



University of
New Haven

American Business Review

Volume 23 | Number 2

Article 6

11-2020

Mobile Banking Adoption Among Rural Consumers: Evidence from India

Malaya Ranjan Mohapatra
Indian Institute of Technology Kharagpur, India

Nirmalkumar Singh Moirangthem
Indian Institute of Technology Kharagpur, India

Pankaj Vishwakarma
Indian Institute of Technology Kharagpur, India

Follow this and additional works at: <https://digitalcommons.newhaven.edu/americanbusinessreview>

Recommended Citation

Mohapatra, Malaya Ranjan; Moirangthem, Nirmalkumar Singh; and Vishwakarma, Pankaj (2020) "Mobile Banking Adoption Among Rural Consumers: Evidence from India," *American Business Review*. Vol. 23 : No. 2 , Article 6.

DOI: 10.37625/abr.23.2.300-315

Available at: <https://digitalcommons.newhaven.edu/americanbusinessreview/vol23/iss2/6>

Mobile Banking Adoption Among Rural Consumers: Evidence from India

American Business Review
Nov. 2020, Vol.23(2) 300 - 315
© The Authors 2020, [CC BY-NC](#)
ISSN: 2689-8810 (Online)
ISSN: 0743-2348 (Print)

Malaya Ranjan Mohapatra ^a, Nirmalkumar Singh Moirangthem ^a, and Pankaj Vishwakarma ^a

<https://doi.org/10.37625/abr.23.2.300-315>

ABSTRACT

Recently, Financial Inclusion has received greater attention, as it is a key to economic growth and equality, growth of the business, and stability of financial and banking systems. In the process of understanding how technology is useful for financial inclusion, the study tries to understand the elements that prompt the perceived acceptability of mobile banking among the low income and low literate stratum. To explore these elements, the current piece of work utilized the Unified theory of acceptance and use of technology and with the addition of component of perceived risk. The research utilized convenience sampling to collect data from the respondents having Jan Dhan account. The results show that performance expectancy, effort expectancy, social influence, and perceived risk have a significant influence on intention to use mobile banking among financial inclusion stratum. Surprisingly, the facilitating conditions were found insignificant. The outcomes of the research can guide banks and technology houses to develop a more user-acceptable mobile banking system. Also, the outcome will help policymakers to enhance mobile banking system adoption for financial inclusion by considering influencing elements.

KEYWORDS

Financial Inclusion, Mobile banking, UTAUT, Perceived risk, Jan Dhan Yojana

INTRODUCTION

The participation of every citizen in a formal financial system is one of the factors for determining economic growth of a country, as financial inclusion provides a lot of benefits and opportunities for individual citizens. Hence, governments and policymakers tend to push for maximum financial inclusion through various programs and methods of technology. However, there are challenges, both from demand and supply side. For instance, financial institutions like banks find it very difficult to serve unprofitable segments in unreachable locations. While people who have a low income and/or low literate feel meaningless to access the 'formal banking' system. Thus, in order to match both demand and supply, technology has a major role to play; for instance, in the form of branchless banking, mini-ATMs, e-cards, business correspondents' support, internet, and mobile banking. Out of these, mobile banking has been gaining traction among the population at large and has become quite easily accessible. Thus, augmenting mobile banking with other technology and IT systems possibly may be a more feasible method for greater financial inclusion. Herein, it may be noted that in developing countries, the financial inclusion rate is low, as these countries are densely populated. Interestingly, these countries have more people who possess mobile phones than those who have proper bank accounts or any financial accessibility (Porteous, 2006). Nevertheless, the possible success of financial

^a Indian Institute of Technology Kharagpur, India

Corresponding Author:

Pankaj Vishwakarma (pankajv@iitkgp.ac.in)

inclusion through mobile banking would depend on its acceptance among this section of the population. For example, India has an unbanked population of 190 million as per a report published by the World Bank (2018); many of them have mobile phones but are not included with any banking system. Thus, deeper penetration of mobile banking (m-banking), may facilitate banking services, and in the process develop financial inclusion.

Irrespective of various steps taken by Reserve Bank of India (RBI) and other financial institutions, financial inclusions among the rural and underprivileged sections remain unsatisfactory. Importantly, financial inclusion would surely instill the habit of 'savings' among the rural community, which in turn strengthens the economic resources of a country, especially like India. Numerous major steps have been taken by the government of India (GOI) such as bank-led initiatives, a product-based method, government initiative, knowledge-based strategies, technology-based approaches, and regulator-based approaches (Garg and Agarwal, 2014). Importantly, the Indian government launched several schemes, such as no-frills accounts, kisan credit cards, savings account with an overdraft facility, business correspondents, mobile banking, branchless banking, and financial literacy programs. However, despite these efforts, the rural population has still not whole-heartedly been able to adopt/abide by these schemes and have therefore not been able to be added onto the 'financial inclusiveness' scheme.

As the mobile phone is possibly the largest accessible tool today, the present study explores factors that affect potential users to accept and adopt mobile banking. The objective of this study is to examine the determinants of adoption of mobile banking among the low literate and low-income masses, especially Jan Dhan¹ users in India. The paper is structured as follows: starting with a literature review, it is followed by the methodology, empirical analysis, findings, conclusions, implications, and finally limitations of the work.

LITERATURE REVIEW

FINANCIAL INCLUSION

The economic growth of a region is associated with various factors like input, resources, and productive participation of all stakeholders. Notably, financial inclusion is also one of the important factors that boosts the economic growth of a region by bringing about financial stability and participation. In the Indian context, it refers to "the process of ensuring access to financial services and timely and adequate credit to weaker sections and low-income groups at an affordable cost" (Rangarajan Committee, 2008). Further, it enables access to universal financial products and services by the whole population of the region, notably the weaker sections of the society (Bijoy, 2018).

