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A Study of the Role of Perceived Risk and User Characteristics in Internet Purchase Intention

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Abstract**—**This study aims at investigating the empirical relationships between risk preference, internet preference, and internet knowledge which are known as user characteristics, in addition to perceived risk of the customers on the internet purchase intention. In order to test the relationships between the variables of model 174, a questionnaire was collected from the students with previous online experience. For the purpose of data analysis, confirmatory factor analysis (CFA) and structural equation model (SEM) was used.

Test results show that the perceived risk affects the internet purchase intention, and increase or decrease of perceived risk influences the purchase intention when the customer does the internet shopping. Other factors such as internet preference, knowledge of the internet, and risk preference affect the internet purchase intention.

Keywords**—**Perceived risk, Internet preference, Internet knowledge, Risk preference, Internet purchase intention

I. Introduction

WITH the rapid global growth in electronic commerce, businesses are attempting to gain a competitive advantage by using e-commerce to interact with customers [13].

As the number of the internet users grows, the usage of this interactive tool, as an influential part in shopping decisions and attempts, has drawn the attention of experts. Companies interact with their clients via internet and thus try to increase their sales and profit margin [19]. Moreover as using the internet has advantages (like reducing extra charges, providing more information, 24 hour availability, etc.), it has turned out to be a good tool for selling goods and rendering services [8].

A large number of people have welcomed internet shopping, yet many more are still reluctant to shop on the internet. They indicate the most important reasons are security issues, trust in the selling companies, and insufficient knowledge of the internet and websites [12]. Therefore raising the awareness of the shoppers about the internet shopping and building trust in companies require an increase in the customers' knowledge of the internet and a decrease in their perceived risk. Thus the main objective of this study is to test the empirical relationship between risk preference, internet preference, and internet knowledge, which are known as user characteristics and Perceived risk of the clients which affects the internet purchase intention directly or indirectly.

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II. Literature Review

As said before, this study aims at investigation the experimental relationships between risk preference, internet preference, internet knowledge, and perceived risk of the customers on internet purchase intention. In doing so, a model proposed by Nicholas and Castillo in 2008 was used. It is worth mentioning that the proposed model inspects the customers' perceived risk associated with different customer knowledge management tools i.e. Discussion forum ،Document repository ،Shared databases ،Workflow application in e-commerce. While in this research different aspects of customers' perceived risk substituted tools of providing information, the Fig. 1, shows the relationship between perceived risk and other user characteristics in internet purchase intention. Each of them will be discussed subsequently.

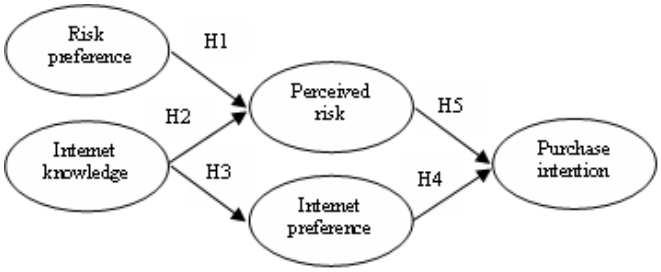


Fig. 1 The relationship between perceived risk and user characteristics in internet purchase intention

A. Risk Preference

Risk preference is a psychological feature of a user's personality and may be defined as a decision-maker's tendency to take (or avoid) risks [4]. Regarding the online environment, Chen and He (2003) empirically found a similar link between risk preference and risk perceptions. Basing their study on structural equation modeling, they concluded that the higher a person's risk preference, the lower his/her perceived

risk. Nevertheless, decision-makers who enjoy the challenge that risks entail will be more likely to undertake risky actions meaning that risk preferring individuals will be willing to incur high risk and will complete transactions on the most risky orders [16]. In line with this, Conchar et al. (2004) state that a person with high-risk affinity will prefer an alternative perceived as more risky. In those situations, users who are risk-seekers will perceive higher levels of risk than risk-averse individuals [4]. Thus, a positive relationship between risk preference and perceived risk can be hypothesized as follows:
H1: Higher risk preference in an individual leads to higher perceived risk of the individual on a web site.

B. Internet Knowledge

Often called Internet experience, defined as the consumer's skill or ability obtained by visiting several web sites and using various value-added services offered on a broad range of web sites, and not as experience with one particular web site [16]. Studies show that the higher internet usage, the lower internet shopping [9]. It has been found that the more frequently a consumer uses the Internet, the more knowledgeable he/she is in using the Internet and the consumer feels less risk associated with the Internet. Based on the previous research, it is posited that Internet knowledge may be a factor in reducing users' risk perceptions in the online context [16]. So, the second hypothesis can be put forward as follows:
H2: Higher knowledge of the internet leads to lower perceived risk of the customer.

