

THE ROLE OF TRUST AND SATISFACTION AS MEDIATORS ON USERS' CONTINUOUS INTENTION TO USE MOBILE PAYMENTS: EMPIRICAL STUDY

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ABSTRACT

During the period of Corona pandemic, many customers faced some difficulties due to the repeated closures of banks and government institutions, which necessitated them to search for other alternatives like mobile payments to pay their due bills. Consequently, more research is needed to study what factors are important to continue using of such technology. In response, this study used a sample of 880 respondents, then proposed a theoretical model and tested it empirically. Results highlighted the role of trust and satisfaction as mediators which significantly impacted users' continuous intention to use mobile payments technology.

Keywords: *Continuous Intention, Mobile Payment, Exception Confirmation Theory, Technology Acceptance Model, Satisfaction, Trust, Confirmation.*

1. INTRODUCTION

Information technology (IT) has changed the way of our life, as most operations have been changed by technology, such as education, commerce, or payments. In recent years, the demand for information and communication technology (ICT) has increased tremendously, and it is expected that growth will continue to increase in the coming future. The mobile phone Internet has developed quickly and globally, hence smartphone payments enable users to use phone stations to make payments anytime and anywhere. These services make the smart device a commercial tool that can replace physical banks, credit cards, and ATMs by allowing users to make financial transactions with money through a mobile phone [66].

Mobile payments are on the verge of taking a giant leap toward a cashless society; it is considered a new technology for researchers, innovators, company executives, and households across the globe. Mobile payments as a new technology have led to the emergence of cashless customers and created a new phase in life especially for people who consider the mobile phone is a device that is used for communication. According to Mallat [55] online payment systems along with mobile devices and their related digital services are important to change the face of customers from traditional ones into digital ones

who can get a lot of financial benefits especially in light of the coronavirus pandemic where there are many difficulties faced by bank customers due the repeated closures for different periods which forced customers to search for new alternatives to pay their due bills.

In the domain of technology acceptance, scholars have used many theorems to check users' acceptance of adopting new technologies. For example, Technology Acceptance Model (TAM) and Expectation Confirmation Model (ECM) are used to check users' intention to accept new technology or not. The TAM model used two main constructs: ease of use and usefulness, while The ECM focuses on expectation, satisfaction, and confirmation in determining users' continuous intention to use a particular technology. Cao et al., [14] illustrated that ECM can be used as a useful tool to evaluate users' behavior towards the adoption of mobile payments technology.

In order to focus more in this phenomenon, this study adds two important factors: perceived security and privacy and trust to evaluate the user's continuous intention to use mobile payment in Jordan. This article is presented as the following: Section 2 presents the literature review of the domain. Section 3 shows the research model and hypotheses development. Section 4 presents the research methodology. Section 5 shows the results and findings of the

study along with the required discussion followed by research implications in section 6. Section 7 illustrates conclusions, limitations, and future work followed by references.

2. RELATED WORK

Shree et al. [72] conducted a research and proposed a model to examine users' intent to use mobile banking services. Their results pointed that comfort, trust; benefits, deliberation, and safety have significantly impacted users' intention to use mobile banking financial transactions. Tamilselvi and balaji [79] proposed a model for mobile banking and tested it empirically. Their Results revealed that expected performance; expected effort, habit and confidence are considered as important factors the positively impacted users' intention to use mobile banking transactions. Al-Dwairi et al. [5] conducted an empirical research to discover the main drivers that affect users' intention to adopt mobile commerce. The results of their research highlighted the important role of perceived ease of use, perceived usefulness and service quality in adopting mobile commerce. Shankar and Datta [71] suggested a model to study users' intention to use mobile payments. Results of the study showed that perceived ease of use, perceived usefulness, confidence, self-efficacy, awareness, and perceived benefits were positively affected users' intention to use mobile payment. Many researchers considered trust as one of the main factors that influence users' continuous intention to use mobile banking transactions [80] [63] and social commerce [3] [20]. Dinh et al. [26] directed research to determine the main drivers of mobile payment and pointed that the main drivers of mobile payment services include perceived benefit, convenience, promotions, and social approval.

