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CUSTOMER ACCEPTANCE OF E-COMMERCE: INTEGRATING PERCEIVED RISK WITH TAM

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Abstract: *We are living in technological era which is growing rapidly. The adaptations of information technology applications have already been carried out in various areas of business. In this study perceived risk, perceived ease of use, and perceived usefulness go shaping e-commerce acceptance among potential customers were examined. Drawing on Perceived Risk and Technology Acceptance Model (TAM), the following factors have been investigated to assess the influence of Perceived Risk (Information Misuse Risk (IMR), Failure to Gain Product Benefits Risk (FGPBR), and Functionality Inefficiency Risk (FIR)), perceived ease of use (PEU), and Perceived Usefulness (PU) on customer adoption of e-commerce. The field survey has been carried out for e-commerce acceptance in the Sultanate of Oman, and empirically validated five hypotheses. The results were analyzed using multiple linear regression analysis. Using analyzed data, the model explained 78.2% of the variance in customers' acceptance of e-commerce. It is found that only four out of five constructs (Information Misuse Risk, Failure to Gain Product Benefits Risk, and Functionality Inefficiency Risk, and perceived ease of use) have significant effect on customer acceptance of e-commerce. Implications, suggestions, and limitations of study have also been discussed.*

Key words: *E-commerce, Risk, TAM, IT acceptance*

INTRODUCTION

The research in the area of acceptance of technology have an important impact on potential user of information technology (Benlian *et al*, 2012; Jones and Leonard, 2014; Fanget *et al*, 2014; Lim and Ting, 2014). Other researches focuses on the effect of perceived risk on customer acceptance of e-commerce (Doolin *et al*., 2005; Park *et al*, 2001) while, several studies integrated between TAM, risk, and trust to investigate its impact on e-commerce adoption (Lim, and Ting, 2014; Glover and Benbasat, 2011). In this paper perceived risk and TAM are integrated to clarify its effect on customer acceptance of e-commerce. Omani environment is selected as a focal context to study e-commerce adoption because most, if not all, customers requested for tools to use e-commerce (internet connection, laps and smart phones, e-payment cards, and etc) be made available and easy to obtain. Omani customers

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prefer traditional way of buying. This study aims to clarify the critical factors that push/avoid Omani customer to use e-commerce.

LITERATURE REVIEW

Any company can build long term relationships with customers through its website and that exist by online repeat consumption (Wang *et al*., 2014), so companies are required to study factors that may affect customers' attitude toward their websites. According to Lian *et al*. (2012) they test customer beliefs about perceived ease of use, perceived affective quality, perceived usefulness, and trust from two perspectives: provider recommendations and customer reviews. They found that the perceived ease of use and the perceived usefulness are significant for those who use provider recommendations, while others who use customer reviews are usually concerned with trust and affective quality. As trust one of important factors for customer to make trading decisions (Hongjun and Aiwu, 2014), so to increase trust in e-commerce Sharfi *et al*. (2013) they built a model to improve the degree of trust among customer to customer (C2C) e-commerce platform, through that model customers can compare any transactions with the previous ones, so they can prevent any fraud in transactions. Janes and Leonard (2014) study indicates that internet safety significantly influences the trust of buyers in e-commerce. To show the effect of ease of use on customer attitude toward e-commerce, Yan *et al*. (2014) demonstrated that ease of use for user interface has significant effect when customers interact with e-commerce platform. From another perspective the factors that drive customers to use e-commerce include diversity convenience, discounts, and safety (Napompech, 2014).

Technology Acceptance Model (TAM): Depending on the finding of Koufaris (2002) and the studies he reviewed, the TAM can be applied to examine the customer attitude toward e-commerce and its affects and the acceptance to purchase over internet. This attitude is affected by two main factors: usefulness and ease of use of e-commerce. For **usefulness** the customer strive to get many benefits from electronic purchase such as saving money, time, and the vast selections of products or services. For **Ease of use** which is concerned to gain the defined benefits, the customer should be able to do the following tasks easily: information search, ordering, and use of customer services. (Makame *et al.*, 2014; Alam *et al.*, 2011; Sebora, 2009). According to this study customers who think that purchasing over internet is useful, and they are able to do it easily they tend to adopt e-commerce. This leads to suggest the following hypotheses:

H_1: High level of perceived usefulness has positive effect on e-commerce adoption.

