DETERMINANTS OF M-COMMERCE ADOPTION: AN EMPIRICAL STUDY

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ABSTRACT

M-commerce has very rapidly developed into a very powerful way of reaching out to the consumer. M-commerce has been a massive success in terms of users' adoption in some markets like Japan, while, astonishingly, not as thriving in others. However, its acceptance and level of adoption are low in Palestine compared to other countries. The research main objective is to classify the key variables that influence the acceptance of M-commerce among higher education students in Palestine by developing an M-commerce adoption Model based on an extension of the Technology Acceptance Model (TAM). A total of 430 questionnaires were collected and analyzed using Structural Equation Modelling (SEM) technique. The findings revealed that perceived usefulness, perceived ease of use, personnel innovation, security and privacy, subjective norms, and perceived trust are found to have an important effect on consumer behavioral intention to adopt M-commerce. These results will benefit stakeholders involved in M-commerce activities such as service providers, retailers, consumers, academicians, and students.

Keywords: *M-Commerce, TAM, Personnel Innovativeness, Perceived ease of use, Perceived usefulness, Subjective norms, perceived security risk*

1. INTRODUCTION

Almost a decade ago, mobile phones were just the wireless devices used for one to one voice communication. Nowadays, the purpose and capabilities of mobile devices have changed their usability. The modern smartphone is becoming the leading means for gaining access to communication because of features such as cost-efficient, flexibility and accessibility to its subscribers. Therefore, the usage of mobile devices has become very popular and continues its growth. According to [1], the rising frequency of worldwide mobile users is not expected to decrease soon. The wireless cellular industry is the fastest developing telecom market and is unrivaled with regard to subscriber numbers and attractiveness.

The fast-growing pace of information technology (IT) nowadays makes it imperative for businesses to explore how these new technologies could bring influence on M-commerce [2]. The new type of commerce transaction that allows users to use mobile devices over wireless communication technologies is known as mobile commerce or commonly referred to as M-commerce [3]. M-commerce is an extension of electronic commerce and is defined as the use of wireless hand-held devices like a cellular phone, smartphone, and personal digital assistant (PDA) to conduct business transactions [4].

M-commerce is playing an important role and adding value to the process of electronic commerce activities [5]. The development of mobile devices and its significant growth and penetration rate create new opportunities for mobile technology, which is leading to the rapid growth of M-commerce. Nowadays, there is not much need for people to physically go to their respective stores to perform transactions. Buying and selling can be done on the go. Businesses have now explored the idea of allowing customers to perform transactions via mobile phones. Research on smartphone value-added services conducted by Nokia, the main target marketplace for M-commerce customers is young students from the age range of 19 to 25 years [6]. This is because they are more concerned about innovations such as M-commerce technology. Young students are most likely to be the primary adopters for M-commerce; they are technology savvy and always want to try new services and

technologies [7]. Nevertheless, mobile technology's rapid development and the advent of M-commerce models are relatively low in the level of adoption in M-commerce [8]. The expectation of M-commerce services is relatively slow [9]. There has been an over-all deficiency of empirical evidence to enable the establishment of the model to examine factors that can explain the usage of M-commerce in developing countries, as most of the empirical researches are conducted in countries such as the USA, China, Japan, and Taiwan [10].

While significant information systems studies have investigated the use of E-commerce, the discipline of M-commerce has been unexplored and little is known about who the potential adopters for M-commerce are. Based on [11], M-commerce is still a minority share of total E-commerce in Palestine. Several studies have been conducted on the adoption of M-commerce in developing nations; however, there is yet to be research to study M-commerce adoption in Palestine.

The adoption of information technology in the workplace has continued to be a dominant concern of information systems research. Clarifying the individuals' adoption of new systems is commonly designated as one of the most desired aspects of information systems research [12]. User satisfaction toward M-commerce has become a favored topic among experts and scholars at home and abroad. Evaluating user satisfaction toward M-commerce is helpful for understanding user demand [13]. This research observed that there is a lack of understanding regarding the adoption of M-commerce factors in the literature. Thus, in addition to exploring driving factors for adopting M-commerce, this research aims to develop and empirically examine a research model of M-commerce adoption from students' perspectives.

