website attractiveness
Flavian, Guinalíu and Gurrea, 2006	Webpage quality
Mukherjee and Nath, 2007	Common values, communication, privacy, the opportunist behavior of e-seller

Source: Adapted from Dung, 2008

The results deriving from the first studies still do preserve their validity. That is, trust does affect the steps taken by the consumers (Ganesan, 1994).

Generally, studies are concentrated mainly over the result coming from the trust of individuals to each other. Purchase intention is one of the main topics investigated due to its market importance and the relationship importance connected with the direct selling process. Gefen and Straub (2004) have studied the strength and the attribute of this relationship. According to their results, it can be said that perceived together with predictability raises the purchase intention but the perceived e-trader, and benevolence does not have the same effect on purchase intention.

Other scholars have studied different e-trust results over purchased intention. For example, customer loyalty (Eastlick *et al.,* 2006), customer adherence (Eastlick *et al.,* 2006), total attitude towards e-trader (Van der Heijden *et al.,* 2003), perceived risk (Pavlou, 2003), perceived usage level (Pavlou, 2003), perceived ease of use (Pavlou, 2003), the adoption of e-trade intention (Kim and Prakhabar, 2004), premium pricing (Ba and Pavlou, 2002), the intention of obeying to e-trader instructions (McKnight *et al.,* 2002), sharing information with e-trader (McKnight *et al.,* 2002), and the intention of re-using the website (Hampton-Sosa and Koufaris, 2005).

A network-service-system conceptual model for e-trust

From a viable systems perspective (Golinelli, 2010; Barile, 2009) the trust has been defined as a categorical value by which it is possible to identify, establish, maintain, and reinforce business relationships with all the viable service systems. Thus, trust is a fundamental component for creating mutual benefits and satisfying reciprocal expectations. The trust is considered one of the most important categorical values for establishing adequate levels of consonance (harmonic *relation*) and resonance (harmonic *interaction*) with the various suprasystems that populate the context, in accordance to value creation and distribution within the designed context (Barile and Polese, 2010).

In all the interactions B2B and B2C the customer wants to find something that goes beyond the product and which is perceived as a corporate value (Maglio and Spohrer, 2008). With a perceived value we intend the inherent value of the principal offering enriched with other offerings that the customer desires to be fully satisfied. Therefore, the value creation goes beyond the product and based exactly in a long-term relationship that roots back on trust. The approach to be followed for the analysis of a given market situation basis on a relational strategy (Gummesson, 1991), which is a long-term strategy that permits to eliminate the indirect costs of the relation or the costs related with the offering that does not meet the expressed promise.

The idea of trust as a sequence of respected commitments is not expressed explicitly in the management literature, probably because it is taken for granted that the products, for example, are developed with characteristics that any commitment is respected by the business firm (Gronroos, 1989, 1997).

In order to develop appropriate levels of consonance and resonance, the mechanistic view of the product as a pre-built package of resources is no longer sufficient. To understand the dynamics behind the value creation in today's context is necessary to analyze the categorical values (i.e. the value system) that guide human action, first of all the trust. In a relational context the main benefit, that is the technical solution reached through a physical good or a service, must be supported by a careful analysis of the levels of trust. The categorical value "trust", in the long term, will allow all the market actors involved to support low relational costs, creating as a consequence a positive value added to the value derived from the main technical solution. On the other hand, the lack of trust can lead to an increase in costs of the report and a decrease in the value added and even a negative value added (Mulhern, 1999).

Therefore, given the importance of trust in relationship networks between viable systems that are simultaneously service providers and consumers, it seems "obligatory" to study the concept of trust under the conditions of service, systems, and networks. This perspective is not applied before for analyzing trust. Hence the following analysis offers a general perspective which is multidimensional and can be applied either in traditional markets or e-commerce, both for trust and e-trust.

First of all we consider a network view because *"B2B is not an island"* (Gummesson and Polese, 2009). In traditional marketplace, as well as in the electronic marketplace, the evolution of marketing concept has passed from (a) traditional American marketing management and marketing mix (customer centric), to (b) relationship marketing, CRM, and on-to-one marketing (relationship centric), up to (c) many-to-many marketing that is network centric (Gummesson, 2009). The last perspective is more reinforced in e-commerce in which can be

verified relationship networks composed by typical relations like: B2B, B2C, C2B, and C2C. These networks, for all the reasons listed in the preceding paragraphs, are very fragile without trust, especially in e-commerce where the market actors create virtual networks that are less tangible and more hazardous.