H_2: High level of perceived ease of use has positive effect on e-commerce adoption.

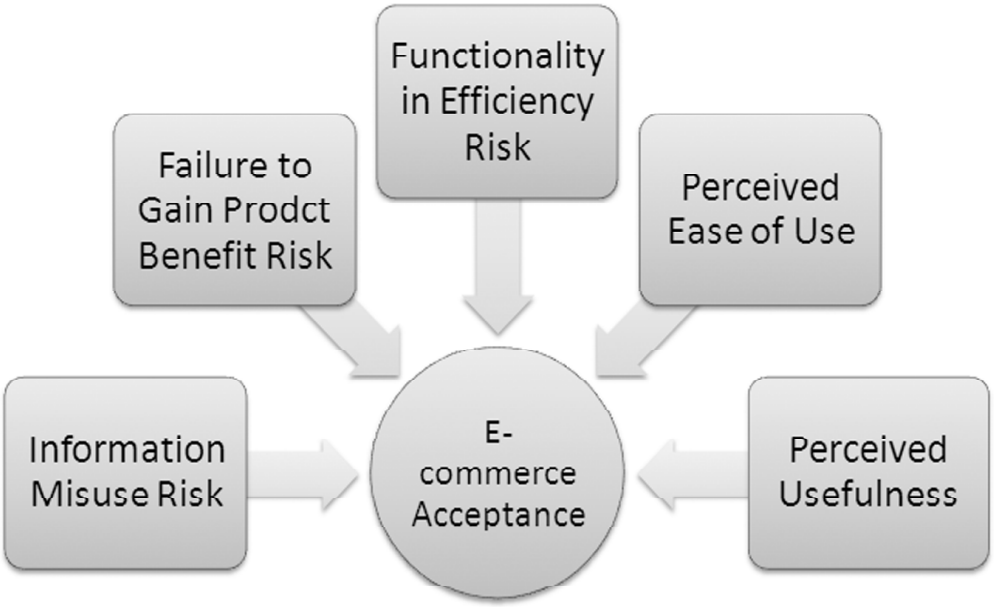
Perceived Risk (PR): It is one of important constructs in e-commerce studies; it refers to the degree of customer belief that the use of e-commerce is unsafe. Perceived risk is combined of **Information Misuse, Failure to Gain Product Benefit and Functionality Inefficiency Risk** (Glover and Benbasat, 2011). When customers buy from web, they provide the personal and financial information. Both the information revealed on network might be misused. Also, during the web purchasing the customer may face problems such as the purchased product may not meet the expectations because the customer did not checked before. Another problem that is delay in delivery. In another perspective, the customer may face the following difficulties: finding, choosing, ordering, paying, receiving, returning, exchanging, and maintaining anything bought through e-commerce (Glover and Benbasat, 2011; Pavlou, 2003; Miyazaki and Fernandez, 2001; Pavlou et al, 2007). As regards to our study customers who believe that the level of perceived risk is low they tend to adopt e-commerce. This lead us to hypothesize the following hypotheses:

H_{3a}: High level of perceived misuse of information has negative effect on e-commerce adoption.

H_{3b}: Low level of perceived failure to gain product benefit has positive effect on e-commerce adoption.

H_{3c}: Low level of perceived functionality Inefficiency has positive effect on e-commerce adoption.

Figure 1: Research model



METHODOLOGY

This study targeted Omani customer attitudes to adopt electronic commerce. A survey was conducted to collect the desired data. The aim of this survey is to assess customers' awareness about the factors that may affect their attitudes to use electronic way for purchasing. Data was analyzed using multiple linear regression test.

SAMPLE

The total valid responses received are 85.35%, hence they were considered for analysis. Out of which, 53% participants were male, ranging between the age 20 - 60. We ensure that all participants had electronic payment card (MasterCard, Visa Card, and etc.), all of the participants used their own electronic cards for the payment at shops, but only 11% of these participants used it to complete online transactions.

INSTRUMENT DEVELOPMENT

We relied on validated instruments to prepare the questions of our survey (Glover and Benbasat, 2011; Makame et al, 2014; Koufaris, 2002; Pavlou, 2003). Some modifications were made to fit the topic content and environment. The result items were ordered randomly for each construct. 5-point likert-type is used to measure survey questions for reliability of all items tested using chroubach's alpha (see table 1).