Internet preference may be a consequence of the user's Internet knowledge and experience. As consumer knows more about this channel, he/she enjoys more when navigating on the Internet. It has been found recently that people skilled at using the Internet really enjoy exploring web sites they hear about, thus showing a higher Internet preference and, indirectly, improving attitudes towards the site That is, Internet skills have a positive influence on exploratory behavior. Also, found empirically that users considered as experts or experienced in navigating the Web did use the Web for fun and excitement, as a recreational way to relax and to spend their time. Thus, based on the literature, we may hypothesize that Internet knowledge and experience may positively influence Internet preference [16]. Therefore, the third hypothesis is proposed as follows:
H3: Higher knowledge of the internet leads to higher internet preference.

C. Internet Preference

The Web may be characterized as pleasurable, fun, enjoyable and as something that enables the Web user to escape from reality. Internet preference relates to the user's personality feature associated with enjoying with Internet exploration and surfing. This exploratory behavior positively influences the user's attitudes toward the web site and, in turn, may be a significant factor in e-commerce acceptance and online purchase intentions [16] So, internet information search intention as a predictor of internet purchasing intentions [19]. According to the above said issues, the fourth hypothesis is brought forward as follows:
H4: Internet preference leads to higher internet purchase intention.

D. Perceived Risk

One of the main concerns expressed in the academic literature is related to the risk perceived by customers when buying a specific good, both in traditional shopping and in online environments. Consumer behavior involves risk since any action of a consumer will produce consequences that he or she views with some amount of uncertainty [16], in other words consumers are apprehensive when they cannot be sure that purchases will allow them to achieve their buying goals

TABLE I
DIMENSIONS OF PERCEIVED RISK

Dimension	DEFINITION	References
Technical risk	The probability that a purchased product results in failure to function as expected.	Nicolas & Castillo, 2008
Service risk	The probability that the firm will not offer a good service in the future.	Nicolas & Castillo, 2008
Physical Risk	Related to safety or health.	Cases, 2002
Social risk	The probability that a product purchased results in the disapproval of family or friends.	Nicolas & Castillo, 2008
Delivery risk	The probability that a purchase results in problems when delivering the product to the customer.	Nicolas & Castillo, 2008
Time risk	The sensation of wasting time associated with the purchase, and especially, the time that the consumer perceives is unnecessarily spent in looking for and finding goods on the internet or in marketing the online purchase.	Mafe et al, 2009
Psychological risk	The probability that a product results in inconsistency with self-image.	Forsythe & Shi, 2003
Financial risk	The probability that a purchase results in loss of money or other resources.	Forsythe et al, 2006
Payment risk	Financial consequences engendered by giving one's credit card number on the internet.	Cases, 2002
Privacy risk	Invasion of the consumer's private life.	Cases, 2002
Performance risk	The loss incurred when a brand or product dose not perform as expected.	Forsythe et al, 2006; Gupta et al, 2001
Transaction risk	Transaction risk results when markets fail to provide payment, services, goods delivered and quality when processing a transaction.	Westland, 2002
Product risk	Product risk is the risk of making a poor or inappropriate purchasing decision.	Doolin et al, 2002
Brand risk	Brand risk is the risk that the specific product may have problem.	Massad & Tucker, 2000
Source risk	Fear of the level of credibility and reliability of the website.	Cases, 2002

[8]. In Table I different aspects of perceived risk along with their definitions are given.

Among the reasons commonly cited for consumers aborting purchase attempts are a reluctance to supply personal and credit card information, technical problems with web sites, and problems in locating products [16].

The concept perceived risks refers to the consumer's anticipation of negative results or expectation of loss [11]. The concept of perceived risk exists when consumer cannot completely foresee the consequences of his/her behavior [14]. The consumer's subjective belief of suffering a loss in pursuit of a desired outcome, thus, consumers have personal beliefs regarding the inherent risks involved in every transaction based on the limited information available to them [17]. So, perceived behavioral control positively affects online shopping intention [5]. Thus, in online contexts, an increase in the risk perceived by customers could reduce their intention to buy through that web site [16] and the more risky a type of interaction is perceived to be, the more trust is necessary [1]. Indeed, several studies have suggested that risk perceptions toward remote purchasing methods can affect related shopping behavior. Thus, consumers who perceive fewer risks or concerns toward online shopping are expected to make more online purchases than more risk-laden consumers [16].

Perceived risk is associated not only with what is acquired but also how or where it is acquired. Consumers perceive risks in most store purchase decisions and higher risk in in-home shopping such as ordering by the telephone or mail. Cox and rich found the most commonly stated reason for not shopping by telephone was a fear of not getting what was wanted [8]. Accordingly, the fifth hypothesis can be put forward as follows:

H5: Higher perceived risk lowers their purchase intention on the internet.

