The Effect of Trust Based Factors on Using Mobile Commerce in Jordan

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Abstract

The purpose of this study is to examine the effect of trust based factors on using mobile commerce in Jordan. Five universities from three biggest cities in Jordan were chosen as samples for this study. A total of 600 questionnaires were distributed to the students in the five universities. Out of this, a total of 450 questionnaires were returned to be applicable, 44 candidates did not use m-commerce and 406 questionnaires were usable for analysis. This research applied a systematic sampling technique and its measurement instruments were adapted from several resources that are high in internal consistency. The final response rate was 75%. Data was then analyzed using Structural Equation Modeling (SEM) by using smart Partial Least Squares (PLS) software with maximum likelihood estimation in order to test the proposed hypotheses. By referring to the value of R2, The results indicate that trust based factors (initial trust, structural assurance, system quality and information quality) are the main factors affecting on behavioral intention to use mobile commerce. Thus m-commerce service providers need to highlight improving the trust in order to facilitate users' adoption and usage of m-commerce in Jordan.

*Key*words: behavioral preferences; demographic factors; online shopping; Jordan

1. Introduction

There are many limitations resources related to mobile service and devices, the most prominent is trust, and the trust is a significant factor that affects the proposed use of M-commerce [1]. As a result there are many factors that minimize the use of this commerce. It's most important factor is the principle of trust in M-commerce because trust based factors play a significant role in level of m-commerce usage among m-commerce users, but they have not been taken into account to develop the existing TAM yet.

In Jordan, Mobile commerce is still in its early stages; and comparatively, Smartphone users are not familiar with it in this country. According to the research by [2, 3], security concerns are accounted as primary problem of people in Jordan, as well as other reasons such as lack of wireless infrastructures and m-commerce laws. So in this country, trust factors play a vital role in increasing usability level of m-commerce, and yet sufficient studies on investigating and evaluating contributing trust factors have not conducted according to the state-of-the-art published scholarly works. On the other hand, the importance of conducting research on evaluating trust indicators is highlighted while mobile penetration in Jordan is reported at 147% by the end of 2015 (Telecommunication Regulatory Commission). Therefore, it is evident that trust of m-commerce remains unknown to, and m-commerce underused by customers. There is a demand, thus, to realize the degree of trustfulness of m-commerce factors and to evaluate these factors which affect acceptance of using it for m-commerce in Jordan.

So in this study will take the trust based factors into consideration when using M-commerce in Jordan.

2. Related Studies

In a study conducted by [4], intention of mobile banking was examined via developing a research model and he empirically tested the model using Partial Least Squares (PLS). He stated that the lack of trust had the highest negative influence on customers' intention towards using m-banking Among Saudi Arabian. However, the effect of trust-based factors on m-commerce was not investigated by him.

In a conducted research by [5], factors in customer intention towards m-commerce in Malaysia and China were investigated evaluated using TAM and DOI models. According to this research, three main factors which can be used to predict costumer's decisions in m-commerce are trust, cost, and social influence. This study confirms the need to expand studies towards main factors that have influence m-commerce level of usability.

In this research, the nature of structural assurance (SA) mechanism on trusting intention among students, in Midwestern University, is examined. [6] Developed four trust-based hypothesis based on four factors that positively affect the customers trusting as (1) perceived vendor-specific guarantee, (2) perceived seal of approval

guarantee, (3) perceived credit card guarantee, and (4) perceived transaction protection. However, the presented SA model did not take into account the factor of reputation as it could have an impact on users trusting intention via other customer feedbacks in forms of scores or postings on the website; on the other hand, the research did not examine the contingency constructs like risk/trust propensity. Finally, it was concluded that a closer investigation on these constructs can provide a clear understanding of effect of SA on trusting intention.

The study by [7], an attempt to examine the users' initial trust in the area of mobile banking (m-banking) by employing the elaboration likelihood model (ELM). He developed eleven hypotheses on effect of trust on performing m-banking. The main quality-based factors which were researched were information quality, service quality, system quality and structural assurance. Then, he tested a hypothesis that information quality is positively correlated with trust in m-banking, and later this claim was accepted and supported by analyzing data in terms of convergent validity and discriminant validity. However, since participants were selected from an eastern Chinese city, results cannot be generalized on other targeted populations, particularly people residing in different countries.

After reviewing the literature review, the researcher propose that trust factors have significant influence in m-commerce adoption. These factors include Information Quality, System Quality, Structural assurance and initial trust. This research will check the influence of these factors on m-commerce adoption from the Jordanian community perspectives. A research model and hypotheses will be developed based on these factors as explained in the following section.

