

Islamic mobile banking smart services adoption and use in Jordan

IMB smart
services
adoption

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Abstract

Purpose – The research identifies the predictors of Islamic mobile banking (IMB) smart services adoption and usage in Jordan.

Design/methodology/approach – Based on the Unified Theory of the Acceptance and Use of Technology (UTAUT) and the Unified Theory of the Acceptance and Use of Technology 2 (UTAUT2), an extended and modified model that encompasses perceived trust was developed. The sample comprised 358 customers from Islamic banks (IBs) in Jordan, and structural equation modelling was applied to examine data drawn from the sample.

Findings – The research framework presented 0.728% of the behavioural intention variance and 0.455% of the use behaviour. Results discovered that performance expectancy, perceived trust and hedonic motivation have significant relations with behavioural intention. The finding that effort expectancy has an insignificant effect and that social influence has a significant negative influence on behavioural intention was unexpected.

Research limitations/implications – The research has successfully verified the effect of performance expectancy, perceived trust and hedonic motivation on the customer's intention to use IMB smart services. However, the research data findings are based on the cross-sectional design.

Practical implications – The outcomes hold implications for marketing strategy makers who are responsible for promoting IMB smart services in IBs.

Originality/value – This research presents a deeper insight into IMB adoption and use. The research employed UTAUT and UTAUT2 as the baseline model and incorporates perceived trust to estimate behavioural intention. To the best of the authors' knowledge, this could be the first inquiry that examines IMB smart services adoption and use in Jordan.

Keywords Behavioural intention, Islamic banks, Islamic mobile banking adoption, Smart services

Paper type Research paper

Introduction

The prevalence of emerging new mobile technologies, cloud computing, big data and smart services in our life and work has increased the diffusion of mobile banking (MB) (Karjaluoto *et al.*, 2010; Zhou *et al.*, 2010; Baptista and Oliveria, 2016; Laukkanen, 2016).

MB is a new banking model that combines innovative mobile technologies and smart financial services to provide convenient and flexible access to banking systems through portable smart equipment such as smartphones, individual digital assistants and tablets (Akturan and Tezcan, 2012; Dong *et al.*, 2020). Mobile smart services refer to a wide range of actions such as account dealings, invoice payments, money transfer and other novel smart



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financial activities, including mobile commerce transactions, e-money, loans, automatic check payments and contact with sales agents (Zhou *et al.*, 2010; Baptista and Oliveria, 2016; Dong *et al.*, 2020). In the current digital age, mobile smart services are the most recent innovation of the banking industry (Boonsiritomachai and Pitchayadejanant, 2017; Thaker *et al.*, 2018; Thusi and Maduku, 2020). These emerging services are of interest to scholars due to their convenience, ubiquitous dissemination and accessibility (Suhartanto *et al.*, 2019; Sreelakshmi and Prathap, 2020). MB smart services have created a new digital channel for service use due to the dramatic growth of mobile technologies over the last years (Luo *et al.*, 2010; Zaffar *et al.*, 2019). However, limited research papers have examined adoption of Islamic mobile banking (IMB). To date, few pieces of research have examined preliminary factors affecting the use of IMB services in developing nations or emerging markets, especially in Jordan (Mansour *et al.*, 2016; Thaker *et al.*, 2018; Zaffar *et al.*, 2019).

Furthermore, although Islamic banks (IBs) are amongst the leading financial institutions in deploying emerging mobile technologies and despite the potential importance of MB for customers, it has not been widely adopted by customers of IBs (Mansour *et al.*, 2016; Sharma and Govindaluri, 2017). Contrary to traditional banks, IBs offer MB services that are compatible with Islamic law based on the Qurʾān and Sunnah (Goh *et al.*, 2014). Given this unique banking context, it is not the Islamic law itself that determines the adoption of portable services in IBs but, rather, the attitudes of bank customers. Thus, it is imperative to analyse the antecedents shaping the approval and use of IMB.

