

Analysis of Factors Influence Online Trust: A Unified Model

Sahar Ghoreishi

Industrial Engineering Department
K.N.Toosi University of Technology
Tehran, Iran

Shahriar Mohammadi

Industrial Engineering Department
K.N.Toosi University of Technology
Tehran, Iran

Abstract— online consumer trust (online trust) is based on consumer's perception of the website's characteristic and its operators in e-commerce and m-commerce. However, lack of trust has been identified as a major deterrent to development of online shopping. Based on previous literature on online trust this paper will review and analyze the proposed antecedents of trust by scholars and asserts influence factors of online trust in order to increasing consumers trust. The study will suppose that scholar's studies and revealed factors mostly resemble one another with different rate of influence in reviewed context and researched group and proposed a model for on line trust with assuming mobile commerce and s-commerce are subset of e-commerce.

Keywords-component; online trust; mobile commerce; electronic commerce; Influence Factors.

I. INTRODUCTION

Electronic and mobile commerce rapid penetration and also leverage of wireless network persuade people to use mobile devices in order to have commercial transaction through internet. E-commerce transactions conducted through radio-based wireless devices are called mobile commerce (also known as m-commerce or mobile e-commerce) [5]. With attention to previous researches lack of consumer trust in virtual world is of the element that prevents users to have on - line transaction. Consumers begin from contacting the website and go through a process from being unfamiliar with the website to be familiar with it, during which trust has gradually built up from the initial trust to the ongoing trust[4]. In this paper, the research literature on online trust is reviewed and analyzed in order to purpose a trust model.

II. LITERATURE REVIEW

A. Trust definition

There are different definitions for trust which refers to social science in range of sociology, psychology, philosophy, economics and media studies (electronic commerce and digital information). In psychology there is relationship between two parties, trustor and trustee. Trustor relies on trustee to do what is expected. In media studies there are a similar definition for trust. Trust is crucial in such situations,

Like transactional buyer-seller relationships, especially which containing an element of risk, including interaction with an e-vendor. Even though various disciplines are dealing with

trust, trust in Internet commerce and mobile commerce should be redefined especially based on the Internet environment [2].

B. Trust in mobile commerce

Compared with e-commerce, gaining customer trust in m-commerce is more difficult due to its unique features [3]. Mobile devices have some constraint such as lack of battery, small screen size and resolution also they are limited in processor and memory. Of course wireless networks have their problems too. In the opposite side it has some unique usefulness like portability and light weight that makes mobile commerce different from electronic commerce, though most of scholars assert there is no difference between them. Even though various disciplines are dealing with trust, trust in Internet commerce and mobile commerce should be redefined especially based on the Internet environment [2]. The study has attempted to analyze the adoption of Internet and mobile commerce. From the point of view that mobile commerce is a subset of traditional electronic commerce, this research applies the same approach developed in Internet commerce to mobile commerce..

C. Researches on online-trust

According to many researches of the e-commerce trust, lack of trust is considered an important barrier to development of electronic commerce. Consumers trust in mobile business become deterrent to development. How to build consumer trust in mobile business, and make more users to receive mobile services is very vital for mobile business in the country's rapid development [8]. Mobile business is a subset of e-commerce.

In this regard e-commerce trust and m-commerce trust together is considered online-trust. Additionally, in the last decades we can see the rapid penetration of mobile and electronic commerce between people though; most of the users don't rely on this technology like the other ones. Addressing to researches done on e-commerce study there are several factors which determine users trust. Scholars study online trust in different perspectives.

TABLE1.RESULT OF LITERATURE ON E-TRUST

Author	Trust antecedents
Ammar Dheyaa Noor, Rosnafisah Sulaiman, Asmidar Abu Bakar(2014)	Usefulness, Ease of Use, Security, Privacy, Website Design, E-word of mouth
Qingfei Min, Decai Meng, Qiuyan Zhong(2008)	Mobile Technology Trust, Institution-based trust, Mobile Vender Trust
Dai-Yon Cho, Hyun Jung Kwon and Hyoung-Yong Lee(2007)	Calculative-based Trust, Structural Assurances, Situational Normality, Familiarity
Yang Guangming, Mao Yuzhong(2011)	Consumer's propensity-to-trust, Structural assurances, Firm reputation, Related groups, Perceived usefulness
Zhihong Li, Minxia Li(2008)	Consumer's propensity-to-trust, Mobile vendor's reputation, Perceived website characteristics, The familiarity with mobile services
Chao-Jung Hsu(2008)	Personality-based trust, Institution-based trust, Knowledge-based trust
Haiping Wang(2010)	knowledge-based trust, cognition-based trust, calculative-based trust, institution-based trust, personality-based trust
Keng Siau, Hong Sheng, Fiona Nah (2003)	Vendor characteristics, Website characteristics, Technology of wireless services, Technology of mobile devices, Other factors(Legal regulations, Word-of-mouth referral Third-party certification, Past Experience)
Khalil Md Nor, Wan Nur Fazni Wan Mohamad Nazarie, Ali Al-Ajamrosman Md Yusoff(2013)	Propensity to Trust, Testimonial, Experience in Online Purchase, Monetary Risk

