

The Influence of Perceived Trust on Understanding Banks' Customers behavior to Accept Internet Banking Services

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Abstract

Background/Objectives: The purpose of this paper is to examine the role of trust in internet banking services based on empirical evidence from the survey conducted with commercial banks' consumers in Irbid, the second largest city in Jordan. The paper answers the main research question: 'Do the Ease of Use and Perceived Usefulness affect consumers' trust to accept and use internet banking technology to perform their banking transactions?' **Methods/Analysis:** This is an explanatory paper based on literature reviews and empirical data to explore reasons for accepting internet banking service. The approach takes the form of an empirical study conducted with 198 bank's consumers in the north of Jordan using a basic model of the adoption of internet banking depends on Technology Acceptance Model framework (TAM). Partial Least Squares (PLS) was used to address sophisticated data analysis issues. **Findings:** The results confirm that trust increases if users perceive internet banking services to be useful whereas perceived ease of use fails to predict Jordanians' trust to accept and use internet banking services. **Novelty/Improvement:** The findings from this study are useful for policy makers, banking sectors and financial practitioners to enhance the use of internet banking services among Jordanians.

Keywords: Internet Banking Services, Jordan, Perceived Ease of Use, Perceived Trust, Perceived Usefulness

1. Introduction

Recently, the world witnessed a rapid growth in information technology (IT) innovations which led to a revolution in human life and performance of organizations. During the last decade, the Internet revolution evolved significantly and had radically changed all aspects of our lives. The banking sector has been influenced, in one way or another, by this promising new technology^{1,2}.

With these rapid changes, the banking sector has realized that Information and Communication Technology (ICT) is a major driver in business development of banks.

So, the banking sector must incorporate IT innovations in various departments in order to provide advanced and varied services, acceleration in the performance, reduction in expenditure, and efficiency in productivity^{1,3-6}. Over the last few years, Internet banking services have grown rapidly due to the benefits of these services it offers for both the banking sector and consumers. As far as the banking sector is concerned, Internet banking services have the ability to provide competitive advantages, cost efficiencies, wider geographical reach, establishing brand name, and provide customized services. For consumers, whether individuals or companies, Internet banking

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service provided the ability to perform banking transactions like fund's transfer, loan applications, opening of fixed deposit account and letter of credit or investment activities. Also, accommodate services for personal finance management facilities such as importing data into personal accounting software and account aggregation. Internet banking services allow bank consumers to perform financial transactions anytime and anywhere^{7,8}.

Despite the many benefits and advantages offered by Internet banking services to both banks and consumers, there are still many underlying issues needed to be considered by interested banks, especially the issue of trust^{4,8}. To clarify consumers' attitudes toward the acceptance of Internet banking services; trust was found to be one of the momentous factors^{9,10}. Several studies suggested that consumers are not used to conducting online transactions, particularly Internet banking services in the same degree primarily because of trust issues and risk concerns^{11,12}. Consumers are very much reluctant to provide sensitive information to banks' websites and applications as they worry about the misuse of debit and credit cards due to the lack of trust^{8,11}. According to¹¹ and¹³, gaining the trust of consumers in Internet banking services is considered as one of the most important indicators of success to many information system innovations. It is also one of the essential aspects of Internet banking services that leads to acceptance among consumers. Furthermore, trust is the main element for building long-term relationship between banks and consumers. Lack of trust remains as the main barrier to speed-up the adoption of online transactions and Internet banking services^{1,9,14,15}.

The main aim of this study is to shed some light on the influence of Perceived Ease Of Use (PEOU) and Perceived Usefulness (PU) on trusting Internet banking services among Jordanians. This study will examine trust as an important element related to the success and growth of Internet banking services, determine the key trust factors and investigate their impact on Jordanian user's intention and decision to accept and use Internet banking services to perform financial and non-financial transactions.

The findings of this study will provide practitioners and researchers in information system (IS) with a set of manageable recommendations to build trust, which will promote greater acceptance of Internet banking services and financial services, while helping banks in providing more customer-oriented services and developing e-commerce competitive advantage.

To carry out this study, we developed a conceptual model, and formulated a set of hypotheses and conducted data analyses. At the end, we discussed the research findings and conclusions.

