

Exploring Users' Intentions for Using Mobile payment Applications, Based on Unified Theory of Acceptance and Use of Technology Theory

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Abstract—The objective of this study is to assess the behavioral intention (BI) of users to use mobile payment based on their behavior. The study used the convenience sampling technique to collect the data from users. 198 questionnaires were analyzed by Smart-PLS 3 to assess the proposed model. The results showed that performance expectancy, facilitating conditions, Social influence, and Trust have a positive and significant impact on BI's use of mobile payment (MP). In contrast, effort expectancy has an insignificant impact on BI's decision use M-payment. This study could provide insights that can be valuable for businesses and developers in designing and promoting MP applications that cater to users' preferences and needs.

Keywords—Behavioral intention, Mobile payment, Trust, Unified theory of acceptance and use of technology.

I. INTRODUCTION

Our everyday lives have altered dramatically as mobile devices have become more common, particularly in terms of financial transactions. In recent years, MP has been widely accepted in a variety of businesses. During COVID-2019, the World Health Organization, 2020 recommended reducing interpersonal contact and preserving social distance. Thus, most people shifted to using M-payment. In this way, the contactless attribute of M-payments could enhance consumers' psychological and physical anticipations that their payment procedures will receive greater support and that their safety will be safeguarded. As a result of the epidemic, users' and businesses' The adoption of contactless mobile payments (MP) resulted in a shift in payment practices and business models from traditional transactions, and this shift played a crucial role in enabling the survival of numerous enterprises and sustained the growth of the social economy (Zhao and Bacao, 2021). In addition, the capabilities of mobile applications have expanded from single-purpose tools to multi-purpose devices. Even though a portable device has limited hardware resources, users could run high-resource integrated apps on their PC (Moon et al., 2022).

MPs in Iraq and other developing countries face several challenges. One of the primary challenges is the need for more technological infrastructure and digital literacy among the population, which hinders the adoption and usage of MP services. Additionally, there need to be more regulatory frameworks and security measures to ensure the safety and privacy of transactions, leading to user concerns about the reliability and security of MP services. Another significant issue is the limited access to financial services, particularly in rural areas where mobile networks and internet connectivity are limited or nonexistent. This limited access to financial services is due to the many unbanked individuals who cannot benefit from MP services. Furthermore, users lack trust (TR) in MP services, which may be due to a lack of understanding of the technology and concerns about fraud and identity theft. Despite these challenges, MP services can potentially revolutionize financial inclusion in Iraq and other developing countries. With the proper infrastructure, regulatory framework, and security measures, MP services can help bridge the gap in financial access and provide a secure and reliable way to transfer funds and make payments.

The study used the "Unified Theory of Acceptance and Use of Technology" (UTAUT) model to predict the

behavioral intention (BI) to use the Fast Pay application. However, this model has been extended by the TR factor. The aim of this study is to examine the impact of UTAUT dimensions extended by the TR on BI's ability to use the Fast Pay application in the Kurdistan Region of Iraq.

II. LITERATURE REVIEW

A. Mobile-Payment

M-Payment refers to the utilization of mobile devices to pay for bills, goods, and services. It is a type of electronic financial transaction that uses informational interaction. Because M-Payment is easy, open, and safe, it has created a new business environment where financial transactions can happen anywhere, at any time, and by anyone (Zhao and Bacao, 2021). This means that enormous market potential exists in many situations, especially during pandemics. A mobile application refers to software applications that operate on a portable computing device such as a smartphone, tablet, or e-reader (Moon et al., 2022). Many advantages (connectivity, simplicity of use, portability, etc.) are now possible thanks to mobile technology, which has overcome the limits of the past. A wide range of Internet services are increasingly being accessed via mobile applications by an increasing number of people using M-Payment. Individual developers and development groups have consistently developed many new mobile apps through various distribution methods and marketplaces. While users have additional hurdles when it comes to locating and utilizing M-Payment, Human daily activities, such as minimizing internet expenses and services that need payment, are among the issues that have the greatest impact on mobile usage (Alghazi et al., 2020). Even though people are getting more attached to their mobile applications, the rapid expansion of the app markets has made it difficult for consumers to choose the right app for their requirements (Jameel et al., 2020).

B. UTAUT

Venkatesh et al. (2003) proposed the UTAUT paradigm. This theory is used to describe a person's willingness to accept new technology. This paradigm stresses the importance of user-related features and views adoption as a choice. It is said to be used in a variety of scenarios, including E-learning (Jameel et al., 2022; 2020), Mobile learning (Alturise et al., 2022), and AIS (Al Delawi, 2019; Al-Delawi and Ramo, 2020).

