Identifying the Factors that Influence Users' Intentions to Use Mobile Payment Services

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Abstract. Mobile payments with significant economic potential have emerged due to the advancement of mobile communication technology and the widespread use of intelligent gadgets. However, the rate of mobile payment adoption is insufficient. This study aims to measure behavioral intention to use Mobile payments. The target populations of the current study are mobile device users in Iraq. The study used Partial Least Square to measure 281 usable questioners. The results indicated that information quality, system quality, and service quality have a significant impact on trust and user satisfaction with mobile payment. Besides, trust and user satisfaction significantly impact behavioral intention to use m-payment. Therefore, Mobile payments services providers should constantly make sure that the information they give is correct and up to date. Furthermore, developers of mobile service systems must ensure that the Mobile payments system is dependable, simple to use, and responsive.

Keywords: Mobile payment · Trust · System quality · Services quality

1 Introduction

The emergence of mobile technology, particularly the mobile internet, has hugely impacted people's lives and activities. The adoption of mobile devices has resulted in substantial changes in how individuals go about their everyday lives. Many people's lives have increasingly dependent on mobile gadgets, particularly smartphones. As the usage of smartphones has grown, a new method of payment known as Mobile payments (MP) has emerged. MP is a service that allows users to initiate, approve, and execute money payments utilizing a mobile device [1–3].

For retailers, MP has the possibility to be a competitive advantage. This is due to the multiple advantages that MP may provide for both users and retailers [1]. For example, users benefit from mobile payment in retail outlets since it streamlines the payment process, speeds up services, and eliminates the need to carry currency. In addition, mobile payment enhances automation for retailers by quickly collecting data and providing statistics such as regular incomings and outgoings and average client spending. Few

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studies measured the factors that led to the intention to use mobile payments in Iraq [4]. However, in Iraq, m-payment is in the early stages; despite the growing number of mobile subscribers, mobile phone users' use of m-payment services remains limited. This is due to the fact that people may be hesitant to make purchases using their mobile devices, maybe due to security and trust concerns. Nevertheless, the prevalence of mobile phones, notwithstanding their limited usage, can boost m-payment.

The study used three main elements of quality from DeLone and McLean [5] information system success (D&M ISS): Information Quality (IQ), System Quality (SYQ), Service Quality (SEQ), and users satisfaction (US). Additionally, the study used users' trust besides the US to predict the behavioral intention (BI) to use MP in Iraq. The study employed trust in the proposed model because the MP service incorporates transaction information that impacts user privacy; many users are concerned about individual performance and SEQ. Therefore, it is critical that customers have faith in mobile payments, recognize that the service is high quality, offer relevant information, and feel compelled to use it more frequently.

This study investigates the impact on intention to use MP using the D&M ISS model and extends by trust.

2 Literature Review

2.1 M-payment Adoption

MP has been characterized as any payment transaction expressly started, granted, and verified by a mobile. In recent years, advances in mobile technology and the underlying mobile networks have resulted in a significant rise in m-commerce transactions [6]. m-payment is a service that allows users to make payments, check balances, and transfer money conveniently, at any time, and from anywhere [7]. As a result, M-payment technology has expanded significantly worldwide, and its expanding strength and cross-border effect are rising [8, 9].

The most crucial stage in achieving technology acceptability and success in technological advances like mobile payments is for the target users to take adoption's first and most vital step [10]. Furthermore, not all consumers have adopted and accepted payment through mobile as an essential service. Consequently, scholars have been concentrating on discovering the elements impacting usage intention [11–14]. When using MP, retailers are frequently concerned about security. However, on the other hand, retailers consider retailer trust in payment service providers and the safety of MP solutions to be crucial requirements for MP adoption [15–17]. The skill is regarded as the capability credibility in the mobile payment scenario, allowing sellers to believe that the mobile payment can achieve the expected goal and execute the required degree of performance [10].

2.2 Information Quality

IQ is usually related to the availability of useful, accurate information quickly. It requires that the material be error-free and feature up-to-date, exact, and comprehensive information. Users become dissatisfied when they have insufficient information.