2. Context of Study

The Hashemite Kingdom of Jordan is one of the Middle Eastern countries with a total area of 89,342 square kilometers, and total population of M5.7 people in 2015. The number of Internet users in 2015 reached 6,623,279 representing 86.1% of the total population in contrast to only 3146 users in 1996¹⁶. **Figure 1** presents the Internet growth and population statistics in Jordan for the past 15 years. In Jordan, there were 25 registered commercial and Islamic banks operating through more than 767 branches as of December 2014¹⁷. According to^{18,19} Internet banking services in Jordan emerged in the beginning of third millennium with only two local banks only: Jordan Kuwait Bank and Arab Bank. Recently, almost all Jordanian banks have websites and applications providing Internet banking services to their consumers.

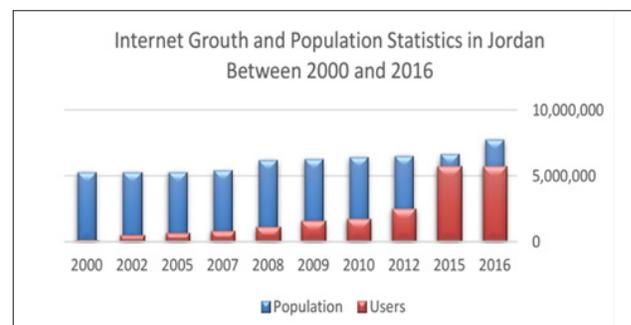


Figure 1. Internet growth and population statistics in Jordan.

3. Research Model and Hypotheses

3.1 Research Model

The Technology Acceptance Model (TAM) is considered as one of the most widely used theories developed by Davis²⁰ to predict individual's adoption and the use of new Information Technology (IT) innovations. TAM also posits that individuals' behavioral intention to use IT is determined

by two beliefs: perceived usefulness (PU) and PEOU. The main purpose of TAM is to pursue better measures for predicting and explaining the use of IT innovations^{20,21}.

Many studies used the TAM to examine the acceptance and use of Internet banking services^{4,8,22-24}. According to¹, the primary use of TAM is to examine the adoption of Internet banking services. Another study examined the post-acceptance application of TAM to understand the role of expectations in the adoption of Internet banking services and the continued use of it among United States of America’s banking consumers²².

This study modified the TAM through the addition of Perceived Trust (PT). The purpose of this study is to find the impact of PU and PEOU on PT. Also, in this study, motivational factors; PU and PEOU are the antecedent of the PT factor which is, in turn, the antecedent of intention to accept and use Internet banking services. Therefore, the research question is “Do PU and PEOU affect consumers’ PT to accept and use Internet banking services to perform their banking transactions?” This study is useful for the banking sector in developing countries like Jordan, where they can understand the intentions to adopt Internet banking services systems. The proposed theoretical model for this study is graphically presented in Figure 2 which consists of the three most intrinsic motivational factors: PEOU, PU and PT.

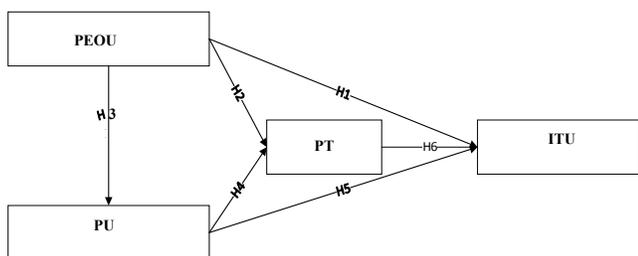


Figure 2. The research proposed model.

3.2 Perceived Ease of Use

PEOU is considered as a fundamental factor for predicting user’s behavioral intention in adopting new technology. PEOU was proposed by²⁰ based on the TAM theory and defined as the degree to which a consumers view the use of new IT innovations to be relatively free of effort. The measured parameters of PEOU are: time saving and the availability and speed of providing Internet banking services^{11,20}. According to²⁵ a novel technology that is perceived to be easy to use and useful have a higher likelihood of being adopted and used by consumers.

A number of studies showed that, PEOU is still a dominant factor when it comes to Internet banking services adoption^{4,5,8,9,12,18,23,26-28}. Also,²⁰ have confirmed that PEOU has a strong effect on PU, so it is hypothesized to be a predictor of PU²¹. Furthermore, extensions of TAM by other studies discussed the relationship between PEOU and PT^{4,29}, where PEOU has significant impact on improving trust among users to adopt Internet banking services³⁰.