The current empirical study attempts to identify antecedents of IMB smart services adoption and acceptance. The study also sheds light on the reasons behind behaviour intention (BI) to utilise IMB in Jordan. The next section presents the literature review of IMB and MB smart services acceptance. Then, the conceptual framework and hypothesis are put forward. The section on methods, data examination and results follows. Thereafter, the research findings are discussed. Finally, the research provides the conclusion, implications and scope for future research.

Literature review

Islamic mobile banking

Rapid advances in wireless networking, telecommunication, and mobile technologies have made MB a necessary foundation of electronic business, mobile commerce, and electronic society (Lin, 2011; Szopinski, 2016). MB involves the utilisation of movable technology such as cellular phones, individual digital assistants and tablets for financial and banking smart services (Tam and Oliveira, 2016; Thaker *et al.*, 2021). It is a contemporary emerging technology that has increased mobility and flexibility in the banking industry.

Islam accepts all technologies as long as they do not violate the Shariʿah (Islamic law). Providing innovative financial services enables a new wave of financial development, characterised by enhanced customer experience at a minimum cost. These technological financial services can prevent money laundering since they can identify customers and verify transactions by using high tech such as artificial intelligence. In addition, the usage of blockchain and cloud computing will regulate financial transactions and reduce costs for IBs (Sun *et al.*, 2020; Rabbani *et al.*, 2020). The usage of blockchain and artificial intelligence has already transformed the financial sector, and both of these efficiently facilitate MB (Hasan *et al.*, 2020). The use of information technology to provide Islamic financial services such as waqf, crowdfunding and zakat will make them more economical, original, appealing and user friendly (Todorof, 2018).

IMB services can be obtained through portable technologies, but their context is different (Sun *et al.*, 2012; Raza *et al.*, 2019; Sen *et al.*, 2020). Islamic banking services are referred to as profit-and-loss sharing or banking without any interest (Sen *et al.*, 2020). IMB offers smart

services that are consistent with Islamic business ethics. Thus, IBs operate within a fairness system focussing on social equity, risk and profit sharing and absence of interest rates (*ribā*) (Sun *et al.*, 2012; Suhartanto *et al.*, 2019; Sudarsono *et al.*, 2021). IMB smart services include banking activities such as money transfers, fund monitoring, mobile commerce transactions, payments and financial transactions in compliance with the Islamic values and rules of transactions (*mu āmalāt*). However, although the Islamic banking system continues to gain attention locally and globally, it inevitably encounters more managerial and marketing challenges than those facing conventional banks (Mohammadi, 2015; Suhartanto *et al.*, 2019). For instance, some people perceive IMB to be functionally indistinguishable from standard banking (Janah *et al.*, 2020).

Mobile banking smart services adoption

Emerging information technology approval is one of the most progressive topics in information technology literature (Venkatesh and Bala, 2008; Dajani and Yaseen, 2016). Several technology acceptance frameworks have been utilised to assess the approval of different innovations (Benbasat and Barki, 2007; Bagozzi, 2007; Dajani and Yaseen, 2016). Since its original publication, the Unified Theory of the Acceptance and Use of Technology (UTAUT) proposed by Venkatesh *et al.* (2003) has qualified as a remarkable hypothetical paradigm (Bagozzi, 2007; Yaseen and El Qirem, 2018; Thaker *et al.*, 2021). UTAUT incorporates several core constructs: performance expectancy, effort expectancy, social influence and facilitating conditions. The theory examines the approval of emerging technologies at the individual level in a wide variety of technology-related contexts (Venkatesh *et al.*, 2011).