Heavy researches have been done using TAM. For example, [45], [77] explained that users' satisfaction of using a particular technology is important to improve user's behavior towards continuous use of the same technology. In addition, the same researchers pointed that is behavior is built on users' usefulness of utilizing such technology. Morris et al., [59] expanded the TAM to study risk and trust issues of the web.

In addition, TAM has been successfully applied to study users' privacy and mobile phone trust issues [16] and involvement in social platforms [86]. In addition, [47] found that the two major factors of TAM mediate the

relationship between perceived compatibility and users' intention to use the mobile online transactions. In addition, Yan and Yang [88] indicated that perceived ease of use, perceived benefit, assurance of structure, and ubiquitous access were significantly impacted user trust. This further affects users' intention to use.

According to Rai and Selnes [65] task technology fit (TTF) affects the two TAM main factors of new digital learning technology and mediates the relationship between them. In addition, the findings of [7] showed that the two main factors of TAM, perceived risk, culture, confirmation, and satisfaction were significantly affected users' continuous intention to use mobile payments.

Users' satisfaction is an important factors and it is considered as a prerequisite factor for user's continuous intention to use a particular system. The later factor can be achieved after the usage of a particular technology and users were satisfied. Consequently, this situation will be a confirmation from users that this technology is useful. As a result of that we can say that usefulness and confirmation might be considered as prerequisites of users' satisfaction which in turn affect users' continuous intention to use such technology [61]. Furthermore, Lim et al. [50] argued that knowledge and perceived security have a significant impact on users' confirmation and usefulness which finally affected users' continuous intention of using mobile services. Chen and Li [19] and Park et al. [63] showed that usefulness has a direct and positive impact on users' continuous intention and satisfaction has a positive effect on users' trust of mobile payments. Also, they pointed that the later factor is important to formulate a positive or negative users' attitude with regard to mobile services. Gupta et al. [31] explained that users' after adoption behavior is important for continuous intention to use the technology. They pointed that benefits, safety, post-satisfaction and self-improvements in turns of using technology are important for users' returning back.

Zhou [92] conducted a study to identify the main constructs that affect users' continuance intention of using mobile payment. Their results showed that service quality and system quality have a strong impact on that behavior. Bhattacharjee [12] proposed a framework based on expectation confirmation model to focus more on users' intention to reuse a particular information system. Their results showed that contentment and usefulness are important for

users' intention to reuse the same technology. According to Ifinedo [39], contentment shows a vital role in explaining users' reuse behavior because they were happy to use that system. The research of [73] showed that usability affected satisfactions which in turn both of the factors have a significant effect on the usage of mobile payments technology. Talwar et al. [78] highlighted the important role of the quality of information and service in constructing users' initial trust. In addition, the results of their study showed that benefits have a direct and positive impact on users' intention to use mobile payments. Susanto et al. [74] explained how users' confirmation leads to increase users' initial trust while confirmation significantly influences user satisfaction and perceived security

3. RESEARCH MODEL AND HYPOTHESES DEVELOPMENT

The functions of mobile devices help to provide information flow, establish effective communication, and make better use of time. In marketing, mobile devices enable effective communication with the targeted customer group with the lowest cost, sending sales offers, and creating a purchase request [10]. For this, the

availability of this technology for 24 hours per day and 7 days per week makes mobile technology a vital tool for businesses and consumers. Consequently, individuals can access information wherever and whenever they want, benefit from banking services, and easily perform transactions such as bill payments. At the same time, Mobile Payment provides users with a more personalized experience [60]. TAM [21] [22] [82] [83] is a famous model with its two main factors (PEOU and PU) can be used for to guess or probably evaluate user's acceptance of using a particular software.

Built on this theoretical background, this study aims to investigate the continuous intention to use mobile payment in Jordan, an extension of the ECM, another variables such as trust, satisfaction, perceived security and privacy. So that, previous studies were reviewed; most of the studies confirmed the relationship between these variables, such as [6] [7] [31]. Based on this we can argue that the theories of TAM and ECM focus on users' motivations for accepting new technology. The ECM focuses on expectation, satisfaction, and confirmation in determining continued usage intention. Based on these facts, Figure (1) illustrates the proposed model for our study.