2. LITERATURE REVIEW

2.1 M-commerce Adoption

It is clear that markets have not always succeeded in using technology in most developed countries [14]. Researches are therefore strongly needed nowadays to expose the reasons for the failure to accept new technologies. Meanwhile, researchers and practitioners agreed that the importance of M-commerce among consumers in developing countries remains uncertain [15].

The higher growth of using mobile services and the subsequent exposure of users to mobile technology have presented an opportunity for adopting M-commerce. M-commerce has been defined as, "e-commerce business processes and models carried out on a mobile terminal" [16]. As M-commerce in Palestine is a fairly new trend, new services are being suggested [11]. The acceptance of M-commerce technology is considered a person's decision to become a user of the technology [6].

Literature lists a couple of common factors in the adoption of M-commerce technology. Many factors can overlap as M-commerce services remain reliable and based on e-commerce technology to ensure that the products if offers meet customer requirements. According to [17], consumers do not prefer to use M-commerce for all types of transactions; instead, M-commerce is typically used for relatively simple transactions.

2.2 Technology Acceptance Model (TAM)

Numerous studies take the Technology Acceptance Model (TAM) [18], to study the determinants of technology adoption. Davis [18] stated that the goal of TAM is to be "capable of explaining user behavior across a broad range of end-user computing technologies and user populations, while at the same time being both parsimonious and theoretically justified". Many authors have used TAM in the areas of acceptance of different technological innovations. TAM was chosen for this study because the concept of Perceived usefulness (PU) and Perceived ease of use (PEOU) appeared to be more appropriate to investigate M-commerce adoption in the Palestinian context. At the same time, TAM has been one of the most widely accepted models in a variety of domains that include related IS and IT acceptance studies and has received extensive empirical support [19]. Based on [20], the original TAM variables may not adequately capture key beliefs influencing consumers' attitudes toward m-commerce. Due to the key limitation of TAM, it is appropriate to include some additional variables in order to strengthen the model. Therefore, the present study extended TAM model to advance further critical factors.

3. RESEARCH MODEL AND HYPOTHESES

Since the focus of the study is twofold, to investigate the factors of M-commerce acceptance among students in Palestinian higher education institutions, and to propose a framework to measure

the adoption. A theoretical research model is developed and proposed based on a set of factors integrating the TAM with marketing variables and empirically tested them to enhance a deeper understanding of M-commerce adoption.

This research extended TAM by comprising personnel innovativeness (PI), social influence (SI), security and privacy (SP), and trust (TR) beside the two main components of TAM perceived ease of use (PEOU) and perceived usefulness (PU) in which these variables are thought to influence mobile shoppers' attitude to accept M-commerce (BI). The proposed model is presented in Figure 1.
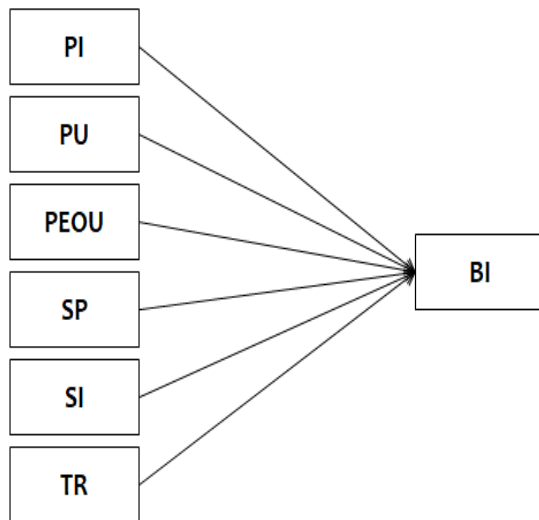

Figure 1: Research Model

3.1 Personnel Innovativeness (PI)

PI Indicate the individual willingness to try out any new IT system. Kim and Park [21] defined PI as "a person's attitude reflecting his or her tendency to experiment with and to adopt new information technologies independently of the communicated experience of others". Innovative individuals will recognize the practicality and the ease of use of new technology faster than non-innovative users. [22] hypothesized and empirically confirmed that the degree of personal IT innovativeness has a substantial positive influence on the adoption of new technology. In this context, [23] agreed that the personal innovativeness of the consumer would directly result in higher cognitive absorption which ultimately reflects total attention and the mental workload associated with technology.