Venkatesh *et al.* (2012) added on the UTAUT by incorporating original constructs: hedonic motivation, price value and habit resulting in the Unified Theory of the Acceptance and Use of Technology 2 (UTAUT2). Both UTAUT and UTAUT2 are applied in various emerging technologies and settings (Tamilmani *et al.*, 2020). However, an intensive research review of the MB adoption showed that limited research has been based on UTAUT and UTAUT2 (Yaseen and El Qirem, 2018; Darmansyah *et al.*, 2020). Raza *et al.* (2019) analysed the acceptance of MB in Pakistan and indicated that UTAUT constructs, except for social influence, have a considerable influence on BI. However, beyond prior research, Luo *et al.* (2010) tested the influence of several dimensions of trust and risk on MB services. The research outcomes indicated that risk perception has a vital influence on portable technology adoption. Choudrie *et al.* (2018) introduced a theoretical model based on UTAUT and diffusion of innovation (DOI) theory to predict MB adoption in the United Kingdom. In addition, El Mallouli and Sassi (2021) examined the adoption of IB services and products in Morocco using the DOI theory.

Research model and propositions

The antecedents of IMB adoption in the proposed model in the present research are primarily drawn from UTAUT and UTAUT2 and incorporate perceived trust (PT) as an extra antecedent to examine IMB adoption and use. The result is an extended model of UTAUT2 that encompasses PT to enhance the analytical capability of UTAUT2. As Venkatesh *et al.* (2016) suggested, the research conceptualised IMB adoption and applied UTAUT/UTAUT2 as a fundamental conceptual research model to estimate the causality and measurement of BI of IBs to use IMB.

The proposed model adopts variables from the initial UTAUT, namely performance expectancy, effort expectancy, social influence and the construct of hedonic motivation from UTAUT2. PT is hypothesised to affect BI and IMB smart services use. It excluded facilitating conditions and moderators that are part of the original UTAUT for four reasons:

- (1) The existing literature has hardly tested the moderating effect of various demographics (Venkatesh *et al.*, 2016).
- (2) This research attempts to test only the major effects of the research paradigm.
- (3) UTAUT has low parsimony due to the complex interaction amongst constructs and their moderators (Venkatesh *et al.*, 2016).
- (4) Facilitating conditions is a latent multidimensional construct that is quite a challenge to measure in the field of MB technology.

The following presents the main predictors:

Performance expectancy construct

Performance expectancy is the level of the benefit obtained from using technologies to enhance accomplishment (Venkatesh *et al.*, 2012). In the MB field, previous research studies show that PE is a crucial prebankingf MB adoption (Baptista and Oliveria, 2016; Sharma and Govindaluri, 2017; Raza *et al.*, 2019).

This construct implies an individual improvement and utilitarian value by using MB. Performance expectancy is theorised to be the most powerful factor that affects behavioural intention. Consequently, it is proposed that:

- H1. Performance expectancy positively impacts behavioural intention to adopt IMB smart services.

Effort expectancy construct

Effort expectancy is the measure to which utilising MB innovation is without effort (Brown *et al.*, 2010). Farah *et al.* (2018) examined MB adoption in Pakistan and identified effort expectancy to be an important construct that affects behavioural intention. According to Carlsson *et al.* (2006), empirical evidence shows that effort expectancy and performance expectancy are found to be the major factors affecting behavioural intention to employ portable services in Finland. Thus, it is proposed that:

- H2. Effort expectancy positively impacts behavioural intention to adopt IMB smart services.

Social influence construct

Social influence is the amount of influence reference groups has on individuals to utilise a specific technology (Venkatesh *et al.*, 2003). Social influence exerts a great influence on the adoption of emerging technologies (Brown *et al.*, 2010; Raza *et al.*, 2019). Similarly, Brown *et al.* (2010) demonstrated social influence as one of the UTAUT constructs that fully mediated the relationship between technology characteristics and use. In contrast, Singh and Srivastava (2018) examined mobile adoption in India and indicated that social influence has an insignificant relationship to behavioural intention. In the case of IMB adoption, social influence operates by influencing social perception about MB technology. Based on the research model, social influence affects the intention to adopt MB. Hence, the next relationship is presented:

- H3. Social influence positively impacts behavioural intention to accept IMB smart services.