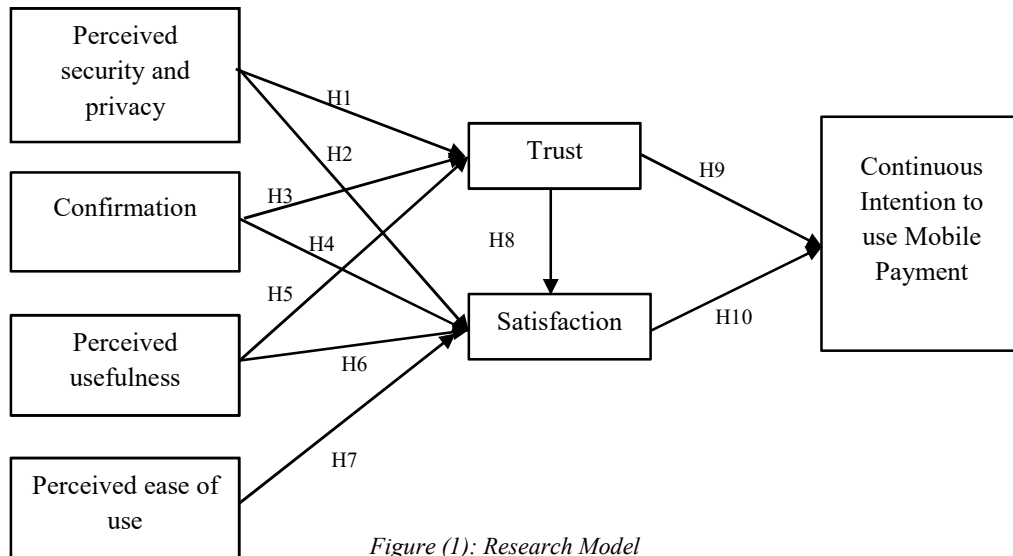


Figure (1): Research Model

Consumers conducting transactions on Internet banking must feel secure with respect to their personal information, credit card details, and so on. Consequently, security can be considered as one of the main requirements for trust [2] [4]. Privacy issues are important for users who are using the Internet and are required

to mention their sensitive data to complete their online transactions. As a result of this, privacy also has an important role in establishing users' trust [28] [81] [88] [76]. Furthermore, security and privacy are suggested to have a direct impact on user's trust [85] [84]. Accordingly, the following two hypotheses are proposed:

H1: Perceived security and privacy has a significant positive effect on Trust.

H2: Perceived security and privacy has a significant positive effect on Satisfaction.

Confirmation is a factor that can be generated or even extracted from the benefits those users' gains from doing their previous transactions. According to the ECM, confirmation is a critical precedent for trust [88] [74] [11] [12]. Hence, users' will be more confident when the value of this behavior is high. In addition, users' will be not happy when the value of the same factor is low [12] [27] [51]. Sun et al. [73] suggested that customer satisfaction is identified as a mediator in the context of mobile payment. Susanto et al. [74] suggested that confirmation is significantly impacted trust and satisfaction while trust is significantly affects satisfaction and users' continuance intention. Based on these facts, we can suggest:

H3: Confirmation has a significant positive effect on Trust.

Susanto et al. [74] and Ouyang et al., [61] argued that there is a direct relationship between confirmation and satisfaction. The assurance-expectancy theory indicates that satisfaction can be achieved from uncertainty and customers' expectations. This theory suggests that "discernment" has an impact on satisfaction because customer's expectations could be confirmed when his/her actual performance meets the expected behavior [19]. The same idea was presented by [41] and [37]. Hence, it can be indicated that there may be a crucial influence on confirming customers' expectations when examining their level of satisfaction with mobile payment. Thus, we can suggest the following hypothesis:

H4: Confirmation has a significant effect on Satisfaction.