A person's projected possibility or probability of engaging in a given future activity is measured by BI. It is described as a person's willingness to adopt and utilize a given technology to a certain degree (Moon et al., 2022). UTAUT considered a multi-dimension model consisting of the following:

Performance expectancy (PE)

PE highlights how mobile applications help people perform better (Massoudi and Fatah, 2021). Users' perceptions of how much innovation helps them improve their work performance are reflected in their PE (Venkatesh et al., 2003). Individual

intentions to use M-Payment will increase if they believe it offers benefits such as time savings, cost savings, safety, and illness prevention during the COVID-19 pandemic (Le, 2021). PE is a measure of how much it is expected to help its users achieve their goals through the M- applications (Ketkaew et al., 2021). The system's ability to execute tasks quickly and accurately has been used to describe its performance (Jameel et al., 2021, 2022). Users are particularly concerned about payment quickness and accuracy, particularly during the COVID-19 epidemic (Zhao and Bacao, 2021). In this study, using the Fast Pay application for payment led to several benefits, including the assurance of security, convenience, and safety for its users. The individual prefers to use the Fast Pay app if he or she thinks and is sure that it will bring such benefits. Based on previous studies, PE impacts BI's decision to use M-Payment (Zhao and Bacao, 2021; Jameel et al., 2020) and M-application (Alturise et al., 2022; Ayuning Budi et al., 2021; Le, 2021; Moon et al., 2022).

H1: PE has a significant impact on BI's decision to use the Fast Pay application.

Effort expectancy (EE)

EE shows how simple it is to use mobile applications. The ease with which consumers can employ an invention is measured by EE (Venkatesh et al., 2003). EE refers to consumers' expectations of ease of use for mobile applications in terms of usage intention and purchase choices (Le, 2021). The ease of use that a mobile app provides is measured by its EE. A user-friendly interface is critical in this situation since it makes it easier for users to interact with the program (Ketkaew et al., 2021). The expectation that using a specific technology will be simple is known as EE. It is described as the degree of ease with which new technology may be adopted and used (Moon et al., 2022).

The current study, EE, relates to how easily users consider the Fast Pay application. It involves the simplicity with which users may understand how the program works and how to use it. The Fast Pay application is intended to be simple and straightforward to use.

BI to use M-Payment increases when the applications are simple. However, statistically, EE has a significant impact on BI's decision to use M-payment (Jameel et al., 2022; 2020; Zhao and Bacao, 2021) and M-application (Alturise et al., 2022). While BI insignificantly impacted by BI (Ayuning Budi et al., 2021; Le, 2021; Moon et al., 2022).

H2: EE has a significant impact on BI's ability to use the Fast Pay application.

Facilitating conditions (FC)

Users have access to technical help when using m-applications. FC is a term that refers to the provision of technical support or assistance for users (Venkatesh et al., 2003). Users assume that a system's utilization is supported by an organizational and technological infrastructure (Le, 2021). FC highlights the importance of assisting users in making the best judgments possible. In this regard, giving frequent technical help to consumers makes it easier for them to adapt to new technology (Ketkaew et al., 2021). The user's assessment of the resources and

assistance available in accomplishing specific activities is called the “enabling conditions.” In this study, the resources that provide support are the necessary tools and features required to operate the Fast Pay application on a smartphone.

FC has a statistically significant impact on BI’s use of m-payment (Jameel et al., 2022; 2020; Zhao and Bacao, 2021) and M-application (Le, 2021). On the contrary, FC has no significant effect on the intention of using the M-Application (Ayuning Budi et al., 2021; Moon et al., 2022).

H3: FC has a significant impact on BI’s decision to use the Fast Pay application.

Social influence (SI)

The impact of family members and friends on the adoption of a certain mobile application is referred to as SI (Ketkaew et al., 2021). SI refers to the level to which other individuals have an impact on a system’s adoption (Alturise et al., 2022). Particularly during the COVID-19 epidemic, advice and proposals from influential, relevant people are crucial for users’ judgments and activities (Zhao and Bacao, 2021). The belief that other individuals or groups affect an individual’s employment of a certain technology is known as SI (Moon et al., 2022). In this study, users using the Fast Pay application could be affected by family or friends. When close family members or other parties observe the beneficial outcomes of utilizing the Fast Pay Application, they are more inclined to utilize it.