In line with [24], PI has a strong effect on the adoption of M-commerce. In view of the emerging of smartphone services technology, it is proper to check innovativeness as an inducing factor under different settings. In Palestine, M-commerce is at its early stages; therefore, more innovative individuals will be more optimistic about the use of M-commerce and are more likely to accept new technologies [4], [25]. Meanwhile, [26] asserted that Innovative people are considered to be more energetic, outgoing, enquiring, adventurous, and risk-seeking. Further, innovative individuals are more dynamic in looking for innovative concepts. Zarmpou et al., [27] and Ghazali et al., [28] proved the significant effect of PI on users' attitudes to accept M-commerce. Thus, it is expected that the level of personal innovativeness will have an influence on the intention to accept M-commerce. Therefore, it is hypothesized that:

H1: "There is a significantly positive relationship between the PI and the consumer's intention to use M-commerce".

3.2 Perceived ease of use (PEOU) and Perceived Usefulness (PU)

PU and PEOU have been applied in various applications such as e-banking, e-library, smart card, e-tax e-learning, e-commerce, and M-commerce. Hence, the ease of use of a system can be increased by providing better training to end-users or enhancing the system user interface. The perception of system usefulness can also be increased by improving the quality and/or the quantity of information accessible via information technology application [18]. In the context of M-commerce, there are many studies in the field of information systems and M-commerce demonstrated that user's perception of the system's usefulness and ease of use result in a behavioral intention to use or not to use the system [8, 28-31].

TAM by Davis [18] suggests that two factors affect the users decision about using new technology viz: "the degree to which a person believes that using a particular system would enhance his or her job performance", i.e., PU and "the degree to which a person believes that using a particular system would be free from effort", i.e., PEOU. In its adaptation to M-commerce consumer behavior, PU is the extent to which a consumer believes that M-commerce would improve their effectiveness in purchasing products, while PEOU

is the extent to which a user believes that purchasing products through the M-commerce channel would be free of effort [32]. These two variables are hypothesized to determine user's attitudes to use certain information systems [23]. Similarly, [33] indicate that PEOU and PU are positively related to the intention to adopt M-commerce among students in higher education.

According to [4], PU is the primary predictor of M-commerce adoption and it captures the perceived benefits associated with using M-commerce. This construct assesses the extrinsic features of M-commerce as well as demonstrates how M-commerce may help the customers to accomplish task-related aims, such as efficiency and proficiency. In fact, if a user sees M-commerce innovation to be easy to use will have affirmative behavior towards adopting M-commerce. The PEU for M-commerce depends on the interface of the application and the prior skills of the user [34]. Hence, it is deduced that PU of M-commerce and PEOU of using it will significantly influence consumer's intention to accept M-commerce and the following hypotheses are proposed:

H2: "There is a significantly positive relationship between PU and the consumer's intention to use M-commerce".

H3: "There is a significantly positive relationship between PEOU and the consumer's intention to use M-commerce".

3.3 Security and privacy (SP)

According to [5], privacy is " the right of an individual to control the information held about them by third parties", while security is described as "the subjective probability with which the consumers are convinced that their personal information will remain private and secure during its transit and storage by parties in a manner that is aligned with the expectations" [35]. privacy fears are one of the utmost significant aspects restraining the evolution of M-commerce [1, 13]. Korzaan and Boswel, [36] found a strong association between privacy and security and the intention to adopt M-commerce. Literature argued that safety features are the main vital threats that were tackled throughout M-commerce acceptance.

Most of the previous studies have aimed to better understand the perceived needs of consumers

online security [37]. Esmaeili and Eydgahi [9] stated that security and privacy threats are one of the central fears of today's online customers. Consumers are concerned about online payment security, reliability, and privacy policy of the online store. Some of these concerns include addressing digital customers' protection of data and confidentiality, which could impede M-commerce development if not properly addressed [15]. M-commerce customers are worried about issues of security and privacy such as the likely leak of secured data to unauthorized parties [38]. Consequently, perceived risk and safety concerns affect the confidence and purpose of M-commerce adoption. Users may not use the facilities provided by M-commerce without adequate security and privacy protection [4]. Privacy and security are tested as a single variable in many studies to determine the intention to use M-commerce [39]. Hence, it is necessary to involve this construct into the model and the following hypothesis is proposed:

H4: "There is a significantly positive relationship between privacy/security and the consumer's intention to use M-commerce".