Table 1
Reliability Analysis

Variables		*# Items*	*Reliability*
Perceived Usefulness	PU	4	0.714
Perceived Ease of Use	PEU	5	0.722
Information Misuse Risk	IMR	7	0.822
Failure to Gain Product Benefit Risk	FGPBR	4	0.733
Functionality Inefficiency Risk	FIR	5	0.795
E-commerce Acceptance	EA	4	0.724

DATA ANALYSIS

Multiple linear regression analysis technique was used to test the research model. Five independent variable (Information Misuse Risk, Failure to Gain Product Benefit Risk, Functionality Inefficiency Risk, Perceived Usefulness, Perceived Ease of use) and one dependent variable (E-commerce acceptance). The research objective is to set the extent to which the readiness of participants for information technology (independent variable) affects in their ability to accept e-commerce (dependent variable).

RESULTS

Table 2
Multiple Linear regression analysis result

Adjusted R Square	*F*	*Sig.*
0.782	172.010	0.000

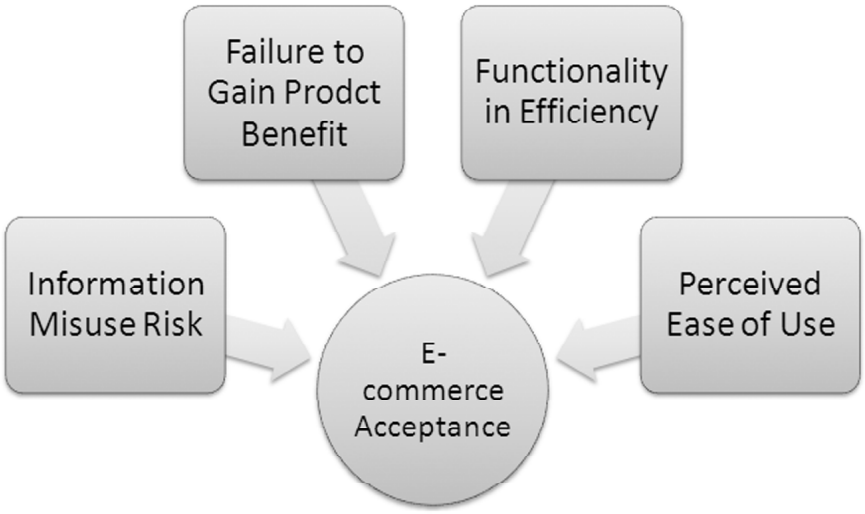
Predictors: (Constant), IMR, FGPBR, FIR, PEU, PU
Dependent Variable: EA

Based on the results of multiple linear regression analysis shown in table (2), the adjusted R^2= 0.782 that mean the model interpreted 78.2% of the variance in respond to adoption of ecommerce. In spite of the whole model being significant (F = 172.010, P = 0.00), each variable was tested for significance. Depending on this test only four out of five hypotheses supported. Table (3) shows the significant and Non-significant constructs, and supported and unsupported hypotheses.

Table 3
Hypotheses test

Hypotheses	*Coefficients*	*T value*	*Sig.*	*Supported*
H1 (PU)	0.025	0.552	0.581	NO
H2 (PEU)	0.614	10.881	0.000	YES
H3 (IMR)	-0.312	-3.698	0.005	YES
H4 (FGPBR)	0.226	2.851	0.000	YES
H5 (FIR)	0.436	11.790	0.000	YES

Figure 2: Significant results



DISCUSSION

As discussed above that the four out of five variables of the adopted model are significant: Information Misuse Risk, Failure to Gain Product Benefit Risk, Functionality Inefficiency Risk, and Perceived Ease of Use. It reflects the belief, intention and ability of respondents about using e-commerce. To do the same, they believed that the risk level of misuse of financial information and personal information must be at the lowest level because this risk (as it seen in the results of regression analyze) affects negatively on their acceptance of e-commerce. Also the expectations of customers about late arrival, unrealized needs, finding, choosing, ordering, paying, receiving, exchange, and maintaining functional inefficiency, have a big impact on customer's decision to adopt e-commerce. From the TAM perspective customers believe if they become skillful in learning, and using all web tools related to e-purchasing, it will have strong effect on their decision either to adopt e-commerce or not. But from the same perspective surprisingly, we discovered that perceived usefulness was not significant. This can be explained that around 89% of the respondents did not do any buying process over internet, therefore they do not have any knowledge of whether the adoption and acceptance of the e-purchase will improve their performance or not, in spite of their consensus that it speeds up the process of access to the product, but the surrounding environment is not encouraging for e-purchasing, their preference to traditional procurement, and the number of companies that have adopted e-commerce is still little compared with the number of consumers, to acquire expertise in the field of e-commerce. Future, research should continue to assess the relationship between perceived usefulness and customer acceptance e-commerce with more focus on culture, trust in electronic transaction.