As shown in Table1 scholars introduce several factors that affect customers trust. As showed above, scholars define different antecedent for trust though they could be categorized into "Institution-based trust", "Personality-based trust", "Calculative-based trust", "Technology-based trust", "knowledge-based trust" factors and other antecedents of scholars' research could be their subsets or synonym to them.

A. Institution-based trust

For further explanation refers to one's sense of security from guarantees, safety nets, or other impersonal structures inherent in a specific context. The two types of institution-based are "situational normality" that is an assessment that the transaction will be a success, based on how normal or customary the situation appears to be and "structural

assurance" that refer to an assessment of success due to safety nets such as legal recourse, guarantees, and regulations that exist in a specific context [6]. While some other researches beliefs it includes Perceived security, Perceived privacy and Third party assurance [1].

B. Personality based trust or Consumer's propensity-to-trust

It mainly comes from cultural background, psychological characteristics and experiences [8]. This concept is usually discussed in perspective of psychology. If one person finds it difficult to trust in something, he is more favorable to distrust in mobile commerce because he won't think it is a comfortable or convenient way for communication or transaction [10]. "Related groups" is the evaluation of the consumers, desire or behavior impact, but also take them to the consumer to compare with their own set of social groups [8], and consequently consumer propensity is influenced by related group.

C. Calculative-based Trust

Mainly depends on ones characteristics that have rational estimation on costs and benefits of online transaction; on the other hand in order to avoid untrustworthy consequence individuals don't contribute in opportunistic behavior. The cognition-based trust examines how trust develops from the first impression rather than through personal interaction experiences. According to this kind of research on trust, the cognition-based trust comes into being through the clarification process and the illusion of control [4].

D. knowledge-based trust

Knowledge-based trust develops based on familiarity with other transaction parties. Familiarity can develop trust because familiarity reduces the social uncertainty through enhancing to understand what happens in the present [4]. It includes familiarity, reputation, brand, size, website quality, and customer service. The parameter "Familiarity" shows individuals familiarity of E-business website. Sites visited more with customer results more familiarity of customer with the site they perceive the site to be easy to use [2]. Obviously cognition based trust and familiarity have similar definition. "Reputation" is consumer image of firm. Where consumers do not have personal experience with a vendor, word-of-mouth reputation can be a key to attracting consumers. Hearing from others of their positive experience with a vendor can help ease users' perceptions of risk and insecurity when interacting with the online vendor [1]. "Brand" is the sum of the characteristics of a product or service perceived by a user. Brands help shoppers make their choice when they have a limited range of clues about the quality and functionality of products. Without brand awareness, consumers may not even know an online store existed. Although an online store may offer high-quality products at lower prices, the consumer may be skeptical over quality, compared with higher priced but better known online brands [1]. "Size" refers to size of vendors firm and its market share holder. Web site has to have good quality of content, structure and navigation, and functionality. Customer service is the process by which an organization delivers its services or

products allow the consumer to access them in the most efficient and cost effective way and so meet the consumer's expectations [1].

E. Technology-based trust

Building trust in mobile vendors is elusive and challenging. To engender initial trust formation in an industry is unfamiliar to most potential customers; this young industry must disseminate information, cultivate interest, and convince potential buyers whose needs will be met by mobile commerce. Both in e-commerce and m-commerce, the vendor plays a similarly roles in the relationships between customer and vendor [3].

III. THE PROPOSED MODEL

A. Research model and Hypotheses

According to the above analysis that discussed about influence factors of online-trust, we purpose an online-trust model is proposed (figure1).