It is anticipated that when consumers think that the ease of Internet banking services increase, it leads to the increase of consumer trust in Internet banking services and their perceived usefulness. Therefore, the intention to use Internet banking services also increases. Hence, the following hypotheses are derived:

H1: *Perceived ease of use will positively influence bank consumers’ intention to accept and use Internet banking services*

H2: *Perceived ease of use will positively influence Perceived Trust among bank consumers to accept and use Internet banking services.*

H3: *Perceived ease of use will positively influence Perceived Usefulness among banks consumers to accept and use Internet banking services.*

3.3 Perceived Usefulness

PU is the second construct included in the original TAM to predict user’s behavioral intention to accept and use a novel technology coupled with PEOU²⁰. In the context of user’s acceptance of Internet banking services, PU among consumers arises due to the awareness of the advantages of Internet banking such as easy access, ease of use, abundance of information, reliability, low cost, saving time and reduction of expenses. All previously mentioned benefits are critical to consumers’ perception of Internet banking services³¹. According to^{20,32} PU is defined as the degree to which a consumer views using a specific IT innovation will enhance his performance. The measured parameters of PU are consumer’s perception of Internet banking services and the importance of Internet banking services for banking sector’s consumers^{11,20}.

Many studies used PU to measure the Internet banking services’ advantages from consumers’ perspective.^{4-6,8,21,28,31,9,11,23} Stated that PU had been identified as an important factor that influences consumer’s trust in Internet banking. So, we hypothesize that PU has a significant impact on PT and the acceptance and use of Internet banking services.

H4: Perceived usefulness will positively influence perceived trust in Internet banking services

H5: Perceived usefulness will positively influence consumers' intention to accept and use Internet banking services.

3.4 Perceived Trust

Trust is vital for any commercial relationship and it plays a critical role in online transactions because it reduces uncertainty. Trust is an important factor in Internet banking services^{4,7,11,29}. The lack of trust is considered one of the biggest barriers that prevent consumers from making online transactions^{7,11, 33}. Defined trust in online environment as “the subjective assessment of a party that another party will perform a particular transaction according to his or her confidant expectations, in an environment characterized by uncertainty”. Research reported that trust has a paramount importance when it comes to Internet banking services^{11,12}. This is due to the lack of conventional financial operations in a bank and physical interaction between consumers and the bank staff.

There are unique features that distinguish consumers' trust on Internet banking services and conventional face-to-face banking services. Internet banking services has extensive use of technology for transactions, the distant and impersonal nature of the Internet as well as the uncertainty of using the Internet for banking transactions; all of which conventional banking operation lacks¹². Trust is a significant predictor of consumer's intention to accept and use Internet banking services. So, trust is increasingly being recognized as one of the most important factors that affect consumers' acceptance and use of Internet banking services¹⁰. Based on these arguments, the final hypothesis of this study is the following:

H6: Perceived trust will positively influence consumers' intention to accept and use Internet banking services.

4. Methods

4.1 Data Collection Method

The primary data collection method used in this study came from a survey distributed to consumers of Jordanian commercial banks in the city of Irbid, in Jordan. Irbid is the second largest city in Jordan. In order to sample existing bank consumers, all respondents had to answer the question: Do you have a bank account? The samples used in the study was randomly selected and respondents were approached in different places in Irbid (Yarmouk University, Ministry of Social Development, Social Security Corporation and Ministry of Education).

A multiple data collection method was employed, whereby some questionnaires were e-mailed to participants and some were personally administered. All items of questionnaire were translated into Arabic language with some modifications to adjust the questions with the local language and culture of Jordanian. E-questionnaire was sent via email to 95 consumers of Jordanian commercial banks who work at Yarmouk University and the Ministry of Education. A total of 86 responses were returned, with a response rate of 88%. Whereas, 175 paper questionnaire were distributed to a random sample of Jordanian commercial banks consumers, who work at public sector institutions in Jordan such as: Yarmouk University, Ministry of Social Development, Social Security Corporation and Ministry of Education. A total of 140 responses were returned, with a response rate of 80%. Only 112 usable paper questionnaire were valid for analysis. 28 questionnaires were excluded because 19 respondents did not have bank accounts and 9 questionnaires were deemed not suitable for analysis because the data provided was incomplete. The total valid sample included 198 responses. Table 1 presents the distribution of sample size.