The number of poor, illiterate, and 'unbanked' population is higher in India as compared to other countries, triggering a financial system imbalance there of; hence, financial inclusion is essential. In the past, scholars have stated that the financial inclusion process is a necessary pillar of financial stability (Hanning and Jansen, 2010; Kumar, 2015). Despite significant growth in business profitability and competitiveness, financial and banking services do not seem to have enough penetration to the low income and low literate population. Thus, in order to reach this stratum of community, the Indian

¹ Jan Dhan users are those people who have opened a bank account under the Pradhan Mantri Jan Dhan Yojana (PMJDY).

government introduced the ‘Pradhan Mantri Jan-Dhan Yojana’² in 2014. The objective of this scheme was to provide the ‘lower strata’ of society access to financial products and services (e.g. zero balance saving accounts, debit cards, remittance, credit/borrowing, insurance, pension schemes etc.) with a minimum cost. Irrespective of the development in information and communication technologies (ICT) and the increase in the number of bank accounts, India’s mobile banking adoption is very low. According to World Bank (2018) report, almost 1.2 billion adults (15-64 years) have opened bank accounts since 2011 till 2017, totaling 3.4 billion accounts, out of 4.9 billion adults, representing 69% penetration.

As on 2017, the number of global mobile cellular subscribers has been estimated to be at 7.7 billion, as reported by the International Telecommunication Union (ITU) (2017). Interestingly, 80% of mobile penetration has been observed in developing countries; this shows that more people have cellular connections than bank accounts or financial accessibility (Porteous, 2006).

MOBILE BANKING ADOPTION MODEL

In the past, numerous adoption models have been incorporated in the context of mobile banking. The studies have utilized well-established theories like Technology Acceptance model (TAM) (Davis, 1989), Theory of Planned Behavior (TPB) (Ajzen, 1991), Innovation Diffusion Theory (IDT) (Rogers, 1995), Theory of Reasoned Action (TRA) (Fishbein & Ajzen, 1975), Theory of Perceived Risk (TPR) (Featherman & Pavlou, 2003) Task Technology Fit (TTF) (Goodhue & Thompson, 1995) and Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al., 2003). In the context of mobile banking, the UTAUT model seems to be the most apt (Carlsson et al., 2006; Min et al., 2008; Park et al., 2007). It comprises of four elements, including performance expectancy (PE), effort expectancy (EE), social influence (SI), and facilitating conditions (FC) (Venkatesh et al., 2003). However, it fails to capture the ‘perceived risk’ of mobile banking usage among the population at large. We thereby propose to use the UTAUT model and extend it with the element of ‘perceived risk’ in order to examine mobile banking adoption.

HYPOTHESIS DEVELOPMENT

The current study investigates the adoption of mobile banking across the low income and low literate people having Jan Dhan bank accounts. Notably, all the variables used in this study and the proposed hypotheses relate to behavioral intentions to adopt mobile banking among Jan Dhan users, have been discussed in the following sections.

PERFORMANCE EXPECTANCY

Performance expectancy (PE) is “the degree to which an individual believes that using the system will help him or her to attain gains in job performance” (Venkatesh et al., 2003). The uniqueness of this study lies in the fact that it focuses exclusively on the intention to adopt mobile banking for the people belong to low income and low literate group, while most earlier studies seem to have ignored this population. Various past studies have also confirmed the positive relationship between performance expectancy and intention across different contexts such as in the adoption of remote mobile payment systems (Slade et al., 2015), the mobile banking system in Pakistan (Farah et al., 2018), and virtual

² Pradhan Mantri Jan Dhan Yojana (PMJDY) under the National Mission for Financial Inclusion was launched initially for a period of 4 years (in two phases) on 28th August 2014. It envisages universal access to banking facilities with at least one basic banking account for every household, financial literacy, access to credit, insurance, and pension.

reality in learning (Shen et al. 2019). Furthermore, several researchers found that performance expectancy directly influences behavioral intention to use mobile banking (Yu, 2012; Oliveira et al., 2014; Sarfaraz, 2017). The gains in performance include convenience, satisfaction, economic benefits, and personal image (Rogers, 1995; Taylor & Tood, 1995). In this case, performance expectancy captures an individual's opinion of improvement in performance (such as convenient payment service effectiveness and fast response) while using mobile banking (Zhou et al., 2010). Hence, we propose:

H1: *Performance expectancy has a positive influence on behavioral intention to use mobile banking among Jan Dhan users.*

EFFORT EXPECTANCY

Effort expectancy is “the degree of ease associated with the use of the system” (Venkatesh et al., 2003). It is similar to the perceived ease of use element of TAM (Luarn & Lin 2005; Wang, Lin, & Luarn, 2006; Kuo & Yen, 2009; Miltgen et al., 2013). In the case of mobile banking adoption, it measures user perception of the difficulty level, while using mobile banking (Zhou et al., 2010). It is very clear from past studies that effort expectancy affects the behavioral intention across various contexts (Farah et al., 2018; Talukder et al., 2019; Shen et al., 2019). User interfaces, content design, and functional ability (Venkatesh et al., 2003; Kim et al., 2009) of m-banking can influence its adoption (Yu, 2012). In the case of the BoP population, this element is very crucial. Further in this regard, we believe that when people would think that mobile banking is easy to use and clear, then they will accept it. Corroborating from the past studies, we propose the following:

H2: *Effort expectancy does have a positive influence on the intention to use mobile banking among Jan Dhan users.*