As mentioned by [74] perceived usefulness is significantly impacted by trust. Deb and David [24] also indicated that Perceived Usefulness has a positive effect on trust. Furthermore, Yadav et al. [87] found that PU positively affects trust. Hence, we can suggest the following hypothesis:

H5: PU has an important impact on trust

Satisfaction is one of the variables related to perceived usefulness. Results of [64] showed that PU has a positive and significant effect on satisfaction. In the context of mobile payments in Jordan and considering the results of the research of [44] and [53] that suggest a

relationship between benefits and satisfaction, we can suggest the following:

H6: PU has an important impact on Satisfaction.

Generally users avoid using difficult systems especially if the same output is achieved from using a simple one and the result will definitely affect their satisfaction. This idea was explored by the research that was conducted by Natarajan et al. [60] pointed that PEOU has a positive impact on satisfaction. Some other studies showed the same result like [70] [30] [17] [52]. Hence, we can propose the following:

H7: PEOU has an important impact on Satisfaction.

A lot of research was done to study the concept of trust in the e-commerce context. The majority of researchers are agreed that trust is a complex behavior and it may be shaped from users' previous experiences and in turn affects users' intention. Examples: [56] [57] [34] [18] [93] [94] [29] [69] [58]. In addition, many studies showed a relationship between trust and satisfaction like: [45] [46] [68] [91] [42] [35]. Based on this we can propose the following:

H8: Trust has a significant positive effect on users' Satisfaction.

H9: Trust has a significant positive effect on users' Mobile Payment Continuous Intention.

Satisfaction was studied in the domain of information systems [12] [75] [13] [81] and in e-commerce applications like online shopping, Internet banking, mobile commerce, and social commerce. Furthermore, satisfaction is considered as an important factor for users' acceptance and continuous usage of a particular system [15] [12] [25]. The post acceptance model considers satisfaction as a base factor for continuous intention to use a system. In addition, customers' satisfaction plays a significant role in establishing a good loyalty for them with a given party [64]

Bhattacharjee [12] and Liao et al. [48] pointed that users' satisfaction is considered as an important factor that impacted their post-adoption behavior which in turn affects their continuous intention to use the same technology. Based on this, we propose the following:

H10: Satisfaction has a positive effect on Mobile Payment Continuous Intention.

4. RESEARCH METHODOLOGY

This study is a quantitative one that used a questionnaire which was designed based on the items of the study to collect the required

data from a sample of respondents who are really used mobile payments. The measures or indicators were adapted from previous studies as well as self-developed by the authors. The questionnaire consists of two sections. Section A: contains some questions to collect some demographic data about the respondents. The second section, Section B: consists of some questions that ask respondents to answer questions based on the items of this study according to the research model and based on using five-point Likert scales as recommended by Revilla et al. [67]. The sample size of this study consists of 880 records which meets the recommendations of Hair et al. [33] [32], Hulland [38], and Kline[43], who mentioned that using of the structural equation modeling requires a sample size not less than 100; and 200 sample size is proper for testing the research model. In the current study, the population consisted of Jordanian citizens. The study sample consisted of Jordanian Yarmouk University students, employees, and the private and public sectors. A questionnaire survey was used to collect the required data. Hence, soft copy is prepared. The link of the used questionnaire is sent to big number of Jordanian groups and to some online communities with some guidance information about the motive of the study and its importance is mentioned. The questionnaire was prepared in Arabic and English to provide a better understanding. In addition, the respondents were given proper period of time to answer the questions of the questionnaire.

5. DATA ANALYSIS AND RESEARCH RESULTS

This study employed a quantitative approach. The methodology was divided into descriptive and analytical sections. The descriptive section is concerned with the sample characteristics and the importance of each statement in the questionnaire, whereas the analytical section includes the relationship between the variables and hypotheses testing, which requires statistical analysis. SPSS was used to analyze the mean and standard deviation of each statement of the independent variables. Table 1 shows the respondent's profile.

Table-1: Respondent's profile

Variable	Item	Frequency	Percent
Gender	Male	415	47%
	Female	465	53%
Working sector	Has a Job in the private sector	520	59.1%
	Has a Job in Public sector	227	25.8%
	Not working	133	15.1%
Educational level	Diploma or less	275	32%
	Bachelor	460	52%
	Master or above	145	16%
	Total	880	100%

5.1 Reliability test

Cronbach's alpha is a commonly used test for internal reliability. Reliability can be defined as is the degree to which the items of the study are free from errors and hence reliable results can be obtained. In this study, the values of Cronbach's alpha ranged from 0.844 to 0.925 for all items. All the given values are greater than 0.60, indicating internal consistency between the questionnaire items [62].