CONCLUSION

The following constructs (Information Misuse Risk, Failure to Gain Product Benefit Risk, Functionality Inefficiency Risk, Perceived Ease of Use, and Perceived Usefulness) are used to investigate customer's perceptions about e-commerce. The study demonstrates, that perceived risk and perceived ease of use can be considered as salient indicators on e-commerce acceptance in the Sultanate of Oman. Those factors helped in interpreting the reasons why customers have to adopt e-commerce. We have to take notice that this study implemented in developing country, it is small in population, and in initial stages of Information Technology adoption in term of e-commerce, and also the data collected using questionnaire so there is potential of self-report bias.

Future studies should attempt to validate the findings of this study by implementing its model in different environment, and moderate all the constructs by other factors like gender, age, study degree or by adding new constructs like trust in electronic transactions, and it is better to use multiple methods to collect data.

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Appendix A

Survey Questionnaire Items

#	*Items*	*Mean*	*Std.*
1	the online seller may use my financial information incorrectly	4.0711	.51771
2	my credit card information may not stored in a secure method.	3.9707	.56059
3	a seller on the website may not be real trader.	3.8033	.80377
4	May be my financial information hacked by another party and misused	3.9791	.57575
5	To get the product that I want I have give more personal information.	4.1339	.58595
6	The online seller may not have sufficient equipments to protect my personal information from hackers	4.0335	.54129
7	my personal information may be used to send disturbing e-mail without my consent	3.8033	.83454
	Information Misuse Risk	**3.9707**	**.44707**
8	the product characteristics and models that are displayed via the website might not be real	3.9874	.47173
9	Maybe I cannot identify the features of the product that I want to buy.	3.9331	.53030
10	might be the product that was previewed on the website differs for product that is shipped	3.9498	.85356
11	Maybe I do not get the product at the expected time or in the time I need.	3.9874	.72460
	Failure to Gain Product Benefit Risk	**3.9644**	**.49397**
12	Maybe I cannot efficiently use the website and its tools	3.8326	.61256
13	Advertised price on the product may not match the actual paid price.	3.8870	.79375
14	Maybe the online seller makes me pay additional costs such as shipping, taxes and customs.	3.8536	.79355
15	May I have to pay the costs of return the product or replace it with another product	3.8912	.68345
16	The online seller may add incorrect information about warranty and maintenance	3.8326	.61256
	Functionality Inefficiency Risk	**3.8594**	**.52178**
17	For me it is easy to purchase over the internet	3.9791	.67642
18	I think it's easy to gain e-purchase skills	3.9749	.54944
19	It's easy to learn how to make purchases through the Internet	4.1046	.54382
20	e-purchase process understandable and clear	4.0795	.53251
21	When I buy over internet, it is easy to use all the Website tools	4.0251	.53393
	Perceived Ease of use	**4.0326**	**.39207**
22	Purchase from the website will increase my ability to make a purchase decision	3.8996	.49191
23	Purchase from the website, will speed up the process of getting what I need.	4.0084	.43955
24	Purchase from the website will enhances the effectiveness of the buying process	3.9414	.52332
25	When I do a purchase from the website it will improve my performance to carry out the purchase	4.0000	.44909
	Perceived Usefulness	3.9623	.35004
26	Given the chance, In the future I think I should use website to buy.	3.9874	.59041
27	I intend to use commercial website to purchase, if I given the chance.	3.9665	.68517
28	I frequently use website to buy many things that I need.	3.8619	.62994
29	I think using website to buy gives me more options	4.0502	.60598
	E-commerce acceptance	**3.9665**	**.46509**