On the other hand, because trust is a categorical value and a fundamental pillar of consonance, then the systems perspective through the lens of the Viable Systems Approach is used. Recent progress in the Viable Systems Approach, with the theory of *Information Variety*, has shown that every viable system (e.g. individual, group, organization, community, etc) can be conceived as a set of three components: categorical values, interpretation schemes, and information units (Barile, 2009, 2013; Barile *et al.,* 2011). In synthesis, information units refers to the "database" of information that every viable system posses (i.e. the background of the general knowledge); interpretations schemes are the "software programs" or the way information is accessed, filtered, and interpreted; categorical values refer to the "strong beliefs" through which viable systems accept or refuse a certain reality (information unit), after the filtering process executed by the interpretation schemes. Therefore, categorical values are the most important element in relationships. According to Barile (2009), "trust" is one of these categorical values that play a relevant role on constructing the consonance (i.e. the harmonic or empathic relation). Because the purpose of consonant relationships between viable systems is that of generating value co-creation, then the Service-Dominant Logic is applied (Vargo and Lusch, 2006).

The network and systems perspective is completed with the Service-Dominant Logic, because every viable system that is part of a defined network that behaves as a service provider. In other words, it proposes value within the network and co-creates value with other viable systems as part of a certain relational network. For instance, the S-D Logic has been used to study the networks of inter-firm partnerships with the aim of value co-creation (Paulin, Ferguson, and Fallu, 2011). In addition, from the consumer's perspective it is relevant to understand its context because the value co-creation is a contextualized process (Vargo, Maglio, and Akaka, 2008). Thus, in one hand there is the value proposition from a viable service system (e.g. online retailer), and on the other hand there is a value-in-context or value-in-use on behalf of the consumer that can be described as a feedback of a satisfied or unsatisfied experience. However, *"offerings with an emphasis on value-in-use carry a higher risk of failing to build trust effectively since they tend to be more complex and dense than those based on value-in-exchange. It is therefore important to develop trust, to integrate processes, to pool resources, and to share data, information and knowledge"* (Kowalkowski, 2011). As it seems, building trust is fundamental in service offerings. One important moderating variable that influence trust building is, for example, the service brand (Brodie, Glynn, and Little, 2006).

Since trust is a variable influenced by its antecedents that cause a purchase intention, a question arises: how to use a network service system conceptual framework for putting together the variables? The main parties in an exchange are the firm and the customer that can be part of one-to-one, one-to-many, many-to-one, or many-to-many relationship networks. The relation can be B2B, B2C, C2B, and C2C. All the actors of every network are viable systems that provide, (co)create, and consume (use) service. The service provider offers as a first step a value proposition that in the S-D Logic is the substitute of price (Lusch, Vargo, and Wessels, 2008). If the value proposition is accepted by the service co-creator and the future service consumer, then we have an initial level of trust that produces an initial level of consonance, initial value co-creation, and embryonic purchase intention. The present stage, said in terms of Granovetter, is characterized by quasi-absent ties in its initially phase, where the service systems (providers and consumers) are presented in the environment as a flow of chaotic connections having weak ties between them. According to Granovetter, *"the strength of a tie is a (probably linear) combination of the amount of time, the emotional intensity, the intimacy (mutual confiding), and the reciprocal services which characterize the tie"* (Granovetter, 1973, p.1361). In other words, a tie in order to be strong should be based on emotional intensity and mutual confiding, that is trust. It means that exist a relation between emotions and categorical values such as the "trust". According to Härtel, Zerbe, and Ashkanasy (2005, pp. 29), *"emotions can express meanings and understanding because strong judgments and values are anchored in emotions and struggling"*. Consequently, the fragility of relationships in the electronic marketplace can be overcome when the viable service systems co-create consonant relations and reciprocal positive emotions and influence for building trust.

Once this initial determinant stage is concluded, begins the real interaction between the viable service systems for amplifying the value co-creation. Because of the resonance (i.e. the interaction) the trust between viable systems is reinforced, and this influence also the purchase intention. The higher the intensity of purchase

intention, the higher it is the probability of effective purchase. Only with the effective purchase (which is not subject of this study) it is possible to have a value in context, and as a consequence a value feedback (i.e. the value from the experience). In all this process, the trust is influenced by the antecedents as explained in the literature. In figure 1 is shown a summary of the conceptual model as it was explained above.