SOCIAL INFLUENCE

Social influence is “the degree to which an individual perceives that important others believe he or she should use the new system” (Venkatesh et al. 2003). Social influence is an individual's belief that s/he is following peers or family members who value the use of technology. Social influence measures aspects of subjective norms of TRA (Venkatesh et al., 2003) and echoes the surrounding effects like opinions of friends, relatives, and superiors on users' behavior (López-Nicolás et al., 2008). Past studies have verified the positive relationship of social influence and the intention to adopt mobile banking (Yu, 2012; Ahmed et al., 2017), mobile payment (Abrahão et al., 2016), and mobile learning (Thomas et al., 2013). In the current context, users would accept and use mobile banking as a result of societal influences like friends, family, and opinions of superiors (Zhou et al., 2010). Hence, we hypothesize the following:

H3: *Social influence has a positive impact on the intention to use mobile banking among Jan Dhan users.*

FACILITATING CONDITIONS

Facilitating Condition is “the degree to which an individual believes that an organizational and technical infrastructure exists to support the use of the system” (Venkatesh et al., 2003). For instance, for introducing mobile banking, various promotional activities, and support from multiple stakeholders do remove barriers to its usage and influence its adoption thereby. If users do not have

these necessary financial resources and operational skills, they would not adopt or use mobile banking (Zhou et al., 2010). Oliveira et al. (2014) stated that facilitating conditions does have a significant effect on behavioral intention among Portuguese mobile banking users. Numerous studies in the past have noted the positive influence of facilitating conditions on adoption intention, for instance, to adopt telehealth services among older adults (Cimperman et al., 2016), internet banking (Tarhini et al., 2016), and cloud classroom (Yang et al., 2019). In this context, if Jan Dhan users feel that they have enough resources and knowledge to use this, they will start using it. So, we propose:

H4: *Facilitating conditions will have a positive impact on the intention to use mobile banking among Jan Dhan users.*

PERCEIVED RISK (PR)

Perceived risk refers to “certain types of financial, product performance, social, psychological, physical, or time loss when consumers use technology” (Forsythe & Shi, 2003). It relates to perceiving a loss, while trying to achieve the job completed (Pavlou, 2001). Another study considers perceived risk as an essential determinant of acceptance of online transactions or mobile banking (Cho, 2004). As the use of mobile banking involves a possible degree of uncertainty for the BoP populous, perceived risk is regarded as one of the important antecedents of behavioral intention to use it. Therefore, perceived risk is one of the estimated variables for the intentional behavior of rural customers towards the use of mobile banking services (Bhuvana & Vasantha, 2017). In fact, many people fear that use of m-banking would leak their personal information; this apart, wrong transfer of money through m-banking would lead to a lack of perceived credibility (Akhlaq & Shah, 1970; Luarn & Lin, 2005; Ahmed et al., 2014). By and large, people are uncomfortable with change, and are thereby resistant to the acceptance of technology. For instance, the apprehension about the loss of personal information or lack of security inhibits them from accepting innovation (Pederson & Ling, 2002). Previous studies on information systems have also found perceived risk as a barrier to acceptance (Brown et al., 2003; Laforet & Li, 2005; Laukkanen et al., 2007; Luo et al., 2010; Cruz et al., 2010; Saleem & Rashid, 2011). Trust and privacy are known to be stimulants of risk, and are also associated with behavioral intention (Min et al., 2008). Importantly, perceived risk was observed to be affecting the adoption of mobile banking negatively (Yu, 2012; Yun et al., 2013). In this context, when Jan Dhan users feel that the use of mobile banking is a risky task for them, they will not use it. Thus, we form our next hypothesis.

H5: *Perceived risk will have a negative impact on the intention to use mobile banking among Jan Dhan users.*

The proposed framework has shown in figure 1. The proposed model has incorporated perceived risk as an additional factor along with the UTAUT.