In our trust model Technology-based Trust have an important role in an online-trust which could be contains network and devices. Depends on what kind of connectivity is used to be online, network connection could be different and each of them has its' advantages and disadvantages. Relatively it could affect the trust and propensity to use. As mentioned before mobile and other devices have constrain and unique usefulness that have an important affection on online-trust.

H1: technology-based trust can positively affect trust in e-commerce.

Second factor is Institution-based trust. It means a consumer who is comfortable with the web situation and the security of its structures is likely to have high trust in a specific vendor [3].in the other word Institution-based trust could affect online-trust.

H2: Institution-based trust is proposed to positively affect trust in e-commerce.

Third factor is Personality-based trust, it completely related to ones' characters, ability and propensity to trust. In this regard people with different character have different propensity to trust.

H3: Personality-based trust is affect trust in e-commerce.

Fourth factor is Calculative-based trust. It mainly depends on ones' behavior that act based on first impression. Consequently, it could affect trust in e-commerce.

H4: Calculative-based trust can positively is affect trust in e-commerce.

Fifth factor is Knowledge-based trust which is directly related to firms' familiarity, reputation, brand, size, and website has an important role in online-trust.

H5: Knowledge-based trust affects trust in e-commerce

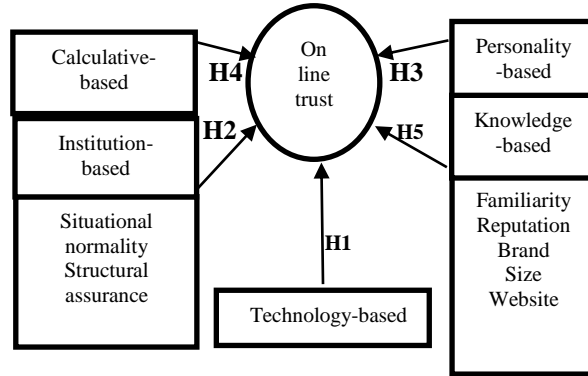


Figure1. Proposed trust model

B. Materials and Methods

1) The analysis of observations

What more you will see, analysis and testing to confirm or reject hypotheses are descriptive and inferential. It is noteworthy analysis was performed using SPSS software. And test hypotheses using statistic methods and student assessment (t).Reliability of the study is 0.95.First address the question of options to include in that they are scoring. Thus the completely agree = 5, agree = 4, no opinion = 3, disagree = 2, is coded 1 = totally disagree. The quantitative data are converted to numbers, since each component is derived from the outcome of a questionnaire, the mean total score of questions related to the above methods have been coded, we calculated, In order to reach a series of numbers. The analysis of observations and confirm or reject the research questions of the student statistic (t) we use. People who participated in the questionnaire were 49 IT experts among approximately 495 people who are working in IT department of Iranian government banks.

2) Reliability in research

95% consider the reliability study. In other words, five percent probability of error in the results, we predict tolerance. Thus, the error coefficient is 0.05.

3) Reliability of the questionnaire

Reliability is the technical characteristics of measuring instruments. Including definitions that may be defined for reliability has been provided by Aybl and Frysby (1989) pointed out:

"Correlation between a set of scores and another set of scores in an equivalent test independently on a subject that is obtained"

Given the ability of the coefficient ranges is from zero (no correlation) to +1 (perfect correlation). Reliability coefficient, which indicates to what extent the characteristics of measuring instruments with characteristics of stable or variable, and subjects him to be temporary measures.

The reliability coefficient measuring instruments are used in different ways. It can be pointed to the alpha method, the following, we describe this method.

4) Cronbach's alpha was used to measure reliability

These tools can answer any questions that have different values. Cronbach's alpha coefficient of variance scores for each subset must first questionnaire (or sub-tests) and total variance was calculated then, using the following formula to calculate the coefficient alpha.

$$r_a = \frac{j}{j+1} \left(1 - \frac{\sum S_j^2}{S^2} \right)$$

That:

J= Subset of test questions or questionnaires.

S_j^2 =The variance test.

S^2 = Total variance test.

Is the coefficient of zero indicates no reliability and 1 indicates perfect reliability [11]. In this study, we investigated the reliability of the questionnaire.

TABLE 2. RELIABILITY OF QUESTIONNAIRE

Cronbach's alpha test	Number of questions	Factors
.816	4	Personality-based trust
.809	3	Institution-based trust
.647	2	Calculative-based trust
.792	4	Knowledge-based trust
.647	2	Technology-based trust

Since Cronbach's alpha coefficient for all factors is greater than the 0.6 is located at the appropriate level, the reliability of this questionnaire is completely acceptable.