Figure 1. A network-service-system framework for analyzing trust.
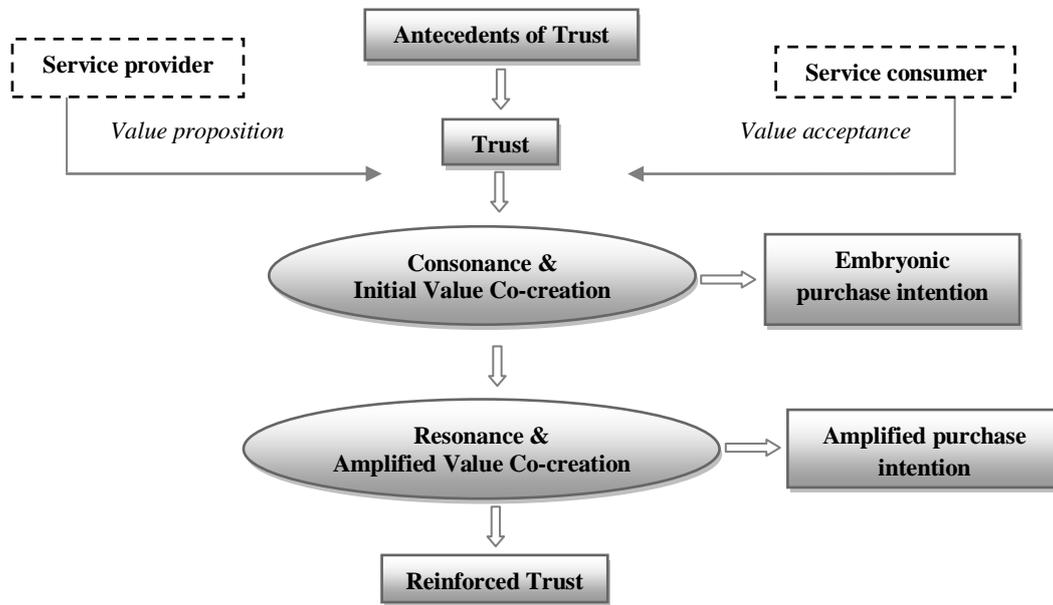
Source: Authors' elaboration

Research Design and Methodology

This research aims to analyze and measure the relationship between trust's antecedents, e-trust, and purchase intention using the main model of e-trust supported by a network-service-system framework. Specifically, measuring the effect that trust's antecedents have on e-trust and simultaneously the effect of e-trust on purchase intention (where trust is used as a moderating dimension). According to the literature review, were taken as antecedents of e-trust: (i) web site design and navigation; (ii) fulfillment and reliability; (iii) customer service satisfaction; (iv) privacy and security; (v) brand power and reputation. These 5 factors were chosen from dozens according to intensity/popularity. Likewise, literature studied several consequences of e-trust. Given the trend of the literature, one of the consequences has been chosen for the present model, which is the purchase intention. Purchase intention was chosen according to popularity as well as its importance for marketing.

The research design is based on causal research. Initially diverse causal relations have been studied between trust antecedents and e-trust where trust behaved as a dependent variable. Successively has been studied the relation between e-trust (in this case as independent variable) and purchase intention. Another causal relation studied is between trust antecedents and purchase intention.

Data is gathered through online questionnaire composed by descriptive and behavioral questions using the Likert scale. Scales were established from items taken from several scientific researches. From a total of 38 items, 7 proposed dimensions have been tested. Questionnaires spread via e-mail and social networks (Facebook, Twitter, Google+, LinkedIn etc.). Filtering questions used. Respondents were asked to visit any of 3 given e-retailers during last year. The largest online retailer of Turkey – hepsiburada.com, biggest private shopping platform of Turkey – markafoni.com and biggest online food delivery service of Turkey – yemeksepeti.com, were chosen for the study. These websites cover the greater range of online sales. Questionnaires prepared in Turkish, but no geographical area limitation used, as it is possible to use these websites from abroad or for respondent who used any of these websites to move abroad.

The convenient sampling, as the most suitable sampling method for online surveys, is used with a sample size of 295 participants from the Turkish market.

The factor analysis used for approving and correcting dimensions. For creation of the model, linear and multiple regression analysis used.

Research model and hypotheses

According the objectives of research given hypothesis established:

H1: Web site design and navigation effects e-trust positively.