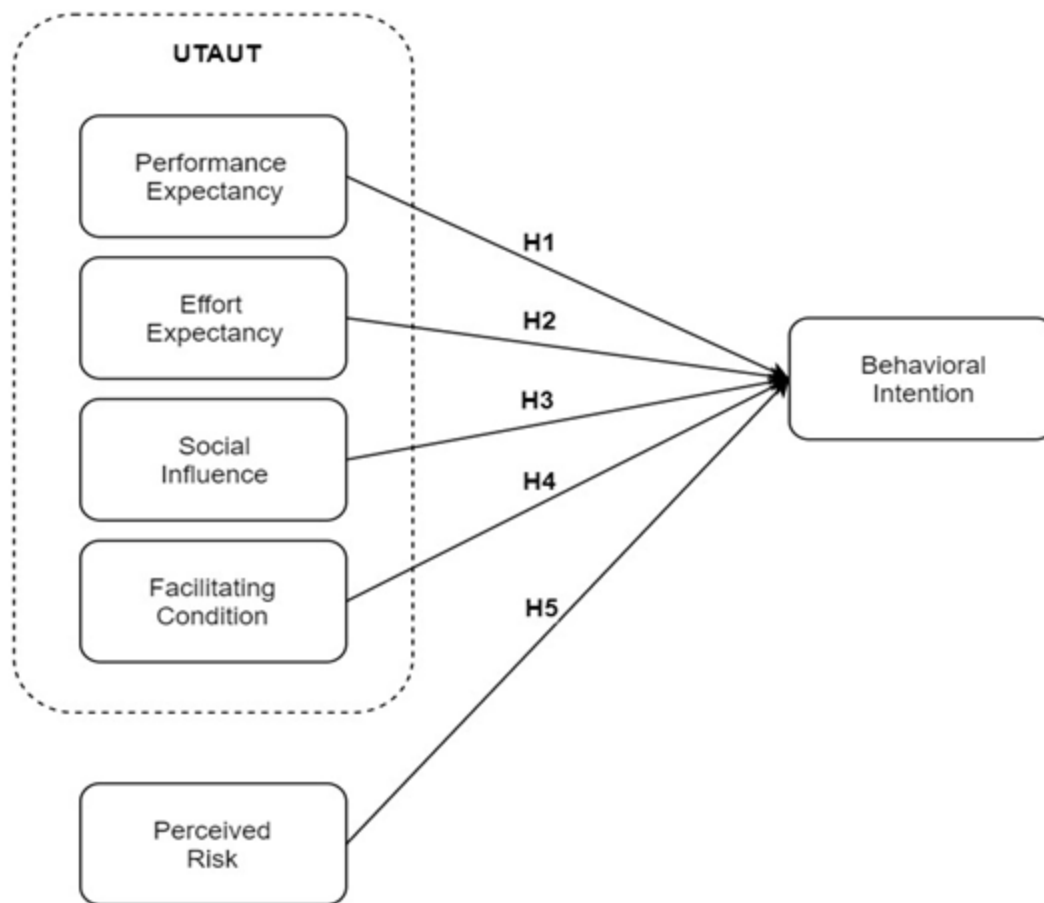


Figure 1. The Conceptual Model

METHODOLOGY

SAMPLE AND DATA COLLECTION

We used convenience sampling for collecting information from the respondents. The questionnaire-based survey was administered among Pradhan Mantri Jan Dhan Yojana (PMJDY) account holders, which is a recent and successful financial inclusion programme. The respondents belonged to surrounding places of Kharagpur, West Bengal; these include Gopali, Amrakola, Chhota Tengra, and Puratan Bazar. The questionnaire was initially framed in English, but it was translated to Bengali vernacular so that the respondents understood the questions better. The Bengali translation was verified by an expert in the Bengali language. While the respondents were looking into the questionnaire, we ensured that we assisted them in making the questions understandable as and when required. We distributed 500 questionnaires to the respondents. After removing incomplete responses, only 311 were used for final data analysis. Table 1 shows the sample characteristics of the respondents.

Table 1. Respondents Characteristics

Item	Category	No. of Respondents	(%)
Age	21-30	134	43%
	31-40	91	29%
	41-50	67	22%
	51 & Above	19	6%
Gender	Male	232	75%
	Female	79	25%
Income (Per Annum in INR)	≤ 20,000	104	33%
	20,001-40,000	30	10%
	40,001-60,000	85	27%
	60,001-80,000	73	24%
	80,000 & Above	19	6%
Education	Illiterate	43	14%
	Primary	74	24%
	Middle or High School	134	43%
	Intermediate	31	10%
	Graduation & Above	29	9%
	Total	311	

MEASURES

The questionnaire carried 20 items, which were measured on a five-point Likert scale ranging from 1 as 'strongly disagree' to 5 as 'strongly agree'. Initially, the questionnaire was tested on 50 Jan Dhan respondents to check if the questions were amply clear; notably, all the questions were found to be comprehensible. The elements to measure the constructs have been drawn from existing literature. The specific items used has been documented under appendix A.

RESULTS

The study used a two-step approach; in the first, we analyzed the measurement model to confirm the reliability and validity of construct items. This was followed by the second step, which involved the analysis of the structural model for testing the conceptualized hypotheses (Anderson & Gerbing, 1988).

MEASUREMENT MODEL

As a first step, we conducted the Confirmatory Factor Analysis (CFA) to test for reliability and validity, including both convergent and discriminant validity. The results indicate that the data fits the

conceptualized model well with $\chi^2 = 244.269$, $\chi^2/df = 1.259$, $CFI = 0.985$, $TLI = 0.982$, and $RMSEA = 0.029$ (Hair et al. 2010). Further, Cronbach's alpha and composite reliability were tested to check for scale reliability. The value of Cronbach's alpha and composite reliability were found to be above the cut-off value of 0.7 (Bagozzi & Yi, 1988; Gefen et al., 2000; Nunnally & Bernstein, 1994); hence, construct reliability was also achieved. Additionally, the average variance extracted (AVE) and composite reliability were found to be above the cut-off value of 0.5 and 0.7, respectively, establishing thereby convergent validity (Table 2). Furthermore, the square root of AVE was also found to be greater than the inter-correlation coefficient, establishing thereby discriminant validity (Fornell & Lacker, 1981), as shown in Table 3.

Table 2. Standardized Item Loadings, AVE, CR and Cronbach's Alpha

Factor	Item	Standardized Loadings	AVE	CR	Cronbach's α
Performance Expectancy (PE)	PE1	0.730	0.522	0.814	0.809
	PE2	0.752			
	PE3	0.727			
	PE4	0.679			
Effort Expectancy (EE)	EE1	0.820	0.676	0.893	0.893
	EE2	0.799			
	EE3	0.796			
	EE4	0.872			
Social Influence (SI)	SI1	0.873	0.777	0.933	0.933
	SI2	0.879			
	SI3	0.879			
	SI4	0.894			
Facilitating Conditions (FC)	FC1	0.738	0.549	0.829	0.829
	FC2	0.742			
	FC3	0.772			
	FC4	0.710			
Perceived Risk (PR)	PR1	0.621	0.601	0.816	0.803
	PR2	0.893			
	PR3	0.788			
Behavioral Intention (BI)	BI1	0.761	0.514	0.760	0.759
	BI2	0.688			
	BI3	0.699			

Table 3. Measurement of Discriminant Validity

	PE	EE	SI	FC	PR	BI
PE	0.522					
EE	0.062	0.676				
SI	0.016	0.012	0.777			
FC	0.010	0.004	0.001	0.549		
PR	0.039	0.006	0.036	0.002	0.601	
BI	0.507	0.129	0.018	0.011	0.161	0.514