Hedonic motivation construct

Hedonic motivation is the degree of leisure and entertainment while using a type of innovation (Venkatesh *et al.*, 2012). It affects BI to utilise emerging technologies in various settings (Yaseen and Alomoush, 2013; Alalwan *et al.*, 2015).

Hedonic motivation refers to perceived entertainment, fun and enjoyment. When assessing UTAUT2, [Tamilmani et al. \(2020\)](#) indicated that for the hedonic motivation–behavioural intention path, 29 of 33 studies reported significant values, while the remaining 12% reported insignificant values. Furthermore, MB technology functions have valuable characteristics that can be utilised to achieve pleasure while processing any banking services ([Yaseen and El Qirem, 2018](#); [Yaseen and Alomoush, 2020](#)). Therefore it is suggested that:

H4. Hedonic motivation has a positive influence on behavioural intention to adopt IMB smart services.

Perceived trust

In every emerging technology involving human–technology interaction, trust becomes a critical issue ([Boateng et al., 2016](#)). The lack of PT is a reason that influences MB adoption ([Lin, 2011](#)). Trust is a belief that an individual entrusts upon MB technology ([Zhou et al., 2010](#); [Sharma and Govindaluri, 2017](#); [Yaseen and Al Omoush, 2020](#)). Previous research (e.g. [Souter, 2007](#); [Yaseen and Al Omoush, 2020](#)) indicated a powerful association between PT and disclosure of personal details in mobile emerging technologies. Results from [Chiu et al. \(2017\)](#), show that individuals who did not adopt MB services also had low trust in online banking adoption. In this line, the findings from [Luo et al. \(2010\)](#) revealed that PT significantly affects behavioural intention by adjusting people’s risk perceptions. Hence, it is suggested that:

H5. PT positively impacts behavioural intention to adopt IMB smart services.

Behavioural intention

A person’s act is determined by the behavioural intention to emit the behaviour ([Ajzen and Fishbein, 1980](#); [Vallerand et al., 1992](#)). Intentions are supposed to reflect an individual inspirational antecedent to indicate an individual’s willingness and to assume how much of an effort to put forth to accomplish a task ([Ajzen, 1991](#); [Singh and Srivastava, 2018](#)). However, the agreement to use MB is highly inadequate ([Venkatesh et al., 2007](#); [Schuetz and Venkatesh, 2020](#)). Consistent with previous intention’s theories and models, it is suggested that:

H6. Behavioural intention positively impacts the use of IMB smart services.

Method

Sampling

The current research adopted a cross-sectional research design. There are foreign and Jordanian IBs in Jordan. The sample of this research is drawn from customers of Jordanian IBs and their branches in Amman, reaching a total of 60 banks. The questionnaire was administered in December 2019. From the total 385 surveys distributed using a random sampling technique, only 358 questionnaires were returned.

Respondents completed a structured questionnaire that was based on earlier research. In addition to the bank customers’ characteristics, the following important question was asked to enquire whether potential respondents use MB technology: What is the frequency with which you access IMB smart services via your mobile phone, tablet or digital personal assistant? The sample’s characteristics are listed in [Table 1](#).

Measures

The anticipated research model consists of six latent constructs. Measured items are employed as indicators of latent constructs ([Sikdar and Makkad, 2015](#)). Several measured scales of the current model have been significantly utilised in past research and have resulted

Feature	Option	Frequency	Percent
Gender	Male	166	46.4
	Female	192	53.6
Age	<=20	15	4.2
	21–30	140	39.1
	31–40	143	39.9
	41–50	44	12.3
	51–60	16	4.5
Experience	<1 year	45	12.6
	1–3	80	22.3
	4–6	95	26.5
	7–10	78	21.8
	10–15	58	16.2
	>15	2	0.6
Using mobile banking	1–2 occasions/month	5	1.4
	1–2 occasions/week	60	16.8
	1–2 occasions/day	107	29.9
	3–5 occasions/day	61	17.0
	>10 occasions/day	8	2.2

Table 1.
Sample attributes

Source(s): Authors' own

in high validity. The measurements of performance expectancy, effort expectancy and social influence were taken from Venkatesh *et al.* (2003). The measurement of hedonic motivation was amended from Venkatesh *et al.* (2012). PT measurement was taken from Lim *et al.* (2006). Constructs of multiple items have been adapted to match the perspective of the IMB. The research's empirical field yielded a sum of 358 completed valid answers from 385 distributed questionnaires. The response rate stood at 93%.