5) Descriptive analysis of observations and data

In the following tables there is some information about participants.

TABLE 3. EDUCATION

Education	Frequency	percent	Percent cumulative
Diploma	3	6.1	6.1
Associate Degree	9	18.4	24.5
MA	6	12.2	36.7
Bachelor	31	63.3	100.0

TABLE 4. AGE

Gender	Frequency	percent	Percentage of valid
female	30	61.2	61.2
male	19	38.8	38.8
total	49	100.0	100.0

In the following table (table5) statistic's result of questionnaire is shown. Purpose of min and max in this table is the questionnaire's scoring scale that mentioned before, since questionnaire asked participant's education, age and gender the Personality-based is between 1.25 and 5.

TABLE 5. DESCRIPTIVE STATISTICS

Factors	average	Median	Standard deviation	min	max
Personality-based trust	3.8214	4.0000	.86603	1.25	5.00
Institution-based trust	4.0816	4.3333	1.02182	1.00	5.00
Calculative-based trust	3.6633	4.0000	1.05271	1.00	5.00
Knowledge-based trust	3.8316	4.0000	.85145	1.00	5.00
Technology-based trust	3.3163	3.5000	.87615	1.00	5.00

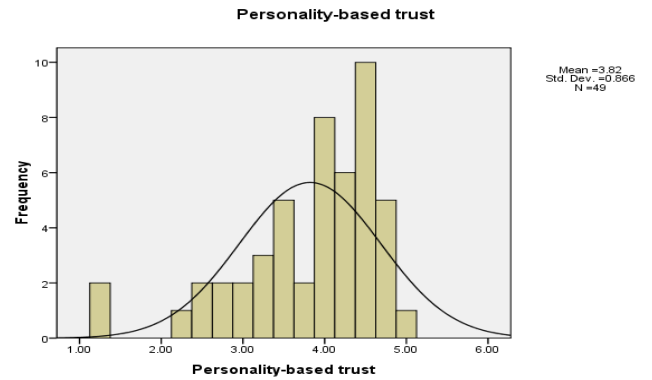


Figure 2. Descriptive indicators of Personality-based trust

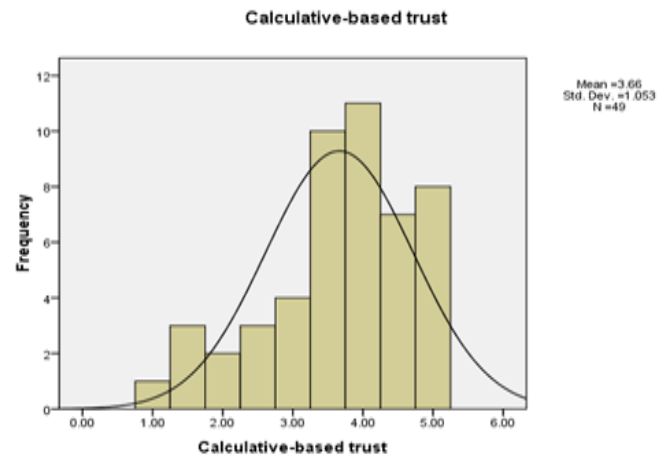


Figure 3. Descriptive indicators of Calculative-based trust

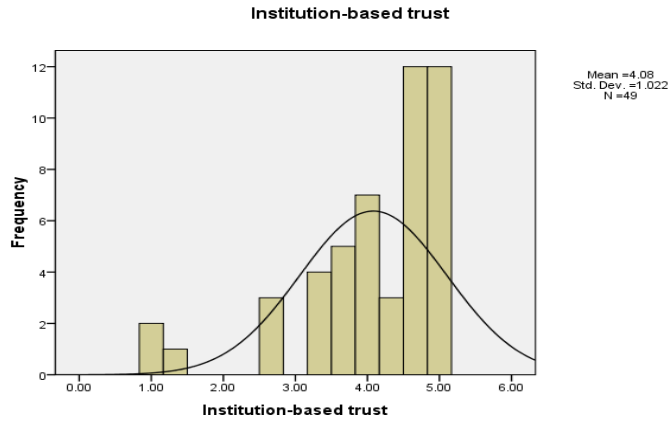


Figure 4. Descriptive indicators of Institution-based trust

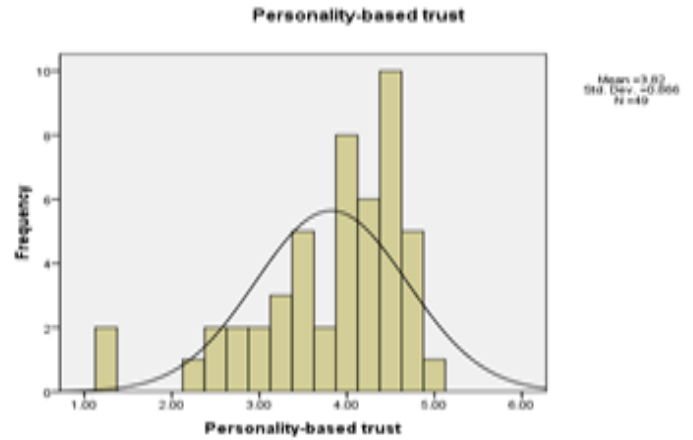


Figure 7. Descriptive indicators of Personality-based trust

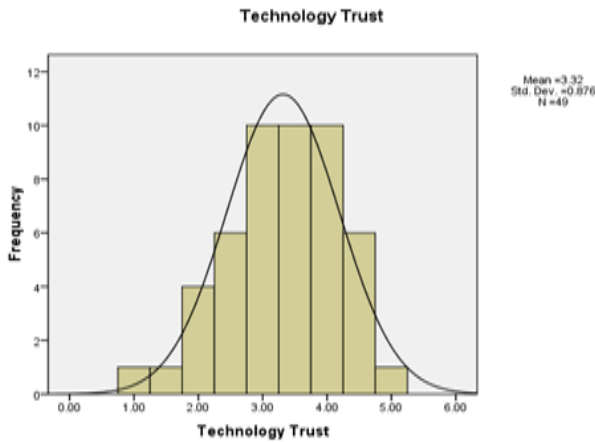


Figure 5. Descriptive indicators of Technology-based trust



Figure 6. Descriptive indicators of Knowledge-based trust

6) Test hypotheses

Before running the first test, Kolmogorov - Smirnov normal data we review is used.

TABLE 6. NORMALITY OF DISTRIBUTION

Factors	Normal distribution parameters		The test statistic	p-value
	mean	Standard deviation		
Personality-based trust	4.0816	1.02182	7.410	.000
Institution-based trust	4.0816	1.02182	1.444	.031
Calculative-based trust	3.6633	1.05271	1.211	.106
Knowledge-based trust	3.8316	.85145	1.049	.221