Web sites is one of the most popular antecedents in the litrerature for E-trust. It's about the nature of electronic commerce. As the physical cues are not functioning in online retailing web site gets important role. Koufaris and Hampton-Sosa (2002) found out an interesting point in their study: web site is replacing the seller of traditional retailing in e-commerce. If we consider the importance of sales agents in traditional retailing there is a huge mission for web sites design and navigation to fulfill (Koufaris and Hampton-Sosa, 2005). It is crucial to consider that this dimension is not only about design. Typographic and grammatical mistakes affect e-trust negatively (Everard and Galletta, 2006). The relationship between web site design (ease of use, navigation etc.) and e-trust approved by several other studies (e.g. Flavian, Guinalíu, and Gurrea, 2006; Hwang and Kim, 2007).

H2: Fulfillment and reliability effects e-trust positively.

Cheskin Research (1999) in one of the first practical studies in the field defined fulfillment as a most important factor for creating trust in e-commerce. They also provided 6 main advises to online businesses for increasing customer trust and fulfillment of promises was one of them.

H3: Privacy and security effects e-trust positively.

In e-trust literature privacy ans security mentioned as crucial both by IT researchers (e.g. Koufaris and Hampton-Sosa, 2004), and marketing ones (e.g. Lee and Turban, 2001). However the approaces to security are different in these to fields. For marketing academicians it's more about consumer perceptions. In the literature there is two main methods offered by researchers: to give privacy and security instructions clearly (e.g. Lee and Turban, 2001) and to support perception by third party certifications (e.g. Kimery and McCord, 2006).

H4: Customer service satisfaction effects e-trust positively.

Customer service satisfaction is appearing as e-trust antecedent especially in repeat purchases (Koehn, 2003; Kim, Xu and Koh, 2004). Srinivasan (2004) defined after sales services as a main antecedent for e-trust, as well as ease reach toproduct and service specifications, ordering and controlling features which are also related with cutomer service.

H5: Brand power and reputation effects e-trust positively.

Brand power is crucial especially at initial e-trust building (Kim, Xu and Koh, 2004; Ba, 2001). In one study reputation studied together by percieved reputation and percived size of the company and effect on e-trust approved (Jarvenpaa, Tractinsky, and Vitale 2000). Reputations effect on e-trust among repeating customers also studied and approved (Kim, Xu, and Koh, 2004).

H6: The mixing of Web site design and navigation, Fulfillment and reliability, Privacy and security, Customer service satisfaction and Brand power and reputation effects e-trust positively.

Literature given in previous 5 hypothesises backuping this hypothesis.

H7: E-trust effects purchase intention positively.

In marketing literature many studies claimed that the rise in trust to company affects purchase intention of customers (e.g. Jarvenpaa, Tractinsky and Vitale, 2000; Wetsch and Cunningham, 1999). Yoon (2004) in their study detected the relationship between satisfaction from web site, e-trust and purchase intention. The relationship between e-trust and purchase intention together by intention to spread news about company (Sichtmann, 2007) and relationship between e-trustworthiness with purchase intention also studied (Gefen and Straub, 2004).

The preceding hypotheses are based on the revised research model of e-trust as shown in figure 2. As it was mentioned before during the literature review, there is a relation between trust antecedent, e-trust, and purchase

intention. The literature has studied many dimensions of these variables, but the present authors have offered a revised version of the model as shown below.

Figure 2. Revised research model for e-trust.