STRUCTURAL MODEL AND HYPOTHESIS TESTING

The results of the structural model reveal that the data fitted the conceptualized framework well, having $GFI^3 = 0.935$; $AGFI^4 = 0.916$; $NFI^5 = 0.932$; $CFI^6 = 0.985$; $RMSEA^7 = 0.029$ (Byrne, 2013). Performance expectancy ($\beta = 0.599, p < 0.001$), Effort expectancy ($\beta = 0.101, p < 0.01$), Social influence ($\beta = 0.048, p < 0.1$) did seem to have a significant positive influence on the behavior intention to adopt mobile banking, while Perceived risk ($\beta = -0.254, p < 0.001$) seemed to have a negative impact on behavioral intention. Interestingly, facilitating conditions were found to be insignificant influencers on behavioral intention. Hence, hypotheses H₁, H₂, H₃, and H₅ are supported. However, H₄ is found to be insignificant, and hence rejected. The results of hypothesis testing have been shown in Table 4.

Table 4. Path coefficients, t-statistics, and p-value

Hypothesis	Path	Estimate	S.E.	t-statistics	Supported or not
H ₁	PE → BI	0.599	0.075	7.946**	Supported
H ₂	EE → BI	0.101	0.031	3.207**	Supported
H ₃	SI → BI	0.048	0.028	1.704*	Supported
H ₄	FC → BI	0.070	0.056	1.261	Not Supported
H ₅	PR → BI	-0.254	0.055	-4.626***	Supported

DISCUSSION

The results show that their perceived performance expectancy influences the Jan Dhan users positively in adopting mobile banking. The result is thereby in line with other UTAUT studies on mobile banking acceptance (Zhou et al., 2010; Oliveira et al., 2014). Similarly, Effort Expectancy does seem to have a positive influence on behavioral intention to accept mobile banking Jan Dhan account holders, indicating thereby some sort of a 'financial inclusion', especially once they realize the ease and the effort needed to learn and use it. Interestingly, this finding seems to be consistent with existing technology adoption studies (Luarn & Lin, 2005; Miltgen et al., 2013; Martins et al., 2014; Shankar & Datta, 2018), supporting thereby the perceived ease of use or understandability and straightforward functions that would make potential users incline towards accepting mobile banking. Notably, for

³ GFI: Goodness of Fit Index

⁴ AGFI: Adjusted Goodness of Fit Index

⁵ NFI: Normed Fit Index

⁶ CFI: Comparative Fit Index

⁷ RMSEA: Root Mean Square Error of Approximation

inexperienced users of new technology like computers, ease of use, and straightforwardness of functions were found to be very significant (Davis et al., 1989; Szajna, 1996).

The aspect of 'perceived risk' seems to have a negative influence on the behavioral intention to adopt mobile banking, which shows people perceive higher risk in the form of monetary or non-monetary loss, theft of data including personal details and uncertainties, leading to adverse effect in using mobile banking which is consistent with past studies based on UTAUT (Luarn & Lin, 2005; Yu, 2012; Yun et al., 2013; Boonsiritomachai, 2017). Additionally, social influence is a big trigger for opinion formation and spreading awareness and has been found to be statistically significant. The result implies that social influence does seem to push individuals to learn and use mobile banking. The finding is thereby consistent with past UTAUT studies in the context of mobile banking acceptance and technology adoption (Zhou et al., 2010; Yu, 2012; Shen et al., 2019).

Notably, we found an insignificant relationship between facilitating conditions and behavioral intention, possibly due to the population in this low income, and low literate stratum is inexperienced and relatively new to mobile banking. The result is supported by Venkatesh et al. (2003), who stated that facilitating conditions could have a strong impact on behavioral intention when users are more experienced. The finding of our study is also found consistent with the other empirical studies (Birch & Irvine, 2009; Wong et al., 2015; Sultana, 2019).

IMPLICATIONS

This research highlights that performance expectancy (PE), effort expectancy (EE), social influence (SI), and perceived risk (PR) are significant reasons of concern, as regards the use of mobile banking among Jan Dhan customers. However, the facilitating conditions (FC) fails to explain behavioral intention to use mobile banking.

This study enriches existing literature through theoretical and practical implications. From a theoretical perspective, the current piece of work has extended the UTAUT model by integrating perceived risk, which is a prominent factor for behavioral intention among low income and low literate strata. This research can provide important insights to the IT department, government, banks, financial institutions, researchers, corporate houses, and other stakeholders, who could utilize the research findings for promoting financial inclusion among the low income and low literate groups. The direct positive effect of performance expectancy on behavioral intention indicates that this section of people would use mobile banking when they realize its value. In this context, policymakers, banks, financial institutions, and corporate houses should join hands to promote the usefulness of mobile banking, so that it triggers the interest among the low income and low literate section. As our study establishes the negative relationship between perceived risk and behavioral intention, the mobile banking provider and other relevant parties should place additional concerns for 'perceived risk'. Banks and mobile banking service providers should build a strong cybersecurity network, giving confidence and assurance to users about the safety of their information and transaction.

Similarly, banks, financial institutions, and corporate houses should introduce more user-friendly mobile banking features and services to improve the ease of use and learning. As social influence is a definite determiner for behavioral intention for using mobile banking among this population, we should provide more helping hands and organize campaigns about financial inclusion. Furthermore, there should be a mass awareness about the safety and credibility of the banking transaction through mass-medias, word-of-mouth (WOM), or e-WOM. 'Facilitating condition' was found to be insignificant in our study, possibly due to the inefficiency of banking infrastructure in rural India (The Economic Times, 2018). The current work believes that the improvement in banking infrastructure and other

facilitating factors in a rural area can motivate the people belonging to low income and low literate stratum, to adopt mobile banking.