Empirically, SI has a significant impact on BI’s decision to use M-payment (Jameel et al., 2020; Zhao and Bacao, 2021). while SI has no significant impact on the intention to use M-Applications (Alturise et al., 2022; Jameel et al., 2022; Moon et al., 2022).

H4: SI has a significant impact on BI’s decision to use the Fast Pay application.

TR

When people are willing to predict a favorable outcome from a product or service, they are showing TR in its ability to succeed. Users are more likely to utilize M-payment platforms for contactless m-payments as opposed to traditional payments if they have TR on these platforms (Zhao and Bacao, 2021). TR has an essential function in lowering the user’s privacy concerns about losing personal information (Ayuning Budi et al., 2021). A user will be more willing to share personal information if they TR the service provider and think the service will do what it says it will do (Massoudi, 2020). Individuals’ misTR of the service provider would lead them to question the location-based app’s capacity to operate in an emergency, it was stated (Jameel et al., 2020). In this study, TR plays a crucial role in determining the user’s intention to utilize the Fast Pay application. The presence of TR has a substantial and favorable influence on the intention to adopt M-payment for business purposes (Ayuning Budi et al., 2021; Zhao and Bacao, 2021).

H5: TR has a significant impact on BI’s decision to use the Fast Pay application.

III. METHODOLOGY

The current study followed a quantitative approach to collect the data from the Fast Pay application users; the data was collected via a questionnaire to save time. A five-point Likert scale measured the questionnaire’s ability to be more understandable for the participants and reduce confusion among them. The study used the convenience sampling technique for data collection by self-administered Fast Pay users. Participants in this study who used or intend to use the Fast Pay application in Erbil 300 questionnaires were distributed, and only 231 were returned; after data screening, there were 198 valid questionnaires to analyze. The data analyzed by Smart PLS 3. The research instruments of this study were adopted from previous studies: the PE, EE, SI, FC, TR, and BI were adapted from (Wut et al., 2021; Zhao and Bacao, 2021) the number of items for each construct illustrated in Table I.

IV. RESULTS AND DISCUSSION

The first step has been conducted through the measurement model to assess the item loading with the cut-off level of 0.70 (Hair et al., 2019). In Table I and Fig. 1, all the item loadings exceeded 0.70 except SI3 and have been removed due to low loading. The “Cronbach’s Alpha” (CA) and “Composite Reliability” (CR) should be higher than 0.7, as recommended by Hair et al. (2019). The CR and CA results as depicted in Table I are higher than 0.7. Average Variance Extracted (AVE) should be higher than 0.5 (Hair et al., 2019); this criterion has been achieved with all the factors having AVE higher than 0.5.

The next step is to assess the discernment validity assessed by the heterotrait-monotrait ratio (HTMT), as illustrated in Table II. The discernment validity for each construct showed no issue due to the value of discernment validity <0.90 as recommended by Hair et al. (2019).

The second method to assess “discernment validity” is the “Fornell-Larcker Criterion.” According to this method, each AVE factor should correlate with itself higher than other values in the same row and column (Fornell and Larcker, 1981). Table III depicts the values of AVE for each factor in bold and shows each factor correlated with itself higher than another factor in rows and columns. Thus, there is no issue with the discernment validity of the proposed model.

After conducting the measurement model and achieving all the criteria, the next step is to run the structural model. To reduce the error, this process involves running a bootstrapping method with 5000 sub-samples. The R2 of this model, as depicted in Fig. 1, is 0.353, meaning that exogenous factors explain 35% of the endogenous factors, which is considered moderate (Hair et al., 2019).

The proposed hypotheses results, as depicted in Table IV and Fig. 2, showed PE, FC, SI, and This statement means that TR has a strong and favorable influence on BI to use Fast Pay application for all $P < 0.05$, thus H1, 3, 4, and 5 are supported, while EE has an insignificant impact on BI to