Web Site Design and Navigation			
Fulfillment and Reliability			
Privacy and Security	→	**Trust in E-Commerce**	→ **Purchase Intention**
Customer Service Satisfaction			
Brand Power and Reputation			
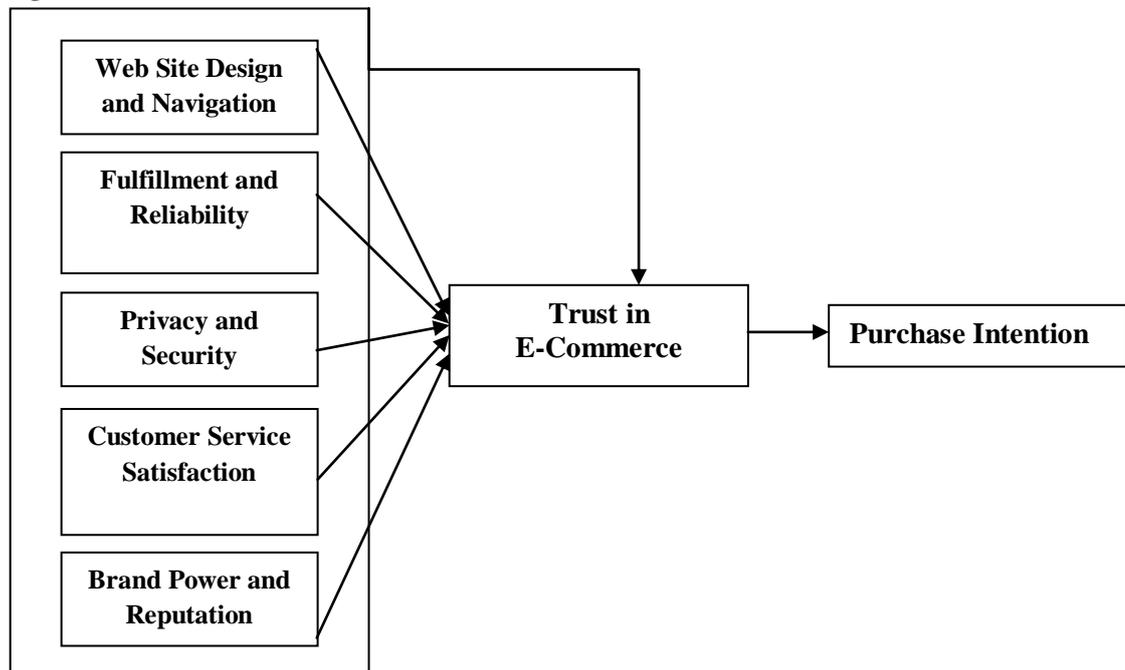
Source: Authors' elaboration

Data Collection and Analysis

Questionnaires established after respective literature review, and scale items adapted to Turkish language and market conditions in accordance with objectives of research. Items taken from different studies translated to Turkish and back (back translation performed). The questionnaire consists of two main parts and 57 questions in total.

The first part refers to the model's dimensions. 29 of 38 questions here belong to antecedents of e-trust (Web site design and navigation - 7, Fulfillment and reliability - 9, Privacy and security - 5, Customer service satisfaction – 3, Brand power and reputation - 5), 5 to e-trust and 4 to purchase intention. A 5 point Likert scale used (from Strongly disagree (1) to Strongly agree (5). In the second part there were 19 descriptive questions about demographics, Internet usage and online sales behaviors.

According to literature (Hair *et al.,* 1998, pp. 99), for successful factor analysis the collected data must be at least 10 times more than items. As the items of antecedents of e-trust are 29, 290 would be enough for any kind of analysis. Initially, over 300 valid questionnaires targeted. For this delivery, 500 questionnaires considered. 522 respondents reached, but 295 out of the total were accepted as valid for the analysis.

Reliability and validity of scale

All analysis performed by SPSS 20.0. Reliability checked by Chronbach's Alpha. For validity, experts' views have been chosen. Three persons (industry professional from another big e-retailer in Turkey – limango.com, academician with a sufficient research experience in the field, and very hard online retailing user) interviewed for checking the validity of scale.

Some values related to reliability are shown in Table 2. As it is obvious from the following table, the reliability of scales is very high. According to Nunnaly, over 0.80 accepted as highly reliable.

Table 2. Reliability values for dimensions.

	Mean	Variance	St. Dev.	N	Cronbach`s Alpha
Overall	142.92	496.606	22.285	38	0.968
Antecedents	108.46	282.271	18.801	29	0.953
E-trust	18.63	10.546	3.247	5	0.873
Purchase intention	15.70	9.864	3.141	4	0.934

Demographic structure of respondents

19 questions asked for defining demographic and behavioral structure of respondents. One of the questions distracted from analysis after being noticed that mainly misunderstood by respondents. There were no restrictions according to age, income, or geographic spread. Some questions left open and encoded according the data.

The majority of respondents were young people. 27 of 295 didn't indicate age. % 83.1 of those who indicated age was between 22-35 ages. In this group greater part (% 41) was 26-30 years. If we consider that Internet is more spread among youth, this result is reliable. % 44.7 of respondents were women, % 54.9 men. Only a person didn't indicate gender. Regarding the marital status, % 47.8 single, %51.4 married. Only 2 persons didn't indicate status.