2.1 Initial trust

Online transactions are characterized by increased uncertainty and risk and therefore, trust has received ample attention from e-commerce researchers and has been evidenced to impact user's service adoption, including online news services [8], internet banking [6], health websites [7] and mobile shopping [8]. Initial trust is important for user behavior and, in relation to this, various factors have been evidenced to impact it, with the first category of factors being related with website. Users with lack of prior experience have a tendency to depend on their perceptions of website quality to develop initial trust [9]. Additionally, information quality has been revealed to impact initial trust in the context of health infomediaries [10] along with other factors such as website appeal and usability [11].

2.2 Information quality

To reiterate what was mentioned earlier, lack of user's direct experience drive them to depend on their perceptions of information quality and system quality to develop their initial trust on mobile commerce. According to [13], information quality and system quality affect the success of information systems, with information quality reflecting information relevancy, accuracy and timeliness [13]. In other words, users expect easy access to m-commerce to purchase products/services any time and at any place they need to and as such, if they receive irrelevant, inaccurate and outdated information, they may perceive the service providers to lack the ability and benevolence to provide quality services. Information quality thus impacts initial trust. According to prior studies, information quality affects initial trust in the context of infomediaries [10].

2.3 System quality

According to [13], in mobile banking, system quality is described as the availability, ease-of-use, navigation and appearance of the system. However, due to several limitations of mobile terminals, like small screens and inconvenient input, users may be hindered from searching information via m-commerce.

This may be resolved through an offering of an interface with robust navigation that saves time and expenses, with a clear layout and timely responses for successful m-commerce use. On the other hand, poor system quality may urge users to perceive that service providers are lackadaisical in their provision of m-commerce and this will affect their evaluation of the providers' credibility and benevolence. This is supported by [14] who noted that system quality (navigational structure and visual appeal) influences trust in mobile commerce technology among users. Poor system quality could thus lead to decreased user prediction of obtaining positive long-term outcomes.

2.4 Structural assurance

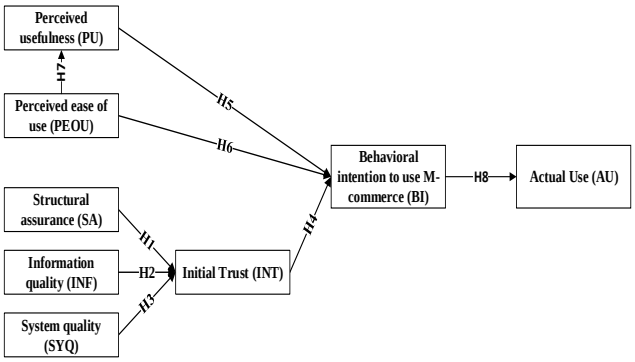
Structural assurance refers to the existence of legal and technological structures that guarantees secure payment and safe environment. In comparison to online commerce, m-commerce has its basis on mobile networks that may be more vulnerable to hack attacks and interception of private and confidential information. To compound the matter further, mobile terminals may contain viruses and Trojan, which will all contribute to the concern of users regarding their account and payment security. According to [14], structural assurance is an institution-based trust tool that influences the initial trust among users, particularly as users who lack prior experience depend on them to develop their trust on m-commerce. [16] Explained that in light of the trust mechanism, users shift their trust to third parties in the context of mobile banking.

3. Research Model and Hypotheses

Depends on the recommendations of some previous researches, such as [4],[17] [18], [4] the researchers found that they are advised to identify factors affecting customer's usability level such as trust based factors on the TAM model because it's important and they confirms the need to extend the traditional TAM model by adding some factors such as trust factors that mentioned previously when studying technology such as m-commerce, Accordingly, this study was provided the extend TAM model.

In this study, a theoretical framework developed is intended to act as a guide to evaluating trust factors that affect M-commerce in Jordan as shown in Figure 1 below.

Figure 1: Proposed Model for the Research



The researcher determined that it is important to respond to the following hypothesis:

H1: Structural assurance will influence the initial trust among Jordanian people.

H2: Information quality will influence the initial trust among Jordanian people.

H3: System quality will influence the initial trust among Jordanian people.

H4: Initial trust will influence the behavioural intention to use M-commerce among Jordanian people.

H5: Perceived usefulness will influence the behavioural intention to use M-commerce among Jordanian people.

H6: Perceived ease of use will influence the behavioural intention to use M-commerce among Jordanian people.

H7: Perceived Ease of use will influence the perceived usefulness of M-commerce among Jordanian people.

H8: The behavioural intention to use M-commerce among Jordanian people will influence actual use.

4. Methodology

A quantitative method was used in this research. Data was collected from a questionnaire survey which contained nine sections. Demographic questions made up the first section. Items measuring trust-based factors in M-commerce made up other sections. Responses will be measured using five point Likert scales which ranked from 1 (Strongly Disagree) to 5 (Strongly Agree). The outcome of this research support Technology Acceptance Model (TAM) in predicting peoples' behavioural intention in using M-commerce in Jordan.