Table 1. Distribution of sample size

	Distributed	Missing	Returned	Excluded	Analyzed
E-Questionnaire	98	12	86	0	86
Paper Questionnaire	175	35	140	28	112
Total	273	47	226	28	198

4.2 Instrument Development

An extend TAM with PT is the research model used in this study. This study aimed at determining the relationship between dependent research variable ITU, and three independent research variables namely, PU, PEOU and PT. The major extension also on the TAM in this study was the hypothesized mediation effect of PT. In order to test the hypothesized model, all items of constructs were taken from prior published IS studies. The items for PEOU (PEOU1, PEOU2, PEOU3 and PEOU4); PU (PU1, PU2, PU3 and PU4) and ITU (ITU1, ITU2 and ITU3) were adopted from [20,26,34](#). Whereas, the measuring items of construct PT (PT1, PT2 and PT3) were taken from [35](#). All items of instrument were measured using a five-point Likert scale ranging from (1) representing strongly disagree, (3) as neutral, and (5) as strongly agree.

5. Analysis and Findings

5.1 Measurement Model

According to [36](#) as part of the PLS procedure, the questionnaire was verified for measurement model based on reflective and formative constructs. Validity and reliability are the two main criteria used for testing the goodness of measures. Reliability is a test of how consistently a measuring instrument measures whatever concept it is measuring. Validity is a test of how well an instrument measures the particular concept it is intended to measure [37](#). To assess the measurement model, this study used a three-element procedure: Indicator items reliability, convergent validity, and discriminant validity. Referring to [36](#) argument, the recommended level of item loading must be more than 0.80 and the minimum acceptable level adopted by this study is 0.60. The loadings for all items

exceeded the recommended value. Whereas, all 13 items in the measurement model were above the minimum recommended level for the outer loadings. The indicator of ITU2 had the highest indicator reliability(0.967) whereas the indicator PEOU2 and PT1 had the smallest indicator for reliability (0.844). Table 2 presents the data related to the measurement model and the item loadings, with Cronbach’s alpha listed also.

The Convergent Validity (CV) of each construd is tested based on the Average Variance Extracted (AVE). Convergent validity is defined as “the extent to which a measure correlates positively with alternative measures of the same construct” [33]. This study considered 0.5 as the acceptable minimum value of AVE upon recommendation of previous research [36,38](#). The highest value for AVE was experienced by ‘intention to use Internet banking services’ (0.905) and the lowest acceptable value was by ‘Perceived Ease of Use’ (0.774). All values are at acceptable levels with respect to convergent validity.

To measure the internal consistency of the model, Cranach’s alpha was used. Referring to Table 2, all constructs met the acceptable criterion for internal consistency. Acceptable and satisfactory values of Cranach’s alpha value are recommended to be >0.70 [36,38](#). The highest internal consistency was observed for ‘intention to use Internet banking services’ (0.9473) followed by ‘perceived usefulness’ (0.9284), and the lowest observation was for ‘perceived trust’ (0.8857). Composite Reliability (CR) values is another measure for internal consistency. CR depicts the degree to which the construct indicators indicate the latent variable. The value of CR must exceed 0.70 [38](#). All values of CR associated with the constructs exceeded the recommended value and ranged from (0.929) for perceived usefulness to (0.966) for intention to use Internet banking services.

Table 2. Results of measurement model

Model construct	Measurement item	Loading	CR ^a	Cronbach’s alpha	AVE ^b
Intention to Use	ITU1	0.96	0.966	0.9473	0.905
	ITU2	0.967			
	ITU3	0.926			
Perceived Ease of Use	PEOU1	0.893	0.932	0.9026	0.774
	PEOU2	0.844			
	PEOU3	0.92			
	PEOU4	0.86			

Model construct	Measurement item	Loading	CR ^a	Cronbach's alpha	AVE ^b
Perceived Trust	PT1	0.844	0.929	0.8857	0.815
	PT2	0.935			
	PT3	0.927			
Perceived Usefulness	PU1	0.881	0.949	0.9284	0.823
	PU2	0.926			
	PU3	0.908			
	PU4	0.914			

To assess discriminant validity, this study used the Fornell-Larcker criterion. Discriminant validity exists when the average square root of extracted variants exceeds the correlation value between all the variables ³⁶. Table 3 shows the discriminant validity based on Fornell-Larker criterion. From Table 3, it can be summarized that discriminant validity exists; where PEOU, AVE2 (bold values in table) is greater than the correlation indicator in ITU, PT, and PU. However, in the ITU indicator, the AVE2 is greater than the correlation indicator in PT, PU. Also, the indicator of PT, the AVE2 is greater than the correlation indicator in PU. In total, the square root of the AVE is greater than the correlation with other constructs, indicating adequate discriminant validity. In conclusion, the reflective measurement model demonstrated adequate convergent and discriminant validity.