According to the occupation, private sector led the list with % 39.8, in which % 21.4 were students, and % 17.7 public employees. The rest % 21 shared between entrepreneurs, doctors, academicians and others. While only a person didn't indicate education, 9 of 10 respondents (% 89.8) were with above undergraduate education. This is an important result as online retailing expected to be used by high education level people. Only % 0.7 didn't attend the high school.

The greater part of respondents resided in Istanbul, %66. Other %7.6 in Izmir, % 3.1 in Ankara, and %10.7 was abroad. The rest indicated different cities of Turkey.

If to summarize the demographic structure of respondents, mainly residents of Istanbul with an average income and high education, working in proper areas attended to survey. Gender and marital status share was balanced. These results match to the expectation.

Behavioral structure of respondents

Several questions asked for creating the structure of respondents according to Internet usage and online purchasing behaviors. As a last retailer it was used gittigidiyor.com (eBay's affiliated company) which was more popular than even the three given retailers, such as hepsiburada.com, markafoni.com, yemeksepeti.com (respectively % 21.4, % 19.7, % 19, and % 16.3). Among the categories purchased online during the last one year, Apparel and accessories led with % 46.8. Books and CDs were second with % 44.4, technology followed them with % 38, and food orders frequency was % 35.6.

As expected the greater part of respondents had long experience with Internet usage. Around half of respondents (% 48.3) were using Internet more than 10 years. % 56.9 of respondents made 5 or more times online purchase in last one year.

The amount of time spent online was also asked to respondents, but interestingly there was a very heterogeneous spread. 9 of 10 respondents declared that they will further continue to make online purchases. Only % 4.4 said will not, but % 5.4 didn't answer. Reasons for the decision also questioned. For "Yes" convenience, price and comfort mentioned. 3 of 4 respondents accept online shopping as reliable, while % 22 does not see it reliable and secure. % 48.5 mentioned that they advice e-retailer which they use often, while % 41.4 also advising but with caution.

Eight main factors influencing e-retailer choice gathered and respondents were asked to rate hierarchically from 1 to 8. Table 3 indicates the choices. The reliability of retailer led the factors with % 43 of respondents mentioned as first. Awareness of the website seems to be the 2nd most important factor.

Table 3. Rating of factors influencing online retailer choice.

Factors	1.	2.	3.	4.	5.	6.	7.	8.	Total
Awareness	78	**70**	22	29	20	19	14	30	282
Price	40	54	**50**	33	31	28	18	25	279
Assortment	18	28	45	47	41	50	23	27	279
Delivery	5	26	39	**52**	**69**	42	24	22	279
Payment conditions	2	22	40	**52**	65	**54**	20	25	280
Reliability	**125**	57	43	18	12	14	9	7	285
Ease of use	6	21	37	23	28	41	**107**	18	281
Design and atmosphere	14	5	7	25	12	30	63	**124**	281
Valid total	**288**	**283**	**283**	**279**	**278**	**278**	**278**	**278**	
Not responded	7	12	12	16	17	17	17	17	
N sp	**295**	**295**	**295**	**295**	**295**	**295**	**295**	**295**	

Factor analysis

Three main dimensions studied: antecedents of e-trust, e-trust, and consequences of e-trust. The first dimension consists of 5 sub-dimensions. Scale items mainly taken from literature and adapted to Turkish market. Accordingly, each dimension analyzed firstly. However factor analysis of antecedents scale divided unrelated items under same groups. As a next step, each sub-dimension attended to factor analysis separately. Here are the results of factor analysis for all scales:

- 29 items of e-trust antecedents reduced to 25
- 7 item Web site design and navigation dimension reduced to 4
- 9 item Reliability and fulfillment dimension divided to 5 item Reliability and 4 item fulfillment dimensions.
- 5 item Privacy and security dimension reduced to 4 items
- 3 item Customer service satisfaction and 5 item Brand power and reputation dimensions approved
- 5 item E-trust and 4 item Purchase intention dimensions approved

Discussion

As follows, are analyzed and explained the hypotheses of this study, as well as the results that they have produced.

H1: *Web site design and navigation effects e-trust positively.*

Effect approved by test results. Regression between web site design and navigation and e-trust is 0.365, which mean that % 36.5 of e-trust perception change can be explained by changes in perception about web site design and navigation. Hypothesis accepted, as 0.000 significance level is below the required 0.050.

H2: *Reliability and fulfillment effects e-trust positively.*

Regression between reliability and e-trust is 0.453, denoting that % 45.3 of e-trust perception change can be explained by changes in perception about reliability of e-retailer. Hypothesis accepted, as 0.000 significance level is below the required 0.050.