3.4 Social influence (SI)

Many students choose to use certain IT technology upon recommendations from their friends or teachers, who are users of the systems. Diverse studies have shown that social factor is influential in determining users' acceptance and usage of IT [4, 17, 25]. Social factors are considered as external variables of TAM. Verkijika [40] was interested in social factors which had a significant predictor of the behavioral intention to adopt M-commerce applications. Min and Qu [41] found that social influence had a strong relationship with behavioral intention to adopt new information systems.

Subjective norm is the most important and relevant social factor as defined by most literature which refers to "the degree to which an individual perceives that important others believe he or she should use the new system" [42]. A research study conducted by a group of researchers in Norway advocates that, due to regulatory pressure from subordinates and family, subjective norms are the main determinants of M-commerce adoption [28]. The effect of subjective norm on technology acceptance had conflicting results. [36] stated that there is no relationship between social norms and

information technology adoption, while [42] mentioned that subjective norm had a strong effect on behavioral intention to use information technology. According to [30], Subjective norm is regarded as an important factor that shows direct determinants of behavioral intention. Similarly, [43] also indicated that subjective norms are critical factors influence mobile shoppers' behavioral intention. Safeena et al., [44] also proved that the willingness to accept M-commerce facilities was completely influenced by social factors such as subjective norms. Therefore, It can be hypothesized that:

H5: "There is a significantly positive relationship between social influence and the consumer's intention to use M-commerce".

3.5 Trust (TR)

In M-commerce, trust has been proposed as a key determinant variable influencing the adoption of these new information systems and technology. Trust is explained by [12] as "the consumers' perceptions of truthfulness and believability of M-commerce messages that may lead to M-commerce acceptance and adoption". According to [1], trust is concerned with whether the consumer trusts M-commerce products and aims basically to determine whether or not the consumer is going to engage in a potential M-commerce transaction in the near future. Trust is a central concept that is influencing shopper attitude and it controls the acceptance of M-commerce [35]. Sadi and Noordin, [4] mentioned that as users' trust in electronic commerce rises, their plans to buy online products in future growth. In parallel to this result, [28] concluded that trust is an influencing factor for the adoption of M-commerce.

Trust is essential as it supports customers to overcome perceptions of doubt and risk, and supports establish suitable expectations of performance and other benefits [4]. Trust is important during situations that are perceived to be risky, and M-commerce exposes consumers to new vulnerabilities and risks [16]. The literature proposes that the absence of confidence is one of the main reasons why consumers cannot purchase online and carry out electronic transactions. Therefore, it can be hypothesized that:

H6: "There is a significantly positive relationship between trust and the consumer's intention to use M-commerce".

4. RESEARCH METHODOLOGY

A survey instrument is developed for testing the hypothesis developed based on the TAM items adopted from previous researches. The first part of the survey focuses on the background information of respondents namely: gender, age, and level of education. The respondents are asked in the second part of the questionnaire to indicate how much they agree on the criteria items on a scale of '1' (strongly agree) to '5' (strongly disagree). It is significant to state that the instruments of this study do not contain any common method biases since the survey instruments are adapted from previous studies and modified to suit the context of the present study.

Respondents are university students. M-commerce and apps such as location services, mobile games, mobile payment, mobile learning, and mobile shopping are popular among college students who are the main user group of m-commerce. Pilot testing was done prior to the actual survey to ensure item reliability and validity. Cronbach's Alpha is used to test the reliability of the questionnaire, it showed very strong reliability at 0.812. A convenience non-probability sampling method is used. The study sample is drawn from that part of the population which is close to hand. A total of 500 students participated in the study, with 430 valid questionnaires, a high response rate of 86% is achieved.

5. DATA ANALYSIS AND RESEARCH RESULTS

5.1 Demographics and Confirmatory factor analysis (CFA)

Data analysis is conducted using structural equation modeling (SEM). Usually, SEM is performed in a two-step approach, i.e. measurement model and structural model. Exploratory factor analysis (EFA) is conducted first, to refine the measurement model. Confirmatory factor analysis (CFA) is then used to test the structural model. In depicting the sample respondents' characteristics, descriptive statistics of frequencies and percentages are calculated. Male represents the majority (62.4%) of respondents while the female represents 35.5 percent. Most of the respondents (52.8 %) are in the age group of less than 20. The majority of the respondents (80.6%) are highly educated with a bachelor's degree; followed by a master's degree (9.5%) and then a Diploma degree with 7.7 %.