Based on their parameter estimates and statistical significance, the results for all the four constructs ITU, PEOU, PT and PU are all valid measures of their respective constructs. Overall, results of the measurement model provided satisfactory empirical support for the reliability, convergent and discriminant validity.

5.2 Structural Model

A structural model or, in other words, inner model represents the relationship between the constructs. Testing the structural model means testing the hypothesized theoretical

model or the relationships between the constructs assumed by the model. This study used path coefficient (β) criteria to test the six hypotheses generated. The path Coefficient (β) have standardized values between -1 and +1. Path coefficient (β) close to +1 represents strong positive relationships and vice versa for negative values ³⁶. Path coefficient (β) value was used to evaluate whether a coefficient is significant or not. When the t value is larger than a sepcific critical value, the coefficient is significant at a certain error probability (i. e. value of $t > 1.96$ would represents a significance level with a p value < 0.05).

Results shown in Table 4 indicate that all hypotheses were accepted except for the first one. It was found that PEOU had positive influence on PT ($\beta = 0.229, t = 2.489, p < 0.01$) and PU ($\beta = 0.472, t = 5.816, p < 0.01$) had the most effect on PT from PEOU. Also, PEOU ($\beta = 0.632, t = 9.316, p < 0.01$) had a positive influence on PU. The influence of PT ($\beta = 0.464, 7.086, p < 0.01$) on the intention to use internet banking services was more than the effect of PU ($\beta = 0.382, 4.776, p < 0.01$) on it. Only PEOU ($\beta = 0.018, 0.25, p < 0.01$) had less (no effect) effects the intention to use Internet banking services.

The coefficient of determination or R^2 value is another measure to test the six hypotheses generated in this study and is calculated as the squared correlation between two specific exogenous and endogenous constructs. The R^2

Table 3. Discriminant validity based on Fornell-Larker Criterion

	Perceived Ease of Use	Intention to Use	Perceived Trust	Perceived Usefulness
Perceived Ease of Use	0.880			
Intention to Use	0.504	0.951		
Perceived Trust	0.527	0.709	0.903	
Perceived Usefulness	0.632	0.679	0.616	0.907

Diagonals (**in bold**) represent the average variance extracted while the other entries represent the squared correlations

value ranges from 0 to 1 with higher levels indicating higher levels of predictive accuracy. In scholarly research, 0.2 is considered substantial for R² values³⁶. Based on the R² values, as shown in Figure 3, the path coefficient (R²) value of PT was 0.411, suggesting that 41.1% of the variance in the degree of PT can be explained by PEOU and PU. A close look at Table 4 and Figures 3 and 4 shows that PEOU was positively related ($\beta = 0.229, p < 0.01, T = 2.742$) in terms of PT and so was PU ($\beta = 0.471, p < 0.01, T = 5.553$). The R² value of PU was 0.400 suggesting that 40% of the variance in terms of usefulness can be explained by PEOU. A close look at the value of path coefficient in Table 4 shows that PEOU was positively related ($\beta = 0.637, p < 0.01, T = 9.708$) in terms of PU. Thus, H2, H3, and H4 of this study were supported. In addition to that, the R² square value of ITU Internet banking services was 0.598, which suggests that 59.8% of the variance in intention to use Internet banking can be explained by PEOU, PU and PT. Also, the result shows that PU was positively related ($\beta = 0.396, p < 0.01, T = 5.33$) to ITU and so was trust ($\beta = 0.461, p < 0.01, T = 7.209$). Finally, PEOU was not a significant predictor of ITU. Thus, H5 and H6 of this study were supported, but H1 was not.

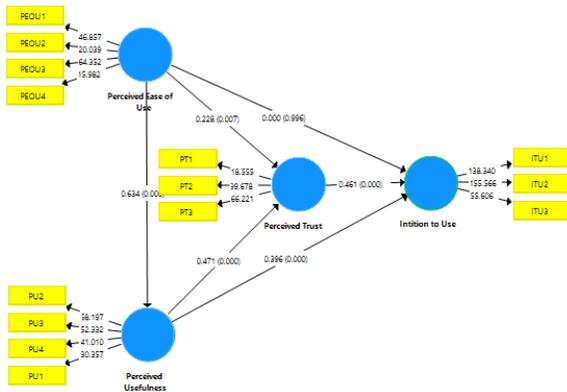


Figure 3. The measurement model with path coefficient, P value and factor loadings.