Regression between fulfillment and e-trust is 0.467, which mean that % 46.7 of e-trust perception change can be explained by changes in perception about fulfillment. Hypothesis accepted, as 0.000 significance level is below the required 0.050.

H3: *Privacy and security effects e-trust positively.*

Regression between privacy and security and e-trust is very high at 0.594, indicating that % 59.4 of e-trust perception change can be explained by changes in perception about privacy and security. Hypothesis accepted, as 0.000 significance level is below the required 0.050.

H4: *Customer service satisfaction effects e-trust positively.*

Regression between customer service satisfaction and e-trust is 0.474, signifying that % 47.4 of e-trust perception change can be explained by changes in perception about customer service satisfaction. Hypothesis accepted, as 0.000 significance level is below the required 0.050.

H5: *Brand power and reputation effects e-trust positively.*

Brand power and reputation accepted as the strongest influencer on e-trust. Regression between brand power and reputation and e-trust is 0.629, which means that % 62.9 of e-trust perception change can be explained by changes in perception about brand power and navigation. This is the highest percentage of all dimensions. Hypothesis accepted, as 0.000 significance level is below the required 0.050.

Table 4. Regression analysis between each sub-dimension of antecedents of e-trust and e-trust.

	R	R square	Adjusted R square	F	T value	VIF	Sig. level
H1	0.606	0.368	0.365	225.416	15.014	1.000	0.000
H2	0.673	0.453	0.451	242.544	15.574	1.000	0.000
H3	0.683	0.467	0.465	256.844	16.026	1.000	0.000
H4	0.771	0.594	0.593	429.066	20.714	1.000	0.000
H5	0.689	0.474	0.473	264.370	16.259	1.000	0.000
H6	0.793	0.629	0.628	497.737	22.310	1.000	0.000

H6: *The mixing of Web site design and navigation, Reliability, Fulfillment, Privacy and security, Customer service satisfaction, and Brand power and reputation effects e-trust positively.*

The relationship between six dimensions of e-trust antecedents and e-trust are measured with a single linear regression as shown in table 5.

Table 5. Results of analysis of regression between antecedents and e –trust.

Model	R	R Square	Adjusted R Square	Standart error of estimation
1	.857[a]	.735	.729	.33781
a. Predictors: (Stable), ORTmg, ORTyg, ORTgvn, ORTmh, ORTgu, ORTws				

R square given (0.735) at table 5 shows a strong relationship between dimensions. The significance level below 0.050 shown at table 6 proves the relationship. F value, which is very high at 133.130, also strengthens the outcomes.

Table 6. Variance analysis for antecedents effect on e-trust.

Model		Sum of squares	Independence level	Square of avarages	F	Sig. level
1	Regression	91.153	6	15.192	133.130	.000[b]
	Fazla	32.865	288	.114		
	Total	124.018	294			
a. Dependent dimension: ORTeg						
b. Predictors: (Stable), ORTmg, ORTyg, ORTgvn, ORTmh, ORTgu, ORTws						

Table 7 indicates variables approved to be in the model and those to be extracted from. Web site design and navigation (0.938) and Reliability (0.317) are dimensions with a significance level more than 0.050; therefore, couldn't enter to the model. Especially with around 1 significance level web site design and navigation very far to be suitable to enter to the model. The rest 4 dimensions created antecedents for e-trust in the model.

Table 7. Results of analysis of regression between antecedents and e-trust.

Model		Not-standardized values		Standardized values	T	Sig. level	Co-linearity statistics	
		B	Std. dev.	Beta			Tolerance	VIF
1	(Stable)	.371	.125		2.954	.003		
	ORTws	.004	.047	.004	.077	.938	.366	2.732
	ORTgvn	.044	.044	.049	1.002	.317	.382	2.620
	ORTyg	.100	.046	***.111***	2.171	***.031***	.355	2.820
	ORTgu	.304	.046	***.320***	6.619	***.000***	.393	2.547
	ORTmh	.130	.044	***.144***	2.985	***.003***	.398	2.514
	ORTmg	.314	.051	***.350***	6.148	***.000***	.284	3.526
a. Dependent variable: ORTeg								

Beta coefficients were as follows – brand power and reputation 0.350, privacy and security 0.320, customer service satisfaction 0.144, fulfillment 0.111, reliability 0.49, web site design and navigation 0.004. Brand power and reputation appeared to be the strongest factor. This result confirmed addition of this dimension to the model. Thereby, antecedents reduced from 6 to 4. Hypothesis accepted with condition.