Convergent validity is defined as "a set of indicators that are supposed to measure a construct [43]. There are three criteria for examining convergent validity. First, the factor loading (FL) of the items must be greater than 0.60 [8] [32]. In addition, Cronbach's alpha (CA) and composite reliability (CR) are greater than 0.70. The average variance extracted (AVE), should be higher than 0.5 to show a high convergent validity of the constructs of the study [38]. Table 2 shows the reliability test of the construct of the study.

Table-2: Reliability Test

Factor	Cronbach Alpha	Composite Reliability	AVE
Confirmation	0.850	0.899	0.691
Mobile Payment Continuous Intention	0.925	0.947	0.816
Perceived Ease of Use	0.924	0.946	0.814
Perceived Security and Privacy	0.866	0.908	0.713
Perceived Usefulness	0.849	0.892	0.625
Satisfaction	0.877	0.924	0.803
Trust	0.844	0.895	0.681

In order to ensure that the questionnaire and its items that represent the variables of the study and the results of the responses of the sample were appropriate for the statistical analysis; construct validity and collinearity tests were carried out. These tests are important to determine whether the measure actually represents the true nature of the study interest.

5.2 Construct validity and collinearity tests

These types of tests are important since researchers will be able to check the validity of the items of their studies as well as the degree of collinearity. Howard [36] define validity as how well the method of the study using some constructs measure a desired concept. In this study, factor analysis was used to determine factor loadings of items that represent five dimensions of privacy, confirmation, perceived security and privacy, perceived usefulness, and perceived ease of use. Collinearity is a test that is used to check whether two constructs are independent (different/correlated) or not. To ensure that there was no collinearity problem in the relationship between the independent variables; the variance inflation factor (VIF) was calculated. According to Kaiser (1981), the value of VIF= (1/Tolerance) must be less than 10. Statistical data listed in table 3 reveals that the two measures are achieved in this study.

Table-3: Collinearity Test

Variables	Tolerance	VIF
Confirmation	0.535	1.868
Perceived security and privacy	0.633	1.580
Perceived usefulness	0.454	2.201
Perceived ease of use	0.554	1.805
Trust	0.382	2.618
Satisfaction	0.382	2.618

5.3 Hypotheses testing and discussion

After testing the reliability of the study as shown in the previous sub-section, the next step will be to check the relationship that exists between the dependent and independent variables of the research model as shown in the hypotheses of the study [54]. Figure-2 shows path testing of the proposed model.

The values of the correlation coefficient (R), and the determination coefficient (R²) at the level of $\alpha = 0.05$ that are represented in table-4 indicated that there is a positive relationship between (perceived security and privacy) and mobile payment continuous intention, trust, and satisfaction). The value of the direct impact coefficient of perceived security and privacy on trust was 0.417, which indicates that perceived security and privacy affect trust. The value of the direct impact coefficient of perceived security and privacy on satisfaction was 0.129, which indicates that perceived security and privacy affect satisfaction.

The value of the direct impact coefficient of Trust on the Mobile Payment Continuous Intention was 0.266, which indicates that trust affects the mobile payment continuous intention. The value of the indirect impact coefficient of Satisfaction on the Mobile Payment Continuous Intention was 0.594, which indicates that satisfaction affects the mobile payment continuous intention. Based on the given results, all hypotheses are supported. Table -4 summarizes the results of the study.