III. Data Collection

To collect the data, five-point Likert scale was used to devise a questionnaire. Questions on perceived risk were designed based on the researches conducted by Cases in 2002, Nicolas & Castillo in 2008, Chen & Barnes in 2007 and Shergill & Chen in 2005, and questions on internet preference, internet knowledge, risk preference and internet purchase intention were written based on Nicholas and Castillo research done in 2008. Necessary changes were made according to the defined risks.

IV. Research Statistical Population

The samples of this research were selected from the students who have already made internet shopping. These students are studying at an Islamic Azad University branch located in the north of Tehran, known as the biggest non-government non-profit university in Iran.

In this research sampling procedure was done in two pre-test and main times. The pre-test part was done distributing 50 questionnaires among the students who had the experience of internet shopping. The results were used to revise the questionnaire. Moreover, in order to achieve the factors influencing perceived risk most, students were asked to determine how much each aspect mentioned in Table I influence their shopping behavior. Therefore, five aspects of financial risk, performance risk, time risk, delivery risk, and social risk had the highest importance among the introduced aspects. In the final step 250 questionnaires were distributed among the students, of which 174 questionnaires were worth analyzing.

V. Reliability and Validity

In order to calculate the reliability of the test, Cronbach's alpha coefficient was used. This coefficient was estimated 0.8411 for all the instruments of the questionnaire. Moreover, coefficient of Cronbach's alpha was estimated for each instrument whose results are detailed in Table II.

In order to determine the validity of the questionnaires, face validity and experts' opinions as well as students' opinions who had already answered the questions in the pre-test were used, and thus the problems of the questionnaire were removed. In order to analyze the internal structure of the questionnaire and identify the constituents of each instrument, the structure's validity was determined through confirmatory factor analysis tool.

TABLE II
Reliability Test

Variable	Cronbach'α	Number of item
All instrument	0.8411	20
Internet knowledge	0.8457	4
Internet preference	0.8660	4
Risk preference	0.8469	4
Perceived risk	0.8310	5
Internet purchase intention	0.9033	3

VI. Results of Research Model

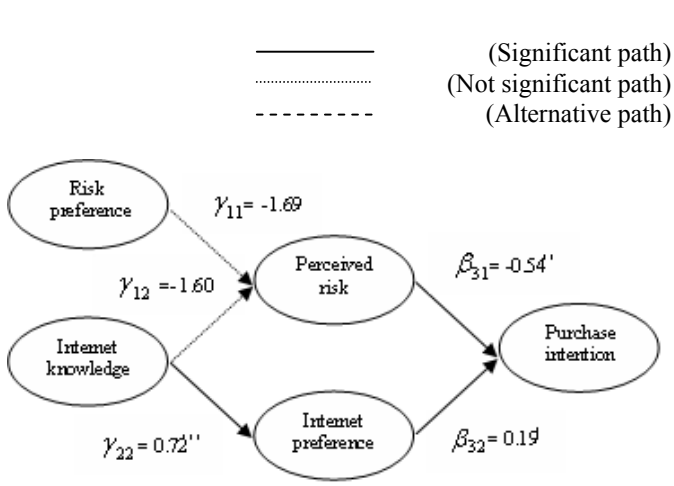
In order to analyze the collected data and test the hypotheses, structural equations modeling method was used. In this method each single index does not show the sufficiency or insufficiency of the model, but they must be interpreted collectively. Results show that the model is suitable and does not indicate misspecification error.

For the hypothetic SEM model GFI is 0.91, AGFI is 0.90, NFI is 0.97, NNFI is 0.99, CFI is 0.99, IFI is 0.99, RMR is 0.053 and RMSEA is 0.047. All fit indexes have suggested adequate model fit between the research model and the empirical data.

Results show that the model is suitable and the obtained values for the indices approve the suitability of the model. So, hypotheses 3, 4, and 5 were accepted. Hypothesis 3 is related to the internet knowledge and internet preference. Hypothesis 4 is related to the relationship between internet preference and internet purchase intention, and hypothesis 5 relates to the

relationship between perceived risk and internet purchase intention. However, hypotheses 1 and 2 which relate to the relationship between risk preference and perceived risk, and between internet knowledge and perceived risk respectively were failed to be accepted. Also it was approved that there is a relationship between risk preference and internet preference, risk preference and internet purchase intention, and internet knowledge and internet purchase intention.

In Fig. 2, the results obtained from initially run the model is shown and in Table III a summary of the research results are indicated.