In the m-payment context, ensuring excellent information quality is critical [18]. Users may be able to conduct mobile payments more efficiently and avoid commercial issues if they have access to sufficient, reliable, and timely information regarding account balances and transaction records. Empirically and in the context of m-payment, Yuan et al. [18] reported trust and satisfaction are positively and significantly impacted by IQ. Yang et al. [1] and Franque et al. [7] reported IQ significantly affects users satisfaction in the Mobile Payment context. IQ can significantly increase the user's trust to use m-payment [6]. Based on mobile banking, Tam and Oliveira [17] reported IQ significantly enhances the BI.

H1: IQ significantly impacts user satisfaction.
H2: IQ significantly impacts trust.

2.3 System Quality

SYQ refers to users' perceptions and evaluations of the MP system, including access speed, simplicity of use, navigation, and visual attractiveness [18]. In the scope of MP Services, system quality refers to the availability of certain attributes, including ease of use, fast connectivity, flexibility, and a visually pleasing look [19]. Empirically, Yuan et al. [18] SYQ's most crucial factor predict the user satisfaction of m-payment and SYQ significantly predicts user trust. According to Gao and Waechter [20], this revealed that early trust in m-payment and online payment trust were significant predictors of usage intention. In the context of MP, Yang et al. [1] found that customer satisfaction significantly impacts BI. Therefore, SYQ can significantly enhance the user's trust to use m-payment. In the mobile banking context, Tam and Oliveira [21] indicated BI was significantly impacted by SYQ. On the other hand, SYQ insignificantly predicted the satisfaction of the m-payment context [7].

H3: SYQ significantly impacts user satisfaction.
H4: SYQ significantly impacts trust.

2.4 Service Quality

Users who have access to high-quality services are more likely to be satisfied, which leads to the continuation of services and a greater belief that service providers have the capacity and willingness to provide as promised [15, 21]. Mobile payment service providers must deliver exact, dependable, and tangible services to users.

Statistically, SEQ's most crucial factor impacts Trust, followed by M-payment user satisfaction [18]. Similarly, SEQ can positively enhance users' trust to use mobile payment [6]. In addition, SEQ can improve the BI to use mobile banking [21]. While, Yang et al. [1] and Franque et al. [7] reported, SEQ had insignificant impact on costumer's satisfaction in the context of m-payment.

H5: SEQ significantly impacts user satisfaction
H6: SEQ significantly impacts Trust.

2.5 Trust and BI

The perceived risk possibilities associated with mobile-based payments are significant for both adoption and continuing intentions. In this case, consumers' early trust may operate as a motivator to embrace mobile-based technologies. As a result of the potential risks and financial damage, users may be hesitant to conduct important transactions through mobile [22]. However, their perception that mobile payment businesses are trustworthy and trusted to conduct secure transactions due to their abilities, talents, and knowledge, on the other hand, increases the likelihood that these users would use such services [23].According to Zhou [24], the intention to use MP impacts directly or indirectly by users' trust. Trust of users significantly impacts on intention to use e-wallet [25]. In the context of mobile payment Yang et al., [1] reported trust has a significant impact on BI to use mobile payments. According to [6], trust significantly enhances and increases the BI to use m-payment.

H7: Trust significantly impact BI.

2.6 Satisfaction and BI

BI is the level or strength of a person's desire to engage in a particular action [11, 26]. BI is defined as the certainty with which people want to employ a particular technology. The most important and vital aspect determining consumers' actual behavior is their BI. One of the most important deciding variables in assessing the effectiveness of an IS implementation is customer satisfaction [27]. Studies have shown that satisfaction is a strong antecedent of continued BI to use in several IS situations. Lin et al. [8] reported usage intention of mobile payment is significantly impacted by users' satisfaction. Yang et al. [1] indicated BI use of M-payment is influenced by customer satisfaction. Satisfaction significantly impacts BI to use mobile payment [7]. According to Phuong et al.,[25], User satisfaction and BI to utilize an E-wallet payment system heavily influence customer trust. Based on the discussion above, the studies prove that users' satisfaction with ISS is highly linked to BI to use.

H8: user satisfaction significantly impacts BI.