LIMITATION AND FUTURE SCOPE

There is some limitation of the study too. The study has been confined to a location around Kharagpur, West Bengal. Future research may be done on a large scale by including a bigger sample size, possibly across different parts of India. Moreover, the current study only attempted to know the essential elements that influence mobile banking adoption intention among Jan Dhan account holders. Future studies could incorporate both triggers and barriers specific to Jan Dhan users. Additionally, this study has been conducted on the customer's end; further research could possibly view it from the supply side, e.g. financial institutions, in addition to perception-based research. Further studies could also look to incorporate control variables like age, gender, educational background, etc. to check the predictability of the model.

REFERENCES

- Abrahão de Sena, R., Moriguchi, S. N., & Andrade, D. F., (2016). Intention of adoption of mobile payment: An analysis in the light of the Unified Theory of Acceptance and Use of Technology (UTAUT). *RAI Revista de Administração e Inovação*, 13(3), 221-230.
- Ahmed, M., Almotairi, M.A., Ullah, S. and Alam, A., (2014). Mobile banking adoption: A qualitative approach towards the assessment of TAM model in an emerging economy. *Academic Research International*, 5(6), 248.
- Ahmed, Z., Kader, A., Rashid, H.U. and Nurunnabi, M., (2017). User Perception of Mobile Banking Adoption: An Integrated Ttf-Utaut Model. *Journal of Internet Banking and Commerce*, 22(3), 1-19.
- Ajzen, I., (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50(2), 179-211.
- Akhlaq, M.A. and Shah, A., (1970). Internet banking in Pakistan: finding complexities. *The Journal of Internet Banking and Commerce*, 16(1), 1-14.
- Anderson, J.C. and Gerbing, D.W., (1988). Structural equation modeling in practice: A review and recommended two-step approach. *Psychological Bulletin*, 103(3), p.411.
- Bagozzi, R.P. and Yi, Y., (1988). On the evaluation of structural equation models. *Journal of the Academy of Marketing Science*, 16(1), 74-94.
- Bhuvana, M. and Vasantha, S., (2017). A Structural Equation Modeling (SEM) Approach for Mobile Banking Adoption-A Strategy for Achieving Financial Inclusion. *Indian Journal of Public Health Research & Development*, 8(2), 175-181.
- Bijoy, K., (2018). Financial inclusion in India and PMJDY: A critical review. *Proceedings of First International Conference on Information Technology and Knowledge Management*, 14, 39-46
- Birch, A., & Irvine, V., (2009). Preservice teachers' acceptance of ICT integration in the classroom: applying the UTAUT model. *Educational Media International*, 46(4), 295-315.
- Boonsiritomachai, W. and Pitchayadejanant, K., (2017). Determinants affecting mobile banking adoption by generation Y based on the Unified Theory of Acceptance and Use of Technology Model modified by the Technology Acceptance Model concept. *Kasetsart Journal of Social Sciences*.
- Brown, I., Cajee, Z., Davies, D. and Stroebel, S., (2003). Cell phone banking: predictors of adoption in South Africa—an exploratory study. *International Journal of Information Management*, 23(5), 381-394.
- Byrne, B.M., (2013). *Structural equation modeling with LISREL, PRELIS, and SIMPLIS: Basic concepts, applications, and programming*. Psychology Press.
- Carlsson, C., Carlsson, J., Hyvonen, K., Puhakainen, J. and Walden, P., (2006), January. Adoption of mobile devices/services—searching for answers with the UTAUT. In *System Sciences, 2006. HICSS'06. Proceedings of the 39th Annual Hawaii International Conference on* (Vol. 6, 132a). IEEE.
- Cho, J., (2004). Likelihood to abort an online transaction: influences from cognitive evaluations, attitudes, and behavioral variables. *Information & Management*, 41(7), 827-838.
- Cimperman, M., Brenčič, M. M., & Trkman, P., (2016). Analyzing older users' home telehealth services acceptance behavior—applying an Extended UTAUT model. *International Journal of Medical Informatics*, 90, 22-31.
- Cruz, P., Barretto Filgueiras Neto, L., Munoz-Gallego, P. and Laukkanen, T., (2010). Mobile banking rollout in emerging markets: evidence from Brazil. *International Journal of Bank Marketing*, 28(5), 342-371.

