

Mobile Banking Use by Rural Students

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Abstract:

Determinants of mobile banking adoption research have been received great attention among researchers and financial institutions around the globe. In India, mobile banking is comparatively new and at an early stage. Research on determinants of mobile banking adoption provides crucial information to financial service providers. A number of research studies were conducted in the urban context. But in the rural context, no studies were found in the literature. This study examined the proposed model of determinants of mobile banking adoption in the rural area with a sample size of 351 using SEM. Empirical results found that the perceived ease of use is a major determining factor of mobile banking among rural students, followed by self-efficacy, social influence, credibility, and perceived usefulness. This study provides significant information to the financial institutions about the design and delivery of more suitable financial products to the rural people to reduce urban and rural differences.

Keywords: Mobile, Mobile Banking, Rural, Extended TAM.

1. Introduction:

Disruptive technology has been influencing business models and human behaviour. Especially, Smartphones have become an integral part of the human lifestyle and young people are more addicted for various reasons. Further, the COVID-19 pandemic created the necessity of virtual connections and enhanced the use of the internet and smartphones in rural areas. Since March 2019, students have been

connected to the internet for attending online classes. Hence, smartphones became an instrument for rural students for attending online classes. On the other side, corporates were adopted technology as a competitive strategy for expanding the customer reach and to build a good customers relationship.

In India, internet banking has been available from early 2000, but it has not received great attention from bank customers due to the cost

of computers and internet connection. In most cases, internet banking is used by employed people who have access to computers and the internet. But the recent time, internet usage through mobile phones (smartphones) increased tremendously. Statista (April 2021) reported around 1.15 billion mobile phone subscribers in India. Telecom Regulatory Authority of India (17th February 2022) confirmed that around 1.15 billion mobile phone subscribers, and rural India it was around 521 million. Reports shows that the potential opportunities for business houses to offer their products on mobile phones (m-commerce). The irony of mobile banking adoption is different from mobile phone adoption, only 31 percent of households use online payments (Statista, July 2021). Therefore. This study aims to examine the facilitators and inhibitors of mobile banking adoption in rural areas with an extended technology acceptance model (TAM).

2. Literature Review:

Several research studies have been found different determining factors of mobile banking adoption around the globe, including both developed and developing economies. Akturan&Tezcan, (2012) investigated mobile banking adoption in youth marketing using an extended TAM model. They found that perceived usefulness and perceived risk were the main determinants of mobile banking.

Alalwan et al., (2017) examined influencing factors of mobile banking using the UTAUT2 model in the Jordan. They found that performance expectancy, efforts expectancy, hedonic motivation, price value, and trust were

the key influencing factors of mobile banking adoption among Jordanian customers.

Phonthanukitithaworn et al., (2016) conducted a study on mobile payments usage in Thailand using an integrated model of TAM and DOI (diffusion of innovation) and they observed that compatibility, subjective norms, perceived trust, and perceived risk were the key determinants of mobile payments than the TAM constructs (perceived usefulness and perceived ease of use).

In Saudi Arabia, Baabdullah et al., (2019) found that performance expectancy, price value, facilitating conditions, hedonic motivation, habit, system quality, and service quality have influencing factors of the customers' use of mobile banking.

Adjei et al., (2020) undertaken study on determinants of continual use of mobile banking. They found that perceived usefulness, perceived ease of use, agent quality, and satisfaction have significant impact on the continual use of mobile financial services.

Chaouali&Souiden, (2019) examined the barriers to mobile banking among elderly people. They found that tradition, image, usage, value, and risk barriers have significantly causing for the non-adoption of mobile banking.

The study on resistance and motivations of mobile banking use in Tunisia (Chemingui&Lallouna, 2013). The authors found that the tradition is one of the resistant factors to mobile banking use and compatibility, trialability, perceived enjoyment, and system quality have the motivational factors to use of mobile banking.

Chawla & Joshi, 2(017)investigated the driving factors of mobile wallets in India. They concluded that perceived ease of use, perceived usefulness, trust, security, facilitating conditions have influencing factors of mobile wallet adoption behaviour.

Deb & Lomo-David, (2014)conducted study on determinants of mobile banking. They foundthat perceived usefulness, perceived ease of use, and social influence have significant influences on the attitude of mobile banking adoption in India.

Krishna Kishore & Sequeira, (2016) investigated mobile banking adoption in rural Karnataka. They found in their study performance expectancy, effort expectance, social influence, attitude, and perceived risk have significance influence on the mobile banking behavioral intentions.

3. Research Model and Hypotheses:

In this study, we adoptedTAMextending with self-efficacy and credibility (**Figure 1**). TAM developed by Davis, (1989). This model has been adapted by the researchers on different innovative and technology adoption studies including online banking, mobile banking, and mobile payments.

3.1 Perceived ease of use

Perceived ease of use refers that the extent to which mobile banking is perceived as easy to learn and operate (Lin, 2011). An extensive literature on digital banking adoption observed that ease of use one of the significant influencing factors to adopt (Kim et al., 2010;Alalwan et al., 2017). The complexity of learning and understanding of the operating system would cause for the low rate of

adoption. It is also found in the prior research that perceived ease of use has a significant impact on perceived usefulness (Mohammadi, 2015;Chawla & Joshi, 2017). Therefore, examined the following hypotheses.

H1a: Perceived ease of use influences mobile banking use.

H1b: Perceived ease of use influences perceived usefulness.

3.2 Perceived usefulness

Perceived usefulness refers that the extent to which mobile banking perceived as usefulness(Sharma et al., 2017). This construct exerts that the more mobile banking is useful for the financial needs of the user the more they use it. Perceived usefulness has been found one of most influential factors of mobile banking in the existing literature(Talwar et al., 2020;Kesharwani& Bisht, 2012). Hence, we examined the following hypothesis.

H2: Perceived usefulness influences mobile banking use.

3.3 Social influence

Social influence refers that the pressures or recommendationscomes from the peers, family members, friends, and from media to adopt mobile banking(Alalwan et al., 2015). Generally, people considered the opinion of the cohorts to take decisions on the adoption of any innovation. (Zhou et al., 2010)found in their study that the social influence is one of the important influencing factors of mobile banking adoption. Therefore, we examined the following hypothesis based on the previous studies.

H3: Social influenceimpacts on mobile banking use.

3.4 Self-efficacy

In the information systems literature, credibility refers that the user's ability to use and operate. Users' ability and confidence is the important element to adopting mobile banking. Many researchers examined the self-efficacy construct influence on the adoption of digital banking and found it as one of the important factors that influences adoption of digital banking. Wang et al., (2003) found that self-efficacy has significance impact on credibility. On this note, we examined the following hypotheses.

H4a: Self-efficiency influences mobile banking use.

