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The Effectiveness of Security Factors on Using Technology Acceptance Model in Jordan

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Abstract

The evolution of the Internet and the Worldwide Web and their proliferation is a notable phenomenon. It began with a simple connection and transformed into what has become thriving business ventures through the internet. In other words, the traditional bricks-and-mortar business has become an electronic business through Information and Communication Technology (ICT) tools. In such business type, marketing allows consumers to use wireless hand-held devices to carry out commercial transactions and this has opened numerous business opportunities. Regardless of this explosive opportunity and high rate of penetration of mobile phones, e-marketing still has a low acceptance rate in developing nations, including Jordan. The consumers are not too inclined towards its adoption mainly because of lack of security. The research adopted a quantitative approach, where data collection was conducted using a survey questionnaire divided into seven sections. In particular, the first section was demographic in nature and the second section comprised of items measuring security factors from Technology Acceptance Model (TAM) and reviewed to develop the proposed model. The conceptual framework developed was aimed to determine the TAM factors role in technology acceptance in the Jordanian context. Based on the findings and results, the

research listed recommendations concerning security factors driving intention towards using and adopting technology.

1   Introduction

The growth of the internet has enabled users to carry out businesses through different technologies and this is particularly true in the case of mobile devices, transforming the scope and nature of their uses to encapsulate business activities. In addition, smartphones market is proliferating with volumes of smartphones shipment predicted to reach 2 billion by 2022, in comparison to 1.8 billion the previous year. Shipments in 2022 are estimated to reach 2.12 billion units [1]. Penetration of smartphone use all over the globe is also expected to affect the performance, interaction, information search and purchase decisions among end-users [2]. In this study, the proposed e-commerce business model is built on the m-commerce phenomenon [3].

In this regard, security is one of the significant factors [4]. In relation to the above, in business, it is important to meet customer satisfaction to remain relevant and thriving in the marketplace [5]. This highlights the importance of addressing security factor to enhance usability of m-commerce among users. Studies are needed to address the topic through scholarly works. Moreover, based on Jordans Telecommunication Regulatory Commission, the penetration rate of mobile devices is expected to increase to 168% by the end of 2022, indicating the possibility of m-commerce adoption, although reality is still the opposite. Hence, drivers of acceptance of m-commerce need evaluation and addressing and in this study, security factors in m-commerce are examined in the Jordanian context.

2   Literature Review

M-commerce adoption in influenced by the security factor as it assists in building a robust relationship with loyal customers [6]. Generally in the case of m-commerce, security can be defined as the protection of m-commerce assets from unauthorized access, use, alteration or destruction [7]. In the context of Malaysian and China, m-commerce adoption has been the topic of past studies using TAM and DOI models [8], leading to the identification of three major factors affecting the decisions of consumers, namely trust, cost and social influence. Literature needs to be extended by further studies examining the influence of security factors in using m-commerce and in Jordan,

m-commerce adoption rate is still low compared to other developing nations [9]. In the case of Jordan, a study focused on determining the limitations and barriers of e-commerce among consumers [10], with data gathered from 170 samples through the use of validated questionnaire survey. The findings showed that security and trust, internet experience, enjoyment, language, legal issue and technology acceptance are the influencing factors affecting end-users. Both security risk and trust need more in-depth examination and this holds true for the Jordanian case [11]. Further studies should be carried out taking security factors into consideration as this would lead to ways and strategies on how to increase the security level in m-commerce use.

3   Hypothesis

Following the review of literature, security factors were found to have significant influence on the m-commerce adoption and such factors include information quality, system quality, structural assurance and initial trust. Thus, this study aims to examine the above mentioned factors in the context of Jordan based on the following framework: Initial Trust Trust is important in transactional situations, particularly in buyer-seller interactions and situations that are characterized by the risk element. Trust influences the inclination of the users to adopt services like online news services [12], Internet banking [13], health web sites [14], and mobile shopping [15]. Information Quality in m-commerce, the lack of being able to conduct the physical examination of products and depending on information online may also be an issue [17]. Studies on the effect of information quality on initial trust and security in the case of health infomediaries have been conducted in literature [19]. System Quality this refers to the reliability of the network, ease-of-use, navigation and visual appearance of the m-banking[19]. Users that find it difficult to search for information in mobile phones owing to the small-sized screens may also be affected in their adoption and thus, to address the drawbacks, new technologies need to develop powerful navigation, clear layout and timely response. Structural Assurance transactions in m-commerce is carried out using mobile or smartphones connected to the network.Structural assurance refers to safeguards like regulations, guarantees and laws that protect users in their transactions. Research Model and Hypotheses on the basis of the recommendations of relevant literature, this study identifies the TAM factors including security factors that influence m-commerce adoption in Jordan. TAM is extended in this study, [8], [16] and [18] and the the-