Significance levels: *p<0/01 **p<0/05 ***p<0/10

Fig. 2 Structural model estimation

Table IV can be inferred as indicating the following points about testing the hypotheses:

Testing hypothesis 1: t-test results (-0.77) show that at 0.9 level, H0 – that there is no relationship between risk preference and perceived risk – is not rejected; therefore there is no significant relationship between risk preference and perceived risk in this model.

TABLE III
SUMMARY OF HYPOTHESIZED STRUCTURAL MODEL

Paths	Estimate of standard coefficient	Standard error (SE)	t
Perceived risk→ purchase intention	-0.54	0.25	-2.14
Risk preference → Perceived risk	-1.69	2.19	-0.77
Internet knowledge→ Perceived risk	-1.60	2.35	-0.68
Internet preference → Purchase intention	0.19	0.097	1.96
Internet knowledge→ Internet preference	0.72	0.10	7.03

Testing hypothesis 2: t-test results (-0.68) show that at 0.9 level, H0 – that there is no relationship between knowledge of the internet and perceived risk – is not rejected; therefore there is no significant relationship between internet knowledge and perceived risk in this model.

Testing hypothesis 3: t-test results (7.03) show that at 0.9 level, H0 – that there is no relationship between internet knowledge and internet preference – is rejected, therefore knowledge of the internet affects the internet preference.

Testing hypothesis 4: t-test results (1.96) show that at 0.9 level, H0 – that there is no relationship between risk preference and internet purchase intention – is rejected, therefore risk preference affects the internet purchase intention.

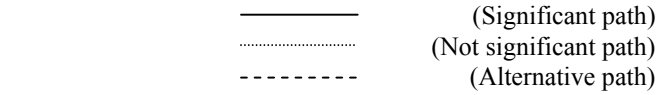
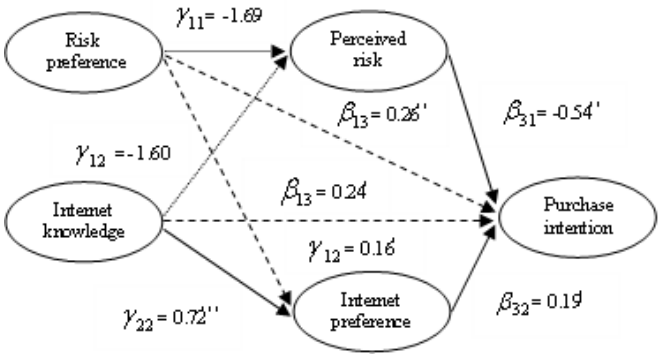


TABLE IV
STRUCTURAL MODEL RESULTS

Paths	Estimate of standard coefficient	Standard error (SE)	t
Perceived risk→ Purchase intention	-0.54	0.25	-2.14
Risk preference → Perceived risk	-1.69	2.19	-0.77
Internet knowledge→ Perceived risk	-1.60	2.35	-0.68
Internet preference → Purchase intention	0.19	0.097	1.96
Internet knowledge→ Internet preference	0.72	0.10	7.03
Risk preference → Purchase intention	0.26	0.12	2.17
Risk preference → Internet preference	0.16	0.09	1.72
Internet knowledge→ Purchase intention	0.24	0.13	1.81



Significance levels: *p<0/01 **p<0/05 ***p<0/10

Fig. 3 Full structural model

Testing hypothesis 5: t-test results (-2.14) show that at 0.9 level, H0 – that there is no relationship between perceived risk and internet purchase intention – is rejected, therefore perceived risk affects the internet purchase intention.

Finally, according to the proposed Lizrel software model, shown in Fig. 3, as a modified model, the results for the final model are put forward as indicated in Table IV.

Results obtained from Fig. 3, show that:

When risk preference increases as much as one unit, it can be expected that the average internet purchase intention increases as much as 0.26 units.

When risk preference increases as much as one unit, it can be expected that the average internet preference increases as much as 0.16 units.

When internet knowledge increases as much as one unit, it can be expected that the average internet purchase intention increases as much as 0.24 units.

When internet knowledge increases as much as one unit, it can be expected that the average internet preference increases as much as 0.72 units.

When internet preference increases as much as one unit, it can be expected that the average internet purchase intention increases as much as 0.19 units.

And when perceived risk increases as much as one unit, it can be expected that the average internet purchase intention decreases as much as 0.54 units.

Internet knowledge of the influences the internet preference most.

VII. Conclusion

The results show that perceived risk influences the internet purchase intention, and as the perceived risk of the customers increases, their internet purchase intention decreases. Other factors such as risk preference, internet preference, and internet knowledge can influence the internet purchase intention directly. When a customer does the internet shopping, such factors influence his internet purchase intention.

Further researches can be done on the role of biographical characteristics such as gender, age, education, and income on perceived risk of the individuals and their internet purchase intention.

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