- Davis, F.D., Bagozzi, R.P. and Warshaw, P.R., (1989). User acceptance of computer technology: a comparison of two theoretical models. *Management Science*, 35(8), 982-1003.
- The Economic Times, (2018). India's banking revolution has left its villagers behind. Retrieved from <https://economictimes.indiatimes.com/industry/banking/finance/banking/indias-banking-revolution-has-left-its-villagers-ehind/articleshow/65019590.cms?from=mdr>
- Farah, M. F., Hasni, M. J. S., & Abbas, A. K., (2018). Mobile-banking adoption: empirical evidence from the banking sector in Pakistan. *International Journal of Bank Marketing*, 36(7), 1386-1413.
- Featherman, M.S. and Pavlou, P.A., (2003). Predicting e-services adoption: a perceived risk facets perspective. *International Journal of Human-Computer Studies*, 59(4), pp.451-474.
- Fishbein, M. and Ajzen, I., (1975). *Belief, attitude, intention and behavior: An introduction to theory and research*.
- Fornell, C., & Larcker, D. F. (1981). Structural Equation Models with Unobservable Variables and Measurement Error: Algebra and Statistics. *Journal of Marketing Research*, 18(3), 388. <https://doi.org/10.2307/3150980>
- Forsythe, S.M. and Shi, B., (2003). Consumer patronage and risk perceptions in Internet shopping. *Journal of Business Research*, 56(11), 867-875.
- Garg, S., & Agarwal, P., (2014). Financial inclusion in India—a Review of initiatives and achievements. *IOSR Journal of Business and Management*, 16(6), 52-61.
- Gefen, D., Straub, D. and Boudreau, M.C., (2000). Structural equation modeling and regression: Guidelines for research practice. *Communications of the Association for Information Systems*, 4(1), 7.
- Goodhue, D.L. and Thompson, R.L., (1995). Task-technology fit and individual performance. *MIS Quarterly*, 213-236.
- Hair, J. F. Jr., Black, W. C., Babin, B. J., and Anderson, R. E., (2010). *Multivariate data analysis*. Pearson Prentice Hall, Seventh Edition.
- Hanning, A. and Jansen, S., (2010). Financial Inclusion and Financial Stability: Current Policy Issues. Asian Development Bank Institute, *ADB Working Paper No. 259*, Tokyo.
- International Telecommunication Union (ITU). (2017). Measuring the Information Society Report 2017. Retrieved on: 04.03.2020 from: https://www.itu.int/en/ITU-D/Statistics/Documents/publications/misr2017/MISR2017_Volume1.pdf
- Kim, G., Shin, B., & Lee, H. G., (2009). Understanding dynamics between initial trust and usage intentions of mobile banking. *Information Systems Journal*, 19(3), 283-311.
- Kumar, V., (2015). Pradhan Mantri Jan Dhan Yojana (PMJDY): Financial Inclusion and Inclusive Growth in India. *International Journal of Scientific & Innovative Research Studies*, 3(3), 19-24
- Kuo, Y.F. and Yen, S.N., (2009). Towards an understanding of the behavioral intention to use 3G mobile value-added services. *Computers in Human Behavior*, 25(1), 103-110.
- Laforet, S. and Li, X., (2005). Consumers' attitudes towards online and mobile banking in China. *International Journal of Bank Marketing*, 23(5), 362-380.
- Laukkanen, T., Sinkkonen, S., Kivijärvi, M. and Laukkanen, P., (2007). Innovation resistance among mature consumers. *Journal of Consumer Marketing*, 24(7), 419-427.
- López-Nicolás, C., Molina-Castillo, F.J. and Bouwman, H., (2008). An assessment of advanced mobile services acceptance: Contributions from TAM and diffusion theory models. *Information & Management*, 45(6), 359-364.
- Luarn, P. and Lin, H.H., (2005). Toward an understanding of the behavioral intention to use mobile banking. *Computers in Human Behavior*, 21(6), 873-891.

- Luo, X., Li, H., Zhang, J. and Shim, J.P., (2010). Examining multi-dimensional trust and multi-faceted risk in initial acceptance of emerging technologies: An empirical study of mobile banking services. *Decision Support Systems*, 49(2), 222-234.
- Martins, C., Oliveira, T., & Popovič, A., (2014). Understanding the Internet banking adoption: A unified theory of acceptance and use of technology and perceived risk application. *International Journal of Information Management*, 34(1), 1-13.
- Miltgen, C.L., Popovič, A. and Oliveira, T., (2013). Determinants of end-user acceptance of biometrics: Integrating the “Big 3” of technology acceptance with privacy context. *Decision Support Systems*, 56, 103-114.
- Min, Q., Ji, S. and Qu, G., (2008). Mobile commerce user acceptance study in China: a revised UTAUT model. *Tsinghua Science & Technology*, 13(3), 257-264.
- Nunnally, J. C., & Bernstein, I. H., (1994). *Psychological theory* (3rd ed). New York, NY: McGraw-Hill.
- Oliveira, T., Faria, M., Thomas, M.A. and Popovič, A., (2014). Extending the understanding of mobile banking adoption: When UTAUT meets TTF and ITM. *International Journal of Information Management*, 34(5), 689-703.
- Park, J., Yang, S. and Lehto, X., (2007). Adoption of mobile technologies for Chinese consumers. *Journal of Electronic Commerce Research*, 8(3), 196.
- Pavlou, P., (2001). Integrating trust in electronic commerce with the technology acceptance model: model development and validation. *Amcis 2001 proceedings*, 159.
- Pederson, P. and Ling, R., (2002). Mobile end-user adoption studies: a selected review. *Scandinavian Journal of Information Systems*. 14(1), 1-17.
- Porteous, D., (2006). *The enabling environment for mobile banking in Africa*. Department for International Development, Boston
- Rangarajan Committee, (2008). Financial Inclusion in India – An Assessment. Retrieved on: 04.05.2020 from: <https://rbidocs.rbi.org.in/rdocs/Speeches/PDFs/MFI101213FS.pdf>
- Rogers Everett, M., (1995). *Diffusion of Innovations*. New York.
- Saleem, Z. and Rashid, K., (2011). Relationship between customer satisfaction and mobile banking adoption in Pakistan. *International Journal of Trade, Economics and Finance*, 2(6), 537.
- Sarfaraz, J., (2017). Unified theory of acceptance and use of technology (UTAUT) model-mobile banking. *Journal of Internet Banking and Commerce*, 22(3), 1-20
- Shankar, A. and Datta, B., (2018). Factors Affecting Mobile Payment Adoption Intention: An Indian Perspective. *Global Business Review*, 19(3_suppl), S72-S89.
- Shen, C. W., Ho, J. T., Ly, P. T. M., & Kuo, T. C., (2019). Behavioural intentions of using virtual reality in learning: perspectives of acceptance of information technology and learning style. *Virtual Reality*, 23(3), 313-324.
- Slade, E. L., Dwivedi, Y. K., Piercy, N. C., & Williams, M. D., (2015). Modeling consumers’ adoption intentions of remote mobile payments in the United Kingdom: extending UTAUT with innovativeness, risk, and trust. *Psychology & Marketing*, 32(8), 860-873.
- Sultana, J., (2019). Determining the factors that affect the uses of Mobile Cloud Learning (MCL) platform Blackboard-a modification of the UTAUT model. *Education and Information Technologies*, 1-16. 223-238.
- Szajna, B., (1996). Empirical evaluation of the revised technology acceptance model. *Management Science*, 42(1), 85-92.
- Talukder, M. S., Chiong, R., Bao, Y., & Hayat Malik, B., (2019). Acceptance and use predictors of fitness wearable technology and intention to recommend: An empirical study. *Industrial Management & Data Systems*, 119(1), 170-188.