The research used questionnaires to evaluating Trust-Based Factors influencing uses M-Commerce in Jordan. A group of Six hundred questionnaires were distributed to Jordanian students in 5 universities (Yarmouk University, Irbed National University, Jordan University for Science and Technology, Jordanian University and Al-Zarqa Private University) in 3 cities (Amman, Irbid and Al-Zarqa). The survey was executed over the period of three months that started from mid of July 2016 to mid-Oct 2016.

Out of the 600 questionnaires distributed, 450 responses were returned. Out of these, 44 questionnaires were discarded from analysis because they were not using m-commerce, making the final number of usable questionnaires 406 and yielding a valid response rate of 67.6%. The Demographic profile of participants was summarized in Table 1.

Table 1: Demographic profile of participants (n =406)

Item	Frequency	Percentage
Gender		
• Male	235	57.9
• Female	171	42.1
Age		
• 18	13	3.2
• 19	48	11.8
• 20	51	12.6
• 21	61	15
• 22	61	15
• 23	69	17
• 24	103	25.4
Education level		
• Secondary Stage	51	12.6
• Diploma	87	21.4
• Bachelor's Degree	208	51.2
• Master Degree	60	14.8
Marital status		
• Single	283	69.7
• Married	123	30.3
Family income		
• Under 500 JOD	48	11.8
• Between 500-1000 JOD	106	26.1
• Between 1000-1500 JOD	105	25.9
• Between 1500-2000 JOD	101	24.9
• Higher Than 2000 JOD	46	11.3
Internet experience		
• Less than 1 year	0	0
• Between 1 to 2 years	46	11.3
• Between 2 to 3 years	110	27.1
• Between 3 to 4 years	95	23.4
• More than 4 years	155	38.2
Internet usage per day		

• Less Than 1 Hour • 1-2 Hours • 2-3 Hours • 3-4 Hours • More Than 4 Hours	8 63 80 137 118	2 15.5 19.7 33.7 29.1
Mobile knowledge • Very poor • Poor • Moderate • Good • Very Good	0 2 29 272 103	0 0.5 7.1 67 25.4
Internet generation • Third Generation • Fourth Generation	66 293	16.3 72.2
• Fifth Generation	47	11.6
level of m-commerce • Less Than 1 Years (level 1) • 1-2 Years (level 2) • 2-3 Years (level 3) • More Than 3 Years (level 4)	174 122 61 49	42.9 30 15 12.1
System Quality (SQ)	0.911	0.931
Behaviour Intention (BI)	0.866	0.903
Actual Use (AU)	Single Item	Single Item

In order to test the hypotheses, data are analyzed by using SEM through using smart PLS software. The results of SEM will include two components:

- Measurement model
- Structural model

5.1 The measurement model

The internal consistency reliability of the measurement model was evaluated by using Cronbach's alpha and composite reliability (CR). Although [19] suggest using CR rather than Cronbach's Alpha in measuring the internal consistency reliability due to being more important and reliable, [21] stress on using both "Cronbach's alpha as the lower bound of the internal consistency reliability and CR as the upper bound for the true reliability". For the measurement model to have satisfactory internal consistency reliability, the Cronbach's alpha and composite reliability of each construct should exceed the recommended value of 0.70 [22] . However, [19] recommend using CR values above 0.8 or 0.9 to consider the internal consistency reliability in particular and the research in general as satisfactory. Using the PLS algorithm test, [24] shows the composite reliability and Cronbach's alpha values of each construct.

Table 2: CR and Cronbach's alpha

Construct	CR	Cronbach's alpha
Perceived Ease of Use (PEOU)	0.888	0.918
Perceived Usefulness (PU)	0.846	0.907
Initial Trust (IT)	0.815	0.890
Structural Assurance (SA)	0.821	0.893
Information Quality (IQ)	0.911	0.931

As shown in the table above, the CR values ranged from 0.815 to 0.911, while Cronbach's alpha values ranged from 0.890 to 0.931. All values are above the recommended threshold value of 0.70. Also, comparing the CR values with the Cronbach's alpha values indicates that the CR is indeed a stronger measuring criterion for assessing the internal consistency reliability. depends on the results of Cronbach's alpha and CR, the indicators used to measure the constructs in this research have high levels of internal consistency reliability.

5. Research Findings

For a measurement model to have an adequate convergent validity, the constructs should have an Average Variance Extracted (AVE) value of 0.5 or above [24,25,26,27,28], implying that the indicators share at least half of their variance with the construct [19], shows the AVE values for the constructs in this research using the PLS algorithm test.