Technology-based trust	3.3163	.87615	.938	.342

The p – value of the test can be concluded that the data are normally distributed so we can verify the hypothesis of a single sample using student t-test, we examined hypotheses are as follows:

$$\begin{cases} H_0 : \mu = 3 \\ H_1 : \mu \neq 3 \end{cases}$$

This means that the impact of factors in e-commerce is not the medium. The test results are presented as follows.

TABLE 7. RESULT OF T-STUDENT TEST

	average	Standard deviation	The test statistic - t	p - value	CL 95%	
					Lower bound	Upper bound
P	3.8214	.86603	6.640	.000	.5727	1.0702
I	4.0816	1.02182	7.410	.000	.7881	1.3751
C	3.6633	1.05271	4.410	.000	.3609	.9656
K	3.8316	.85145	6.837	.000	.5871	1.0762
T	3.3163	.87615	2.527	.015	.0647	.5680

*P=Personality-based, I=Institution-based C=Calculative-based, K=Knowledge-based, T=Technology-based

As can be seen in the above Table (Table6), the average Impact of all factors in e-commerce with the average value that is greater than 3 at level 0/05 has been detected significantly (p-value<0/05), so it can be concluded that the impact of hypothesized factors in e-commerce is more than the average.

IV. CONCLUSION

The purpose of our study is analyzing and confirming the antecedent of online trust and importance of that to increasing customer trust. Also, demonstrating influence factors which have been studied in different context by scholars. This research shows majority of scholar's studies refer to the same antecedents which have more appropriate rate of influence in reviewed context and researched group. The result of a study in china indicates that technology limitations and technological safety are the main concerns for China's m-commerce consumer[6]although in our research model knowledge and Institution based trust have an important role in the online trust and technology-based trust has at least impact on online trust.

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AUTHORS PROFILE

Sahar Ghoreishi, University alumni
 Shahriar Mohammadi, Assistant Professor