**H7:** *E-trust effects purchase intention positively.*

E-trusts effect on purchase intention approved scientifically. Regression value is 0.637 which means high relationship between dimensions. VIF coefficient below 10 (1.000), and significance level below 0.050 (0.000) proves relationship. Research indicates that % 63.7 of purchase intention can be explained by changes in e-trust, which is very high. Research results are shown in table 8.

Table 8. Results of analysis of regression between e-trust and purchase intention.

R	R square	Adjusted R square	F	T value	VIF	Sig. level
0.799	0.638	0.637	515.514	22.705	1.000	0.000

After the factor and regression analysis the proposed revised model for e-trust resulted to be valid with less antecedents, as it is shown in figure 3.

Figure 3. Accepted e-trust main model.
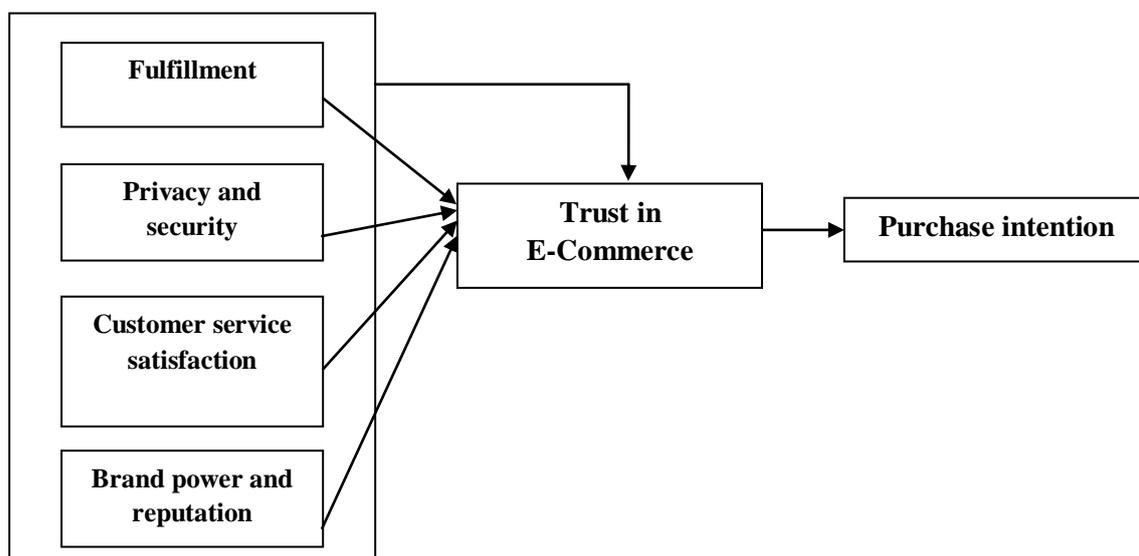
Source: Authors' elaboration.

Conclusions, Limitations, and Practical Implications

In E-Commerce literature studies on trust were provided through the main model. In this study we also followed the same method, but with a new combination of variables. The model consists of mostly used dimensions in the literature. Even if brand power and reputation was not a popular dimension for literature we chosen to add this dimension to the study. Results confirmed that this choice was successful. As a consequence of e-trust, and as the most popular dimension, the purchase intention was chosen. The proposed model was revised after factor analysis and tested with regression analysis. At the end of all analysis, an updated model was established.

Trust is and will be very crucial factor for the development of e-commerce globally as well as in Turkey. This kind of works is assisting to the industry. The effort for covering all areas of online sales has boosted the value of the study. The same study can be done for industrial markets. Different antecedents and consequences can be studied as well.

The protection of consumers is another important point. Risks taken by consumers mentioned above raises the vulnerability for them. Areas have to be regulated and controlled very attentively. This framework creates an area for academicians for providing researches. New studies related to protection of consumers in e-commerce can assist an improvement in e-trust field.

In this study 3 pure online retailers studied. However traditional retailers expanded to online transfers trust built physically to new business. This is an important limitation of the current study. Another limit is the cultural one. The study is performed in the Turkish market. Therefore, other comparative studies from different cultures should be completed in order to have more reliable results.

This is a pioneering study in the field for Turkish market. Even in global literature there is a gap for e-trust researches.

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