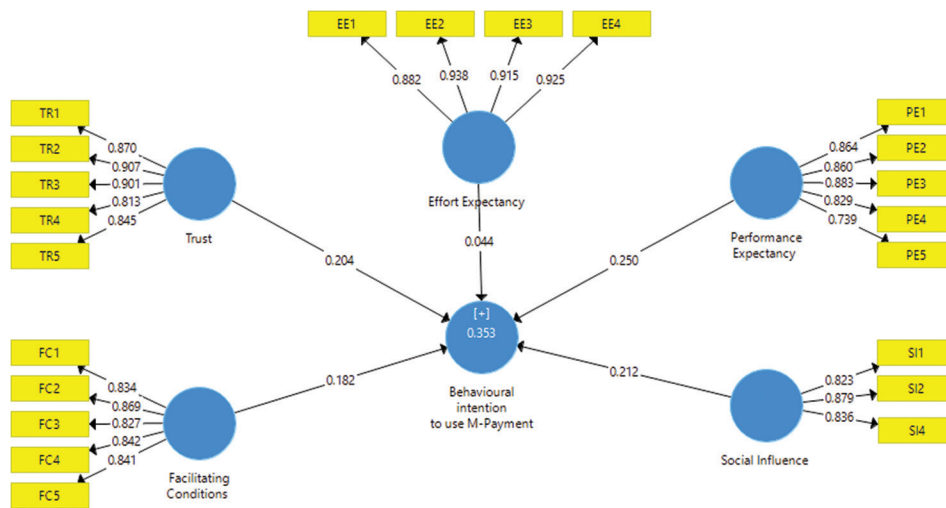


Fig. 1: Measurement model.

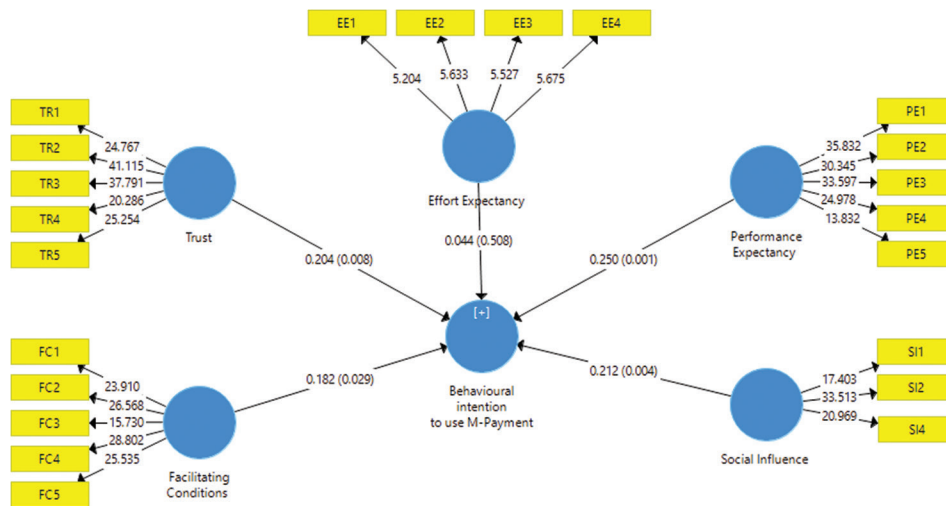


Fig. 2: Structural model.

use Fast Pay application due to the *P*-value higher than 0.05 for H2.

The findings indicate that the use of Mobile-Payment in BI was significantly influenced by PE, which is consistent with earlier research (Jameel et al., 2020; Zhao and Bacao, 2021).

This finding suggests that performance expectations reflect the benefits and ease of M-payment when it comes to using them. Users appreciate its benefits, including purchase transaction availability (24/7), time savings, cost savings, and pandemic safety.

BI to use M-payments is insignificant impacted by EE, and this result is supported by past findings (Ayuning Budi et al., 2021; Le, 2021; Moon et al., 2022). Users are unconcerned with the application’s complexity, which includes the supporting hardware. Regardless of its complexity, any user will prefer to utilize a system if it delivers the performance required to execute a task. Even though consumers find m-Payments to be simple, they are more willing to use alternative Internet channels. Contexts, technical

developments, geographic areas, cultures, and marketplaces affect usage intentions differently.

BI to use m-payments is significantly impacted by FC. This finding is supported by past findings (Jameel et al., 2022; 2020; Zhao and Bacao, 2021). Users’ willingness to utilize m-payments might shift depending on their level of knowledge, expertise, and assistance in using mobile Internet. Increased performance anticipation, favorable situations, and perceived imitation contribute to increased usage intention.

SI has a significant impact on BI’s willingness to use M-payment among Fast Pay users, in results consonant with previous findings (Jameel et al., 2020; Zhao and Bacao, 2021). This means that in the Iraqi context, the adoption of M-payments is dependent on the suggestions and encouragement of close friends and family members. It is becoming more common for people to rely on the advice and support of those closest to them, such as family and friends. According to this study, a new payment habit formed by the epidemic will be influenced by M-reputation payments and word of mouth.