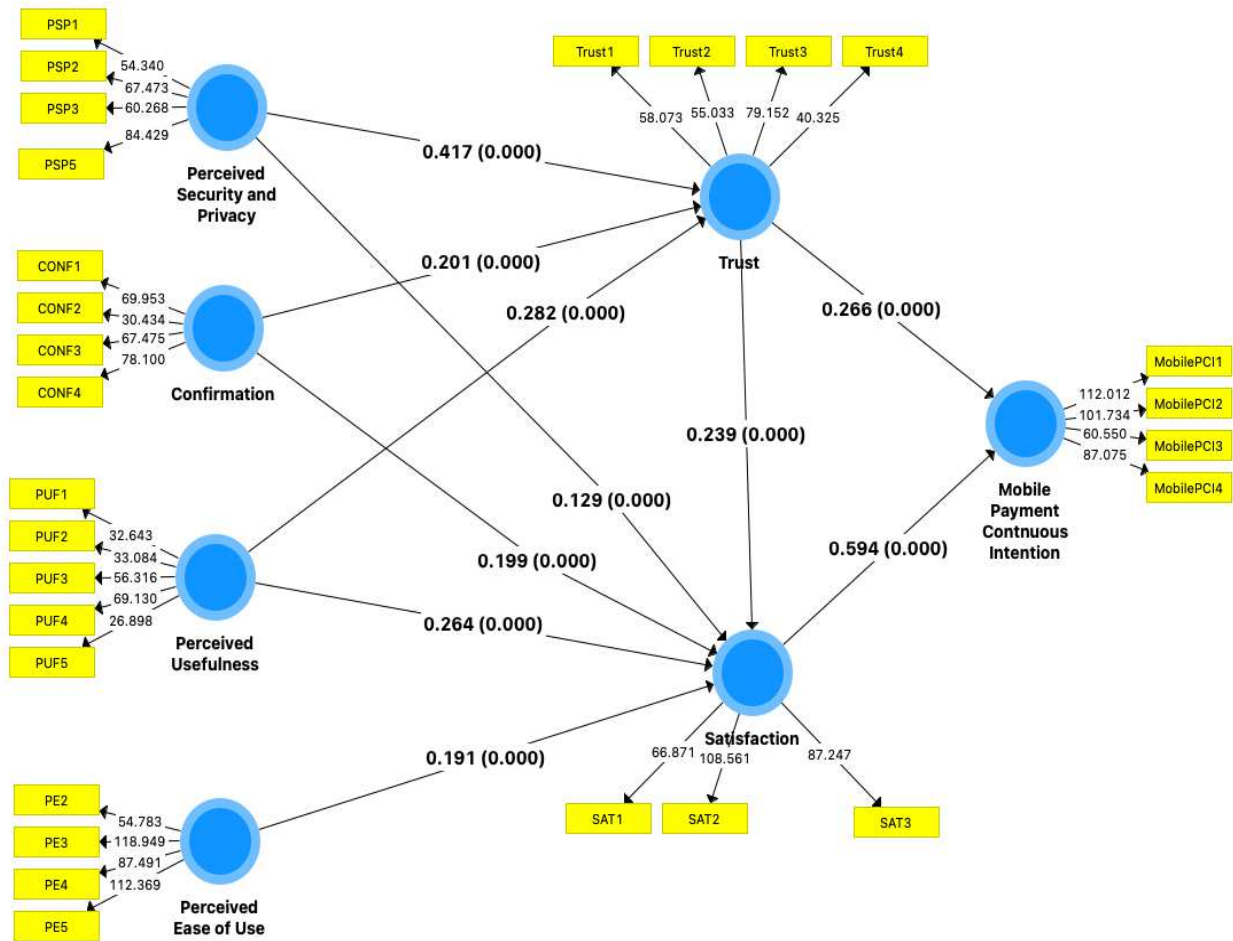


Figure (2): The bootstrapping technique and the t values

The value of the direct impact coefficient of confirmation on trust was 0.201, which indicates that confirmation affects trust which is a function at the level of $\alpha=0.05$). The value of the direct impact coefficient of confirmation on satisfaction was 0.199, which indicates that confirmation affects satisfaction. The value of the direct impact coefficient of perceived usefulness on trust was 0.282, which indicates that perceived usefulness affects trust. The value of the direct impact coefficient of perceived usefulness on satisfaction was 0.264, which indicates that perceived usefulness affects satisfaction. The value of the direct impact coefficient of perceived ease of use on satisfaction was 0.239, which indicates that trust affects satisfaction. The value of the direct impact coefficient of perceived ease of use on satisfaction was 0.191, which indicates that perceived ease of use affects satisfaction. This study aimed to investigate the continuous intention of users to use mobile

payments. Specifically, the study aimed to test the effect of perceived usefulness, perceived security and privacy, and confirmation of trust in mobile payment continuous intention. The study also aimed to examine the mediating effect of satisfaction and trust on the relationship between the independent and dependent variables.