3 Methodology

The target populations of the current study are mobile payment users in Iraq, and all the users had online activities experiences. The current study used a convenience sample due to not being able to reach all users who have mobile payment experience. 400 questionnaires were distributed by self-administrative in several shopping malls located in Erbil. However, choosing the shopping malls is due to the large traffic of Iraqi customers from various demographics. 312 questionnaires were returned, which means the response rate is 78%; after checking the missing values and outliers, 281 questionnaires were valid to analyze. However, the data was analyzed using Smart-PLS.

As mentioned above, the data was collected by questionnaire, and the questionnaire consisted of 31 items among 6 constructs. All the items adopted from previous works

and as follows; 6 items measured the BI [19, 21], the IQ, SYQ, SEQ and user satisfaction measured by 5 items for each construct [19, 21], the Trust measured by 5 items [1, 19].

4 Results

4.1 Descriptive Statistics

The majority of respondents were male, 70% and 30% female. However, the majority of responds Age between 21–25 years old 31%, while the Age 20 years old and below was 25%, Aged between 26–30 years old shown 16%, and Age between 31–35 years old and 36–40 years old 12% and 10% respectively, only 6% was 40 years old and above.

4.2 Measurement Model

This step will measure the reliability, validity, Convergent validity (CV), and Discriminant validity (DV). The loadings of an item should be 0.70 and above according to Hair et al. [28] reliability scale. As depicted in Table 1, the outer loadings show all the items loadings above 0.7, except two items, that were removed (SEQ5 and TR5) because they showed poor loadings. In addition, to assess the internal consistency reliability of each construct should measure Cronbach's Alpha (CA) and Composite Reliability (CR); the cut-off level for both criteria is 0.7 and above [28]. According to Table 1, both criteria CA and CR constructs are above 0.70 this is means the construct has good internal consistency. Thus, this step has been achieved. To evaluate the CV, according to Hair et al. [28] should be measuring the variance extracted (AVE) should be above 0.50. it is based on Table 1, all the constructs AVE above 0.50.

Table 1. Construct reliability and validity

Constructs	Items	Outer loadings	CA	CR	AVE
Behavioural intention	BI1	0.786	0.913	0.933	0.698
	BI2	0.861			
	BI3	0.809			
	BI4	0.789			
	BI5	0.898			
	BI6	0.864			
Information quality	IQ1	0.878	0.922	0.941	0.762
	IQ2	0.866			
	IQ3	0.861			
	IQ4	0.876			
	IQ5	0.883			

(*continued*)

Table 1. (*continued*)

Constructs	Items	Outer loadings	CA	CR	AVE
Service quality	SEQ1 SEQ2 SEQ3 SEQ4	0.842 0.869 0.845 0.815	0.864	0.907	0.710
System quality	SYQ1 SYQ2 SYQ3 SYQ4 SYQ5	0.814 0.888 0.915 0.891 0.831	0.918	0.939	0.755
Trust	TR1 TR2 TR3 TR4	0.849 0.864 0.891 0.847	0.886	0.921	0.745
User satisfaction	US1 US2 US3 US4 US5	0.844 0.843 0.896 0.790 0.853	0.901	0.926	0.715

The DV assessing by Fornell-Larcker Criterion. According to Fornell and Larcker [29], the AVE for each construct should correlate above other constructs, as shown in Table 2, each construct correlated above than other as highlighted in bold font. Thus, this criterion was achieved.

Table 2. Fornell-Larcker criterion

	BI	IQ	SEQ	SYQ	TR	US
BI	**0.836**					
IQ	0.483	**0.873**				
SEQ	0.480	0.377	**0.843**			
SYQ	0.541	0.595	0.440	**0.869**		
TR	0.523	0.503	0.490	0.525	**0.863**	
US	0.502	0.456	0.530	0.485	0.475	**0.846**

4.3 Structural Model

After ensuring there are no issues in validity, reliability, and DV, the next step is to test the hypotheses, which is called the structural model. This step has been run by bootstrapping with 5000 subsamples as recommended by Hair et al. [30].