Data examination and outcomes

Evaluation of the measurements

The statistical technique of structural equation modelling (PLS-SEM) was applied to analyse the causal associations in the anticipated research framework. The reflective measurement framework was evaluated by estimating the values of item loadings, reliability analysis and validity analysis. Item loadings above the value of 0.70 were kept in the framework measurement according to Hair *et al.* (2020). The reliability of constructs was evaluated by composite reliability (CR) with its lowest value of 0.70 and Cronbach's alpha (CA). Convergent validity (CV) was estimated by calculating the average variance extracted (AVE) (Hair *et al.*, 2020). A measurement scale is regarded as reliable if it has CR above 0.70 and AVE above 0.5 (Luo *et al.*, 2010). As shown in Table 2, all scales were reliable.

Furthermore, the Fornell and Larcker (1981) principle is utilised to evaluate discriminant validity (DV). The square root of the AVE (Italic values) should be larger than its association with all other constructs (Hair *et al.*, 2014, 2020). Table 3 demonstrates the Fornell–Larcker matrix.

Assessment of the structural model

The bootstrapping technique was employed to examine the analytical impact of all path coefficients. Figure 1 illustrates the results of the analysis, showing the path coefficients along with their significance levels. The anticipated research model has a substantial projecting and analytical power (Hair *et al.*, 2018).

Constructs	Items	Factor loadings	CA	CR	AVE
Effort Expectancy (EF)	EF1	0.823	0.847	0.897	0.686
	EF2	0.853			
	EF3	0.845			
	EF4	0.790			
Hedonic Motivation (HM)	HM-1	0.946	0.912	0.944	0.848
	HM-2	0.919			
	HM-3	0.897			
Behaviour Intention (BI)	INT-1	0.963	0.956	0.972	0.919
	INT-2	0.979			
	INT-3	0.933			
Perceived Trust (PT)	PT1	0.953	0.955	0.967	0.880
	PT2	0.947			
	PT3	0.906			
	PT4	0.946			
Performance Expectancy (PE)	PE-1	0.962	0.970	0.970	0.868
	PE-2	0.923			
	PE-3	0.28			
	PE-4	0.953			
	PE-5	0.915			
Social Influence (SI)	S11	0.939	0.894	0.894	0.627
	S12	0.851			
	S13	0.861			
	S14	0.736			
	S15	0.761			
Use Behaviour (UB)	EU1	0.782	0.970	0.970	0.914
	EU2	0.815			
	EU3	0.953			
		0.964			

Table 2.
The measured model research

Source(s): Authors' own

The explained variance of the BI is 0.728, adjusted *R* square = 0.725, and the explained variance of the use behaviour is 0.455, adjusted *R* square = 0.453. Table 4 illustrates path coefficients, *t*-tests and significance levels.

The structural model findings support H1, H4, H5, H6 and fail to corroborate H2 and H3. The results indicate that PT is the main significant variable that influences the

	EE	HM	BI	PT	PE	SI	UB
EE	0.828						
HM	0.329	0.921					
BI	0.381	0.736	0.959				
PT	0.412	0.735	0.822	0.938			
PE	0.461	0.622	0.673	0.698	0.932		
SI	0.464	0.469	0.407	0.500	0.525	0.792	
UB	0.427	0.606	0.675	0.764	0.661	0.420	0.956