oretical framework is developed to evaluate such factors and validate their influence (Figure 1).

4   Methodology

This research employed a quantitative study approach, with data gathered using questionnaire survey, divided into sections. The first section was dedicated to demographic questions, followed by the second section which contains security factors influencing m-commerce. Responses were gauged using 5-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). The findings of the study support TAMs ability to predict behavioral intention of users towards adopting m-commerce in Jordan. A total of 450 questionnaire survey copies were distributed to determine the security factors that influence m-commerce adoption in Jordan. The questionnaire copies were distributed to the students in 4 Jordanian universities, namely Yarmouk University, Irbid National University, Jordan University for Science and Technology and Jordanian University in the cities of Amman and Irbid. The survey was conducted over a period of three months from Feb 2022-May 2022. From the total distributed questionnaires, 350 copies were retrieved, out of which 42 were found to be redundant, and thus, the remaining useable questionnaires were 308, indicating a rate of response of 68.4%. Hypotheses were tested using Structural Equation Modeling (SEM), particularly PLS software with maximum likelihood estimation.

5   Findings

The formulated hypotheses were partially supported by the research model, indicating that security factors have a key role in influencing the acceptance of m-commerce among users. The targeted study sample comprised of students owning smartphones and having internet access, and those who can readily conduct m-commerce. According to the statistics reported by Statista (Jordan-Statista Dossier) in January this year, the top internet use in the country constituting 17.4 hours weekly, were 18-24 year olds, with equal uses between genders. This group represented the general internet users in Jordan. The respondents to the study were selected using stratified sampling among 18-24 year old students in undergraduate and post-graduate programs in Jordanian universities. The Jordanian population is estimated at 10 million by the Jordan times as of January 30, 2022, and based on the mentioned

Statista Dossier report, the population accessing the internet through mobile phones constitute 8.41%, which represents 555,060 individuals. Hence, the study adopted Yamanis (1967) formula to determine sample size, which came out to be 400 respondents, with confidence level at 95% and acceptable sampling error of 0.05. The hypotheses were tested using SEMs PLS software with maximum likelihood estimation, and this involved analysis of measurement model and structural model. The study findings had partial support for the hypotheses.

6 Conclusion and future study

This research contributes to theory and practice first, theoretically, it developed a model used to examine users intention to adopt m-commerce by extending TAM to include security factors. The study contributes to scholarly works on the reason behind low adoption rate of m-commerce in light of security factors and the lack of users leveraging mobile phones to conduct m-commerce. The study also contributes to literature on the effects of security factors on m-commerce and the way that security can be enhanced to this end. As a developing nation, Jordan needs to adopt m-commerce and this may only be possible by addressing and focusing on the security factors. In-depth analysis of m-commerce penetration and proliferation should be conducted by further studies in other developing countries, with the inclusion of trust concerns, advertising, and promotions.
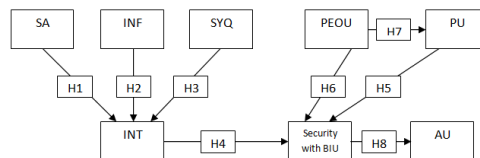
H1: Structural assurance will influence the initial trust among Jordanian people.
H2: Information quality will influence the initial trust among Jordanian people.
H3: System quality will influence the initial trust among Jordanian people.
H4: Initial trust will influence the security with behavioral intention to use M-commerce among Jordanian people.
H5: Perceived usefulness will influence the security with behavioral intention to use M-commerce among Jordanian people.
H6: Perceived ease of use will influence the security with behavioral 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 security with behavioral intention to use M-commerce among Jordanian people will influence actual use.

Figure 1: Proposed model and hypothesis for the research

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