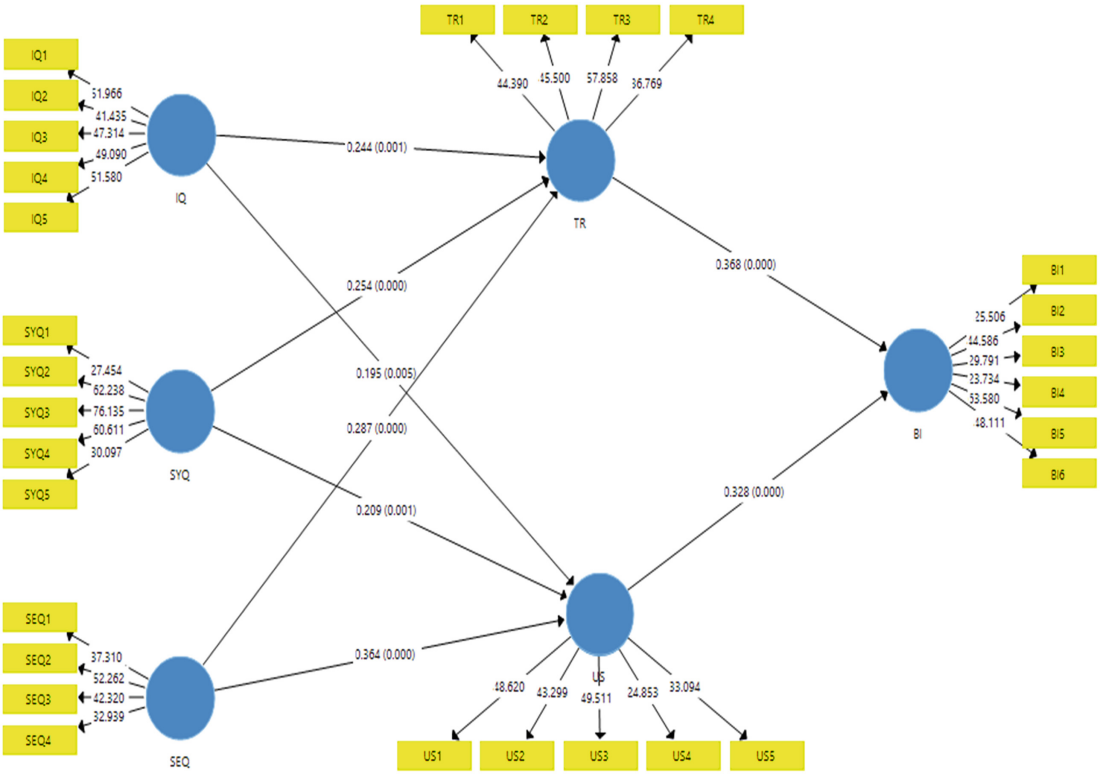

Fig. 1. Structural model

Table 3. Hypotheses outcomes

Hypotheses	Original sample	Sample mean	Standard deviation	T statistics	P values	Supported
IQ → US	0.195	0.196	0.068	2.863	**0.004**	**YES**
IQ → TR	0.244	0.247	0.071	3.411	**0.001**	**YES**
SYQ → US	0.209	0.209	0.065	3.221	**0.001**	**YES**
SYQ → TR	0.254	0.253	0.064	3.935	**0.000**	**YES**
SEQ → US	0.364	0.366	0.053	6.922	**0.000**	**YES**
SEQ → TR	0.287	0.287	0.064	4.459	**0.000**	**YES**
TR → BI	0.368	0.367	0.067	5.456	**0.000**	**YES**
US → BI	0.328	0.329	0.068	4.804	**0.000**	**YES**

The R2 was evaluated to show the variance and reported how much the exogenous explained the endogenous. The R2 for TR and US to IB is 0.357; this mean TR and US 35% explained the BI, which could be a moderate variance [31]. IQ, SYQ, and SEQ explained 39% and 38% variance to Trust and US, respectively, which could be a moderate variance [31]. However, the Q2 purpose is to measure the predictive relevance and, according to Hair et al. [28], should be above zero. As depicted in Table 3, the Q2 is BI 0.250, TR 0.290, and US 0.264; these results are considered medium [28]. Table 3

and Fig. 1 depict the Hypotheses' results. All eight hypotheses are supported. IQ has significant impact on US and TR (T-value 2.863 and 3.411 > 1.96; P-value 0.004 and 0.001 < 0.05) respectively. Thus, H1 and H2 are supported. Additionally, SYQ showed a significant impact on US and TR due to the P-value being less than 0.05 for both, and the T-value is higher than 1.96, 3.22, and 3.93, respectively. Thus, H3 and H4 are supported. Besides, SEQ significantly predicted the US and TR with p-value < 0.05 and t-value 6.922 and 4.459 higher than 1.96. Thus, H5 and H6 are supported. The TR and US also significantly impact BI to use MP with t-value 5.456 and 4.804, respectively, and the p-value < 0.05. Thus, H7 and H8 are supported.