Table 3.
Fornell-Larcker matrix

Source(s): Authors' own

behavioural intention to adopt IMB, maintaining a standardised co-efficient of 0.547. This important finding posits that the PT construct is still the primary antecedent in the MB context, and lends further support to earlier research (Luo *et al.*, 2010; Lin, 2011; Zhou *et al.*, 2010; Sharma and Govindaluri, 2017). However, the research outcomes fail to confirm the impact of effort expectancy as the effect of this construct was statistically insignificant. This result led to the rejection of H2. Furthermore, the finding that social influence is negatively affecting behavioural intention was unexpected. The finding differs from prior MB adoption research in which the construct of social influence exerts a direct positive effect on the innovation approval (Venkatesh *et al.*, 2012). The research results indicate that the research model explains 0.725% of the change in the behavioural intention and 0.455% of the change in the usage behaviour. The analytical and projective strength of the current research framework is greater or equivalent to that of past research papers (Luo *et al.*, 2010; Goh *et al.*, 2014). Consequently, based on the *R* square, path co-efficients and goodness-of-fit index (SRMR = 0.083; NFL = 0.808), the researchers

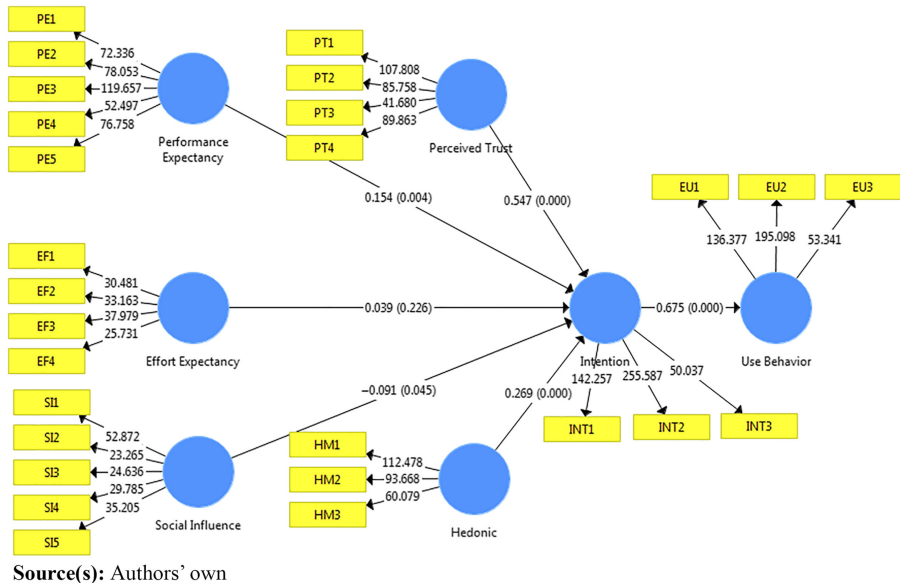


Figure 1.
The structural equation modelling results

Path	Standardised coefficients	Sample mean	Standard deviation	<i>T</i> -tests	<i>p</i> -values	Hypothesis
EE → BI	0.039	0.042	0.032	1.212	0.266	H2: Not supported
HM → UB	0.269	0.262	0.059	4.521	0.000	H4: Supported
BI → UB	0.675	0.676	0.048	14.160	0.000	H6: Supported
PT → BI	0.547	0.547	0.071	7.681	0.000	H5: Supported
PE → BI	0.154	0.154	0.053	2.913	0.004	H1: Supported
SI → BI	-0.091	-0.086	0.045	2.011	0.045	H3: Not supported

Source(s): Authors' own

Table 4.
The structural model results

assert that the research framework provides a satisfactory explanation of the MB smart services adoption and use.