Table 3: Average Variance Extracted

Construct	AVE
Perceived Ease of Use (PEOU)	0.690
Perceived Usefulness (PU)	0.764
Initial Trust (IT)	0.731
Structural Assurance (SA)	0.736
Information Quality (IQ)	0.692
System Quality (SQ)	0.691
Behaviour Intention (BI)	0.651
Actual Use (AU)	Single item

The analysis shows that the AVE for the constructs ranged from 0.651 to 0.764, exceeding the recommended threshold value of 0.5, indicating that convergence validity for all constructs are within the recognized value.

For examining the discriminant validity at the construct level, [24] criterion was used. The discriminant validity was established when the square root of the construct AVE exceeds the correlations between the construct and all other constructs. The AVE value for each construct is calculated using PLS algorithm test while the square root of the AVE value is calculated manually.

Table , displays the constructs discriminant validity. The bolded diagonal values in the Table are the square roots of the AVE, while the non-bolded off-diagonal values are the inter-correlation values between the constructs.

As demonstrated in the

Table all square roots of the AVE values exceeded the inter-correlation values in their corresponding row and column. This confirms that the discriminant validity at construct level is established. Consequently, the results of the square roots of the AVE values and the inter-correlation values prove that the first assessment of the measurement model discriminant validity is well established.

Table 4: Inter-Correlation Matrix

	PEOU	PU	IT	SA	IQ	SQ	BI	AU
PEOU	**0.831**							
PU	0.518	**0.874**						
IT	0.353	0.278	**0.855**					
SA	0.292	0.283	0.451	**0.858**				
IQ	0.461	0.312	0.485	0.345	**0.832**			
SQ	0.376	0.289	0.462	0.412	0.517	**0.831**		
BI	0.372	0.457	0.498	0.452	0.439	0.384	**0.807**	
AU	0.370	0.357	0.373	0.430	0.370	0.367	0.543	**Single**

In conclusion, all the above results of the Measurement Model assessment substantiate that all the construct measures are valid and reliable. Consequently, based on these results, the measurement model for this study which indicated that the measures for all the constructs are valid and reliable, the subsequent step is to present results of the Structural Model.

5.2 The structural model

The structural model contains of the constructs, also known as latent variables, and the paths that connect them with each other as shown in

Fig 1 Assessment of the structural model specifies the relationship between the latent variables [19]. The aim of the structural model assessment is to examine its validity [23], and path estimates [19] and thus test the proposed hypotheses.

In Hypotheses Testing, the hypotheses H1-H8 were supported, with the exception of H6, Table 5 summarized the results of the hypotheses testing.

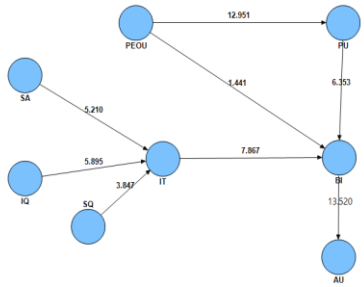


Fig 1: The Research structural model

No.	Hypothesis	Path	T-statistics	P value	Result
1	SA -> IT	0.268	5.210***	0.000	Support
2	IQ -> IT	0.288	5.895***	0.000	Support
3	SQ -> IT	0.202	3.847***	0.000	Support
4	IT -> BI	0.385	7.867***	0.000	Support
5	PU -> BI	0.310	6.353***	0.000	Support
6	PEOU -> BI	0.076	1.441NS	0.147	Not Support
7	PEOU -> PU	0.518	12.951***	0.000	Support
8	BI -> AU	0.543	13.520***	0.000	Support

*p< 0.05 , **p< 0.01, ***p< 0.001, NS: not significant.

Table 5: Results of the hypotheses testing

6. Benefits of The Study and Further research

This study sheds some light on technology acceptance levels with respect to m-commerce in Jordan. The outcomes of this study contribute to both theoretical and practical aspects. Theoretically, the proposed research contributes in:

- Expanding the current scholarly literature by identifying the trust-based factors influencing the use of m-commerce among customers who may have already accepted this technology, but have not fully used its capabilities.
- Developing a comprehensive model contributing to on-line m-commerce customer behavior literature by expanding the technology acceptance model (TAM).

- Contributing to the on-line trust literature by evaluation the role of customers trust towards m-commerce and how it can be increased.

Aside from aforementioned contributions, practically, the proposed research will assist banks, market stakeholders' and businesses to understanding of their current/potential customers' behavior, needs and concerns especially about the trust. Exploring the market, especially at the time when M-commerce is still in early stage in most countries around the world, is critical for industry stakeholders if they are to ensure the success of this emerging market. Therefore, this research highlights the most important factors that need to be considered in order to support the proliferation and advancement of m-commerce in developing country, and especially in Jordan. Through the results of this study the researcher found that the value of R2 for BI of the extended TAM model more than BI in original TAM model.

for future research the researchers can investigate the topic in further details such as adoption of mobile commerce by other factors, other societies and other samples that include not only individuals respondents.

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