Table 4. Path coefficients and hypothesis testing

Hypothesis	Relationship	Coefficient (β)	T value	p-value	Supported
H1	Perceived Ease of Use -> Intention to Use	0.018	0.25	0.803	No
H2	Perceived Ease of Use -> Perceived Trust	0.229	2.489	0.013	Yes
H3	Perceived Ease of Use -> Perceived Usefulness	0.632	9.316	0.000	Yes
H4	Perceived Trust -> Intention to Use	0.464	7.086	0.000	Yes
H5	Perceived Usefulness -> Intention to Use	0.382	4.776	0.000	Yes
H6	Perceived Usefulness -> Perceived Trust	0.472	5.816	0.000	Yes

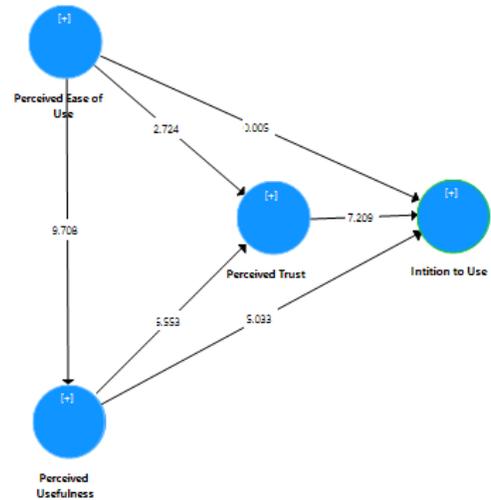


Figure 4. The T values for significance estimation of the model.

6. Discussion and Conclusion

The main purpose of this study was to investigate the influence of PEOU and PU on PT among Jordanian bank customers. Also, we aimed at investigating the effect of PT, PEOU and PU on ITU Internet banking services and perform banking transactions. Based on the findings of this study, all the hypotheses except the first one were confirmed. Also, PT succeeded in mediating the influence of both PU and PEOU on ITU.

From the results of path coefficient (β) and R² values, there is no significant effect of PEOU on behavioural intention to use Internet banking services. The significant relationship between PEOU and PU to use internet banking services is supported, where the estimated path coefficient between PEOU and PU had reached 63.2%. Based on the results of path coefficient (β) and R², there is a significant effect of PU on PT

(H4) and behavioural intention to use Internet banking services (H5). The estimated path coefficient between PU and PT is 47.2% and the estimated path coefficient is between PU and intention to use Internet banking services is 38.2%. Similarly, PT has a positive effect on Jordanian behavioural intention to use Internet banking services where the estimated path coefficient had reached 46.4%. This supports the hypothesis related to the influence of perceived trust on user's intention to use internet banking (H6).

This study supports conventional views of the influence of independent variables of PEOU, PU on the PT in Internet banking. It also examines how PEOU, PU, and PT can predict the intention to use Internet banking services among Jordanian commercial bank customers. The paper also examined the goodness of measures, which is assessed by looking at the validity and reliability of the measures carried out using the PLS approach. The results of this study emphasized previous research findings when predicting intention to use Internet banking services. Findings indicated that the measures are reliable and exhibited both convergent and discriminant validity.

The findings have meaningful implications. This study implies that banks sector need to build the trust between Internet banking services and their consumers through increased public awareness of the usefulness of Internet banking services. The research model of this study can, however, be applied to other information system research areas such as the application of cloud computing among individual users. These suggested future studies will increase the validity of the study research model and enrich our understanding of the domain.

As the case with any research work, some limitations were faced in this study. The first limitation is the fact that this study focuses only on the banking sector in the north of Jordan and excluded the rest of Jordan. This limitation offers future study opportunities as the findings of this study are limited and further studies should be conducted to include the rest of Jordan. The lack of previous local studies and statistics regarding the effect of trust on the acceptance and use of Internet banking services in Jordan is another limitation for this study. This study is limited in terms of its qualitative data. So, to gain a solid understanding of consumers' behaviour to accept and use Internet banking services, more qualitative research, such as case studies and longitudinal studies are required.

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