- Tarhini, A., El-Masri, M., Ali, M., & Serrano, A., (2016). Extending the UTAUT model to understand the customers' acceptance and use of internet banking in Lebanon: A structural equation modeling approach. *Information Technology & People*, 29(4), 830-849.
- Taylor, S.R. and Tood, P., (1995). Assessing IT Usage: The Role of Prior Experience, *MIS Quarterly*, 561-570.
- Thomas, T., Singh, L., & Gaffar, K. (2013). The utility of the UTAUT model in explaining mobile learning adoption in higher education in Guyana. *International Journal of Education and Development Using ICT*, 9(3), 71-85.
- Venkatesh, V., Morris, M.G., Davis, G.B. and Davis, F.D., (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly*, 425-478.
- Venkatesh, V., Thong, J. Y., & Xu, X., (2012). Consumer acceptance and use of information technology: extending the unified theory of acceptance and use of technology. *MIS Quarterly*, 157-178.
- Wang, Y.S., Lin, H.H. & Luarn, P., (2006). Predicting consumer intention to use mobile service. *Information Systems Journal*, 16(2), 157-179.
- Wong, K. T., Teo, T., & Goh, P. S. C., (2015). Understanding the intention to use interactive whiteboards: model development and testing. *Interactive Learning Environments*, 23(6), 731-747.
- World Bank, (2018). The unbanked. Retrieved on: 07.05.2020 from: https://globalfindex.worldbank.org/sites/globalfindex/files/chapters/2017%20Findex%20full%20report_chapter2.pdf
- Wu, J.H. and Wang, S.C., (2005). What drives mobile commerce? An empirical evaluation of the revised technology acceptance model. *Information & Management*, 42(5), 719-729.
- Yang, H. H., Feng, L., & MacLeod, J., (2019). Understanding college students' acceptance of cloud classrooms in flipped instruction: integrating UTAUT and connected classroom climate. *Journal of Educational Computing Research*, 56(8), 1258-1276.
- Yu, C.S., (2012). Factors affecting individuals to adopt mobile banking: Empirical evidence from the UTAUT model. *Journal of Electronic Commerce Research*, 13(2), 104.
- Yun, H., Han, D. and Lee, C.C., (2013). Understanding the use of location-based service applications: do privacy concerns matter? *Journal of Electronic Commerce Research*, 14(3), 215.
- Zhou, T., Lu, Y. and Wang, B., (2010). Integrating TTF and UTAUT to explain mobile banking user adoption. *Computers in Human Behavior*, 26(4), 760-767.

APPENDIX

Construct	Variable Item	Description
Performance Expectancy (Venkatesh et al., 2003)	PE1	<i>I would find the mobile banking useful for my DBT and normal banking transactions.</i>
	PE2	<i>Using mobile banking enables me to finish my transactions and other enquiries faster (duration).</i>
	PE3	<i>Use of mobile banking improves the banking transaction convenience.</i>
	PE4	<i>This mobile banking reduces the cost of transaction</i>
Effort Expectancy (Venkatesh et al., 2003)	EE1	<i>I believe that when I use mobile banking, the process will be simple and understandable.</i>
	EE2	<i>It would be easy for me to become skilful at using the mobile banking.</i>
	EE3	<i>I would find the mobile banking easy to use.</i>
	EE4	<i>Learning to operate the mobile banking is easy for me</i>
Social Influence (Venkatesh et al., 2003)	SI1	<i>People who influence my behaviour think that I should use the mobile banking.</i>
	SI2	<i>People who are important to me think that I should use the mobile banking.</i>
	SI3	<i>People whose opinion I value insists me to use mobile banking.</i>
	SI4	<i>In general, the society or surrounding has supported the use of the mobile banking.</i>
Facilitating Conditions (Venkatesh et al., 2003; Zhou et al., 2010; Boonsiritomachai, 2017)	FC1	<i>I/My family have basic mobile handset for using basic mobile banking like SMS.</i>
	FC2	<i>I have basic knowledge of SMS, MISSED CALL, OTP to use the basic mobile banking.</i>
	FC3	<i>My mobile network is supported with 24 x 7 availability for banking services through SMS, MISSED CALL, etc.</i>
	FC4	<i>A specific person (or group) is available for assistance with mobile banking difficulties.</i>
Perceived Risk (Luarn & Lin, 2005; Kim et al., 2009; Yu, 2012; Zhou, 2010)	PR1	<i>Others may know information about my online transactions if I use this mobile banking.</i>
	PR2	<i>There is a significant risk when making my queries and/or my banking transactions through the mobile banking.</i>
	PR3	<i>I believe that making queries and/or banking transactions with this mobile banking is a risky choice.</i>
Behavioral Intention (Luarn & Lin, 2005; Wu & Wang, 2005; Kim et al., 2009; Venkatesh et al., 2012; Yu, 2012; Shankar & Datta, 2018)	BI1	<i>Assuming I had access to mobile banking, I intend to use it.</i>
	BI2	<i>I intend to start/continue using mobile banking.</i>
	BI3	<i>Assuming the benefits of mobile banking, I may/will regularly use mobile banking in the future.</i>