Detailed demographic statistics are presented in Table 1.

Table 1: Demographic Statistics of the Respondents

Measure	Item	Frequency	Percentage (%)
Gender	Male	274	62.4%
	Female	156	35.5%
Age	<20	232	52.8%
	20-24	139	31.6%
	>25	59	13.4%
Education Level	Diploma	34	7.7%
	Bachelor	354	80.6%
	Master	42	9.5%

Although the instruments are adopted from previous studies it is deemed necessary to check their consistency. The questionnaire reliability resolved through Cronbach's alpha by measuring the internal consistency of the scale adopted in the Instrument. if Cronbach Alpha value is more than 0.7, it is assumed to be a reliable measurement [45]. The reliability statistics of the constructs range between 0.789 and 0.922 which is above the minimum requirement. The reliability result is as follow: PU (0.922), PEOU (0.862), SP (0.920), PI (0.789), SI (0.812), and TR (0.914). Seeing that the measures are highly reliable, there was no need to change and refine the questionnaire for increasing the alpha coefficients.

Confirmatory Factor Analysis (CFA) test the validity of the measurement model through the goodness of fit (GOF) indices and composite reliability and validity. results of initial CFA model fit indices found to be in acceptable limits with Normed Chi-square ($\chi2/df$) value of 2.02, the Chi-square ($\chi2$) value of 652.73, the degree of freedom (DF) value of 322, root mean square error of approximation (RMSEA) value of 0.053 which is less than the cut-off point of 0.08, Normated fit index (NFI) value of 0.911, comparative fit index (CFI) value of 0.934, Tucker-Lewis index (TLI) value of 0.929, and adjusted GOF index (AGFI) value of 804. In addition to these GOF measures, the values of standard regression weights (factor loading) for all items found between 0.68 and 0.91, indicating that the loadings fulfill the requirement of above 0.50 [46]

After CFA, construct validity is to be tested using discriminant and convergent validity. Convergent validity assesses the extent to which two measures of the same concept are correlated. According to [47], all of the items in factor analysis should load highly on their own latent variables to show good convergent validity. Based on the recommendation of [47], best results of convergent validity can be obtained if standardized loading estimates are 0.7 or higher, estimation of AVE is greater than 0.5 and estimation of reliability is above 0.7. Following the above-mentioned recommendation, this research study assumed the minimum cut off criteria for factor loadings, AVE and composite reliability as 0.7 > 0.5 > 0.7 respectively, in assessing the convergent validity. Discriminant validity is the degree of destination between two conceptually similar concepts [48]. To assess the discriminant validity, this research compared AVE for each construct with the corresponding squared inter-construct correlation (SIC). If AVE estimations are found to be consistently larger than SIC estimation, it indicated support for the discriminant validity of the construct. The results show that convergent validity and discriminant validity criteria are satisfactorily met (See Table 2).

Table 2: Reliability and Validity Test

	CR	AVE	MSV	ASV	1	2	3	4	5	6
PEOU	0.879	0.582	0.256	0.211	0.772					
PU	0.913	0.602	0.323	0.137	0.503	0.779				
SI	0.812	0.551	0.278	0.145	0.521	0.483	0.744			
PI	0.905	0.637	0.298	0.166	0.432	0.336	0.234	0.734		
SP	0.882	0.542	0.388	0.136	0.382	0.434	0.356	0.467	0.748	
TR	0.897	0.661	0.380	0.123	0.439	0.398	0.372	0.423	0.642	0.724

Notes: "Composite Reliability (CR) is higher than 0.7", "Average Variance Extracted (AVE) is higher than 0.5", "Convergent Validity: CR > AVE", "Discriminant Validity: AVE > MSV > ASV".

5.2 Structural Model and Hypotheses Testing

The next step of the analysis is to test the causal hypotheses presented in the proposed research model and the strengths of the relationships among the constructs with the help of a structural model. The results showed that all the fit indices of the model are above the threshold, resulting in a good model fit. However, the normed Chi-square ($\chi2/df$ =1.838) is in the range between 1 and 3 [45], RMSEA (0.058) is less than the cutoff point 0.08, IFI value is 0.932, CFI value is 0.932, TLI value is 0.933, all of which are above the cut-off value of 0.09 [45].