Discussion

The research findings confirm that the constructs of performance expectancy, hedonic motivation and PT have significant relations with the construct of behavioural intention. This is consistent with previous research results (Zhou *et al.*, 2010; Yaseen and Al Omoush, 2013; Sharma and Govindaluri, 2017; Raza *et al.*, 2019). The finding posits that if IBs improve customer performance, hedonic motivation and initially PT, most probably existing customers and anticipated clients will adopt MB smart services. The results indicate that PT is the main significant and influential variable affecting behavioural intention. This important result is coherent with some prior studies (Luo *et al.*, 2010; Lin, 2011; Sharma and Govindaluri, 2017). The result implies that PT has a crucial influence on MB adoption and use. PT minimises perceived risk or uncertainty that is associated with MB technology. It is one of the key predictors that explain MB use in different settings (Akhlaq and Ahmed, 2013; Chiu *et al.*, 2017).

The finding that the construct of effort expectancy has an insignificant relationship with behavioural intention was unexpected. This result is supported by the study of Baptista and Oliveria (2016). However, this result contradicts the conclusions of Venkatesh *et al.* (2012) and others, namely, Carlsson *et al.* (2006), Yaseen and El Qirem (2018), Raza *et al.* (2019) and Yaseen and Al Omoush (2020). Nevertheless, while social influence has long been positively associated with the behavioural intention, the current finding indicates a negative influence of social influence constructs on behavioural intention to adopt and use IMB in Jordan. This is probably for three reasons:

- (1) IMB is at the early phase of adoption.
- (2) The existing social perception implies that people could rely on the conventional commercial bank's services using direct and face-to-face communication.
- (3) The decision-making style in the Arab world is often paternalistic and simultaneously exhibits strong personalism, collectivism and individualism.

Furthermore, MB technology is still a sensitive matter for diverse social groups (Yaseen and El Refae, 2019). As a result, this research recognised SI as the main obstacle to adopt IMB in Jordan.

The second important predictor was hedonic motivation. This outcome is in harmony with the prior study of Baptista and Oliveria (2016) and indicated that using MB technology is pleasing and entertaining. MB is meaningful and gratifies one or more bank customers' intrinsic needs.

It is vital to emphasise that the research contributes to the IMB literature in numerous respects. The research has successfully verified the impact of performance expectancy, PT and hedonic motivation on the customer's behavioural intention to use IMB. This research may contribute to the understanding of the main predictors that influence IMB and thus, enabling IBs' managers to effectively incorporate these antecedents into the existing MB strategy.

Conclusion and implications

This research aims to investigate antecedents of IMB smart services adoption and use in Jordan. The research's model is primarily drawn from UTAUT and UTAUT2 and incorporates PT as a further antecedent to forecast IMB adoption and use. The extended and modified model justified 0.728 of the BI variance and 0.455% of the use behaviour. The analytical power of the current

research framework is more robust than or similar to other past studies (i.e. Venkatesh *et al.*, 2003; Luo *et al.*, 2010; Goh *et al.*, 2014; Yaseen and El Qirem, 2018).

The conclusions of this empirical investigation hold several implications for marketing strategy makers who are responsible for promoting MB smart services amongst customers. Marketers and decision-makers should capitalise on the trust aspect of IMB. Security features should always be checked and updated to encourage customers to use portable banking services. Furthermore, application programmers should emphasise on developing systems that are motivating and easy to use. Perhaps, marketers and decision-makers should increase their efforts in promoting MB and emphasise the advantages of portable banking services to increase social influences and word-of-mouth promotion of MB.

Furthermore, this research may be the first research that investigates predictors influencing IMB adoption and use in Jordan and the Middle East area. Future research should investigate MB smart services adoption in IBs in the Gulf area and compare the result with IBs in other Arab countries. Future studies may concentrate on how artificial intelligence, blockchain, digital money and other sophisticated cyber mechanisms facilitate MB.

Nevertheless, some limitations are inherent in this research. First, the data analyses depend on the cross-sectional design which is incapable of confirming the causal inferences empirically. Second, the findings strictly apply to the Jordanian IBs' context. Therefore, future studies should apply the longitudinal approach to investigate IMB smart services adoption in other Arab countries.

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