5 Discussion

The results indicated user satisfaction and trust were significantly impacted by IQ. This results in line with prior results [1, 6, 18]. This indicates that users may be encouraged to make m-payments if they access relevant, adequate, reliable, and timely information. High-quality information is a sign of a service provider's competitiveness that can't be readily replicated or counterfeit; greater information quality indicates a service provider's skill, trustworthiness, and integrity. Users are more likely to be satisfied and trust the provider's reliability if they believe a high IQ is supplied via an MP.

SYQ significantly impacts user satisfaction and trust. These results are in line with previous findings [1, 18, 21]. Users acquire discontent and uncertainty about the provider's capacity in every usage experience if they discover an m-payment system's efficiency is weak, challenging to use, or sluggish to display text and graphics—resulting in lesser trust. As a result, the providers of m-payment services should strive to improve the dependability of their systems by reducing user inputs and simplifying the procedure. Given the limited screen size of mobile devices, a well-designed interface that is both appealing and easy to browse may be a suitable option for providers. Integration of the MP system with current financial and internet infrastructures is also required. However, Poor system quality, shown in poor imagery, smaller screen size, inflexibility, and complexity of use, on the other hand, would frustrate consumers and erode their faith in service providers. They may interpret this as the suppliers' failure to deliver excellent services, resulting in dissatisfied users. User satisfaction and trust were significantly impacted by SEQ. These results are in line with previous results [6, 18, 21]. The MP platform is essentially a service product based on the mobile network, and since SEQ is a crucial aspect of payment products, it is logical to assume that consumers will be more concerned with SEQ. As a result, companies should build prompt, dependable, and professional services to value users. Furthermore, companies may supply customized services based on users' interests and locations, presuming that users have given their consent. Current results refer to the fact that boosting service quality will increase a person's BI to use MP. Additionally, if the Product information, enjoyment, convenience of use, and relative to usage all impact the quality of a system. For example, suppose the information supplied to consumers is free of inaccuracies, omissions, errors, irrelevant material, and out-of-date content. Then, it will have a favorable influence on the customers' intention to utilize the services offered. Trust significantly impact BI to use mobile payment. Similar results were reported by Yang et al. [1], Phuong et al., [25],

Pal et al.[6]. Another critical element that the authors intended to investigate was the extent to which payment trust influences customer intention to use MP. The result indicated that payment trust is a critical component of customer retention; improving SYQ, SEQ, and IQ will boost consumers' trust and encourage them to use M-payment in the future. Different facets of trust include trust in services, service suppliers, initial trust, and continuing trust. Because m-payments rely on wireless networks, which are more unreliable and riskier, increasing trust is critical to enhancing the behavioral intention to use the payment through mobile. As a result, service providers must exercise caution when building encrypted services that include numerous security checks and effective fraud detection methods to alleviate privacy concerns and increase customer trust during transactions.

BI to use MP is positively impacted by user satisfaction; these results are in line with similar previous findings [1, 7, 8, 32–36]. In addition, the results show that when a user is extremely satisfied with their m-payment experience, satisfaction becomes a key predictor of their intention to use m-payment in the future. However, In the retailing business, customer satisfaction in BI to use mobile payment is essential in determining whether or not to use it. In addition, because MP is a financial service, customers place a premium on trust and satisfaction when deciding whether or not to utilize it.

6 Conclusion

Mobile payment service providers should constantly make sure that the information they give is correct and up to date. Furthermore, developers of mobile service systems must ensure that the MP system is dependable, simple to use, and responsive. Finally, users must be able to trust mobile payment service providers. This may be accomplished by enhancing the mobile payment services' reputation and security. Overall, the results showed that IQ, SYQ, and SEQ impact trust and user satisfaction. Additionally, trust and user satisfaction significantly impact BI to use m-payment.

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