Another important part of the structural model assessment is coefficient parameter estimates. Research hypotheses were tested by analyzing the path significance of each relationship and parameter estimates were used to produce the estimated population covariance matrix for the structural model. To examine the hypotheses of the study, critical ratios, standardized estimates and p-value were used. It was assumed that a relationship is statistically significant at the 0.05 levels when the critical ratio (CR) found higher than ± 1.96 [45]. All the casual paths in the model were examined based on the path estimates and CR (t-value). Based on the structural model, the results of hypotheses testing are shown in Table 3. Results demonstrated that t-values for all causal paths estimate found above the 1.96 (critical value) and significant at p ≤ .05.

The results of hypotheses testing reveal that H1 which states that "There is a significantly positive relationship between PI and the consumer's intention to use M-commerce" is supported based on β = 0.434; SE = 0.082; CR = 3.291; p < 0.001. Similarly, hypotheses H2, H3, H4, H5, and H6 are all supported based on the final results presented in Table 3.

Table 3: The estimate of the Hypothesized Model

	Stand. Regression Weights (β)	SE	C.R.	P	
H1	0.434	0.082	3.291	***	YES
H2	0.167	0.048	1.920	0.223	YES
H3	0.435	0.199	3.410	***	YES
H4	0.478	0.131	4.981	***	YES
H5	0.278	0.195	2.243	0.017	YES
H6	0.179	0.009	3.114	0.001	YES

Notes**:** "Std. Reg. Weight = Standardized regression weight"
SE = "Standard error of regression weight"
CR = "Critical ratio of regression weight"
p =" Level of significance of regression weight" (*** p < 0.001)

6. DISCUSSION

TAM was adapted in the research to examine the key variables of M-commerce adoption in Palestine. In addition to PEOU, PU, and behavioral intention abducted from TAM added elements like trust, security, and privacy, and PI were new to the framework to strengthen model predictive power. It is very important to note that the findings of this study validate previous studies employing TAM theory in the context of M-commerce use. Further, the findings reveal that the factors influencing M-commerce use among smartphone users in Palestine are PU, privacy and security, trust, PEOU, subjective norms, and personnel innovativeness. It is also revealed that privacy and security is the strongest determinant of behavioral intention to use M-commerce among students in Palestine.

The results exposed that PU has a positive connection in examining the attitude to accept M-commerce. The findings are consistent with researches [5, 12, 23, 24]. This indicates that if M-commerce is convenient and helpful, students possibly are more willing to accept it. The

implication of this finding is that marketers need to emphasize more on the usefulness of M-commerce to make it more successful. The ability to use M-shopping for customers from anywhere and at any time is an additional benefit to the system's usefulness, contributing to customers willing to adopt it. Likewise, the relationship between PEOU and M-commerce has been found to be positive. It correlates to previous studies including [5, 12, 25, 28]. When a platform is not complex and easy to use, consumers' behavioral intentions toward M-commerce acceptance are higher; when a consumer, for example, can easily use their mobile devices to search and shop with only one figure, without complicated process, they are more likely to continue to use M-commerce channels. Nevertheless, some researchers revealed different findings, for instance, perceived ease of use does not influence behavioral intention directly, and PEOU only has an indirect effect through perceived usefulness [8], [49]. However, compared to PU (β = 0.434), the effect of PEOU (β = 0.435) is found to be stronger on behavioral intention.

Personnel innovativeness was hypothesized to have a direct positive effect on M-commerce adoption. The results of parameter estimates (β = 0.434, t-value = 3.291) for hypothesis H1 (PE $\rightarrow$ BI) found to be statistically significant at p = 0.001 level and indicated that the innovativeness of the consumer is a strong predictor to adopt M-commerce. These results are in accordance with the findings of other research studies [2, 23-25]. This simply means that consumers who have innovative characteristics and look for ways to experiment with and try new technologies will be more likely to accept M-commerce. [28] found that personnel innovativeness impact M-commerce adoption amongst shoppers. Customers with high personnel innovativeness attributes are more likely to use M-commerce as a different way of buying.

Statistical findings revealed that the values of the critical ratio (4.981) and standardized regression weight (0.478) for the path between security and privacy and behavioral intention demonstrate its statistical significance at the p = 0.001. Although some prior researches didn't find a positive relationship between security risk and M-commerce adoption [50], [51], the results of this research concluded that security risks are the main predictor of M-commerce adoption. Considerably, this result correlates with other studies such as [8, 24, 35, 44], in which perceived security threats are a key variable to consider when developing M-commerce technology. If there are no appropriate safety and security measures, consumers may not accept the facilities given by M-commerce. To some extent, M-commerce carries higher security risk than e-commerce, this is because M-commerce verification tremendously depends on SIM and recorded user's particulars, a lost phone device rises the threat of abuse and fraudulent activities carried on the device without the owner's notice, especially if the owner failed to report the theft directly. [28] stated that perceived risk and safety problems affect the intention of M-commerce and their plans for M-shopping.

Moreover, subjective norms were hypothesized to have a direct positive effect on M-commerce behavioral intention to use. The results of parameter estimates (β = 0.006, t-value = 0.094) for hypothesis H10a (SN $\rightarrow$ PU) found to be statistically significant at p = 0.001 level and indicated that social influences (subjective norms) are a strong predictor to accept and adopt M-commerce among students in Palestinian higher educational institutions. These results further demonstrated that consumers get socially motivated to accept M-commerce when they see their friends or people around them use these applications and thus recommend them to use it. Although some previous studies didn't find empirical evidence of the direct impact of subjective norms over M-commerce adoption in a similar domain [12, 28]. As the results of a structural model in this study have shown, there exists a significant relationship that is consistent with the finding of [4, 17, 30, 32, 40]. Moreover, [44] mentioned that social influence has a positive influence on the acceptance of M-commerce as the user believes that using this new technology improves his performance and image in society.

Besides, the usefulness of M-commerce, the ease of use, privacy, subjective norms, and innovativeness. The results indicate that trust has an effect on shoppers' attitudes to adopt M-commerce; it helps to generate positive perceptions of M-commerce and increases their belief in M-commerce. This means that building trust between consumers and service providers must be in consideration for the service suppliers thus maximizing the system's usefulness. Results revealed that the regression coefficient of H6 "There is a significantly positive relationship between trust and the consumer's intention to use M-commerce" is 0.179, and the significance level is 0.001 (p < 0.05). Therefore, perceived trust is positively related to user acceptance of M-

commerce. This result is consistent with other studies such as [1, 5, 16]. All over, perceived privacy and security are found to be the strongest influencing factors, M-commerce providers may focus more on protecting consumers' financial information such as their credit card details to enhance m-commerce use in Palestine. In order to create a positive intention in the consumers, privacy and security are some of the pre-requisite dimensions that M-commerce providers should emphasize. Without proper privacy and security protection, consumers will be skeptical of using M-commerce technology. The findings from this study are essential for practitioners who intend to venture into M-commerce in Palestine. The paper also adds to the body of literature on behavioral intention to use M-commerce and on actual use of M-commerce among Palestinian smartphone users.

7. CONCLUSION

In conclusion, the objective of this article is to examine the critical success factors of M-commerce adoption in higher learning institutions in Palestine. The results of this research exposed that PU, PEOU, security and privacy, personnel innovativeness, perceived trust, and social influence are the main variables influencing mobile users' attitudes to adopt M-commerce in Palestine.

Although the research results suggest implications for M-commerce providers, retailers, and brands, this research can be further enhanced through overcoming numerous limitations. The model did not include M-commerce behaviors, and further studies should, therefore, explore casual linkages between behavioral intention and actual use. The data were collected only from smartphone users in some universities which may not be generalized to all smartphone users. Further study should also adopt a longitudinal approach to provide a more complete perspective and full understanding of consumers' intention to use m-commerce. Some other factors which may affect M-commerce use but are not included in this study such as Self-Efficacy, perceived financial risk, mobile device performance, and perceived cost may be considered in the future. Future studies will hopefully paint a more complete picture of why and when consumers are willing to purchase from their smartphone. Despite these limitations, this research improves understanding of M-commerce and monitors the establishment of upcoming M-commerce services.

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