TABLE I
VALIDITY AND RELIABILITY

Items	Loadings	CA	CR	AVE
BI1	0.777	0.895	0.923	0.705
BI2	0.879			
BI3	0.874			
BI4	0.862			
BI5	0.801			
EE1	0.882	0.937	0.954	0.838
EE2	0.938			
EE3	0.915			
EE4	0.925			
FC1	0.834	0.898	0.925	0.710
FC2	0.869			
FC3	0.827			
FC4	0.842			
FC5	0.841			
PE1	0.864	0.892	0.921	0.700
PE2	0.860			
PE3	0.883			
PE4	0.829			
PE5	0.739			
SI1	0.823	0.804	0.883	0.717
SI2	0.879			
SI4	0.836			
TR1	0.870	0.918	0.938	0.753
TR2	0.907			
TR3	0.901			
TR4	0.813			
TR5	0.845			

BI: Behavioral intention, EE: Effort expectancy, FC: Facilitating conditions, PE: Performance expectancy, SI: Social influence, TR: Trust

TABLE II
HTMT

Factors	BI	EE	FC	PE	SI	TR
BI						
EE	0.103					
FC	0.477	0.061				
PE	0.486	0.095	0.505			
SI	0.380	0.102	0.167	0.146		
TR	0.487	0.073	0.581	0.397	0.309	

HtMT: Heterotrait-Monotrait ratio, PE: Performance expectancy, EE: Effort expectancy, FC: Facilitating conditions, SI: Social influence, TR: Trust, BI: Behavioral intention

TR has a significant impact on BI's willingness to use M-payment among Fast Pay users, which is in line with prior findings (Ayuning Budi et al., 2021; Zhao and Bacao, 2021). Users have established faith in M-payment platforms as a result of their consistent performance, well-formed framework, and legal protection, and they are less concerned about financial dangers, allowing them to enjoy more significant advantages from the service.

MP services have been gaining popularity worldwide, and their potential benefits in terms of financial inclusion and convenience are significant. However, as discussed, developing countries like Iraq face unique challenges that must be addressed to realize the full potential of MPs.

The need for digital literacy and technological infrastructure is a significant obstacle to adopting MP services. However, this challenge can be addressed through awareness campaigns and education programs that teach users how to use these

TABLE III
"FORNELL-LARCKER CRITERION"

Factors	BI	EE	FC	PE	SI	Trust
BI	0.840					
EE	0.089	0.915				
FC	0.435	0.051	0.843			
PE	0.438	0.085	0.456	0.837		
SI	0.329	0.074	0.144	0.130	0.846	
Trust	0.446	-0.003	0.525	0.360	0.271	0.868

PE: Performance expectancy, EE: Effort expectancy, FC: Facilitating conditions, SI: Social influence, TR: Trust, BI: Behavioral intention

TABLE IV
HYPOTHESES RESULTS

Path	Sample mean	Standard deviation	T-statistics	P-values	Results
H1: PE -> BI	0.254	0.078	3.208	0.001	Supported
H2: EE -> BI	0.048	0.066	0.663	0.508	Not supported
H3: FC -> BI	0.180	0.083	2.191	0.029	Supported
H4: SI -> BI	0.213	0.073	2.915	0.004	Supported
H5:TR -> BI	0.202	0.077	2.658	0.008	Supported

PE: Performance expectancy, EE: Effort expectancy, FC: Facilitating conditions, SI: Social influence, TR: Trust, BI: Behavioral intention

services and their benefits. Additionally, governments and mobile network operators can invest in expanding network coverage and improving connectivity to enable more people to access MP services.

V. CONCLUSION

The purpose of this study was achieved, and the findings indicated that PE, SI, FC, and TR have a significant impact on BI's decision to use the Fast Pay application for payment. While EE has an insignificant impact on BI's use of the Fast Pay application for M-payment. According to the findings, TR is an essential factor influencing user intent to use the Fast Pay App. In this case, TR refers to an individual's conviction in an application's ability to make the payment swiftly and correctly. In addition, this study has both theoretical and practical implications. This study's results have various recommendations for fast payment providers to enhance service and increase the adoption rate. An additional theoretical contribution to this subject comes from the actual findings of emerging nations like Iraq. Compared to research done in industrialized countries, several results also highlight regional differences' importance.

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