The results showed that perceived security and privacy, confirmation, and perceived usefulness have a significant positive effect on trust (Hypotheses 1, 3, and 5). This result is consistent with the findings of [88] [74] [12] [24] [87].

Results of the study also showed that perceived security and privacy, confirmation, perceived usefulness, perceived ease of use, and trust have a significant positive effect on satisfaction (Hypotheses 2,4,6,7 and 8). This result is in line with the results of [34] [89] [90] [74] [61] [41] [1] [44] and [53] [60]. The study also found that trust and satisfaction have a

significant positive effect on mobile payment continuous intention (Hypotheses 9 and 10). This

is going ahead with the findings of [12] [9] [13] [49] [83].

Table-4: Results of hypothesis testing with direct influence

Hypothesis	Effect	Coefficient	T Value	P Value	Supported
H1	Perceived Security and Privacy -> Trust	0.417	12.866	0.000	YES
H2	Perceived Security and Privacy -> Satisfaction	0.129	4.267	0.000	YES
H3	Confirmation -> Trust	0.201	5.972	0.000	YES
H4	Confirmation -> Satisfaction	0.199	6.239	0.000	YES
H5	Perceived Usefulness -> Trust	0.282	8.853	0.000	YES
H6	Perceived Usefulness -> Satisfaction	0.264	6.911	0.000	YES
H7	Perceived Ease of Use -> Satisfaction	0.191	5.251	0.000	YES
H8	Trust -> Satisfaction	0.239	5.679	0.000	YES
H9	Trust -> Mobile Payment Continuous Intention	0.266	6.768	0.000	YES
H10	Satisfaction -> Mobile Payment Continuous Intention	0.594	16.325	0.000	YES

6. RESEARCH IMPLICATIONS

This study had several implications. The implications were divided into theoretical implications for the body of knowledge, theory and practical implications for decision-making and policymakers about electronic payments such as mobile payments. The implications of this study are discussed in the following sections.

This research adds new ideas and knowledge to the domain of mobile payments. Few studies have investigated mobile payments in developing countries and the Middle East.

As part of the study, selected variables from other theories, such as the technology acceptance model, were added to the ECM. In this context, the two theories are confirmed to be applicable. This study contributes by adding trust as a mediator to examine the continuous intention for mobile payment. At the same time, the use of mobile payment relies heavily on trust, which stems mainly from perceived security and privacy. Overall, the study fills the gaps in the literature by investigating the Continuous Intention to Use Mobile Payment using the second generation of statistical tools, Smart PLS, and overcoming the inadequacy of previous

studies regarding the sample size and the tools used in the studies of mobile payment.

7. CONCLUSIONS, LIMITATIONS AND FUTURE WORK

This study incorporates the expectation confirmation model with other selected factors, such as trust, perceived security, and privacy, which are directly related to mobile payment continuous intention. This is one of the first studies on mobile payment in Jordan that considers trust and satisfaction as mediators in the proposed model. Results of the study showed that perceived security and privacy, confirmation, perceived usefulness, and perceived ease of use have a direct impact on trust and satisfaction which in turns significantly impact users' continuous intention to use mobile payments.

This study had several limitations. The study sample consisted of three sub-samples: university students, employees in public and private sectors. Therefore, the results of this study can only be generalized to these groups of people. In addition, this study employed a quantitative approach using a questionnaire survey. A qualitative approach can be used to study relationships in greater depth. Finally, the

effect of corona pandemic on the continuous intention of users to use mobile payments needs to be further studied, as people had little option regarding online payment in times of quarantine. In view of these limitations, some

recommendations are made for future research. Future research may include a qualitative component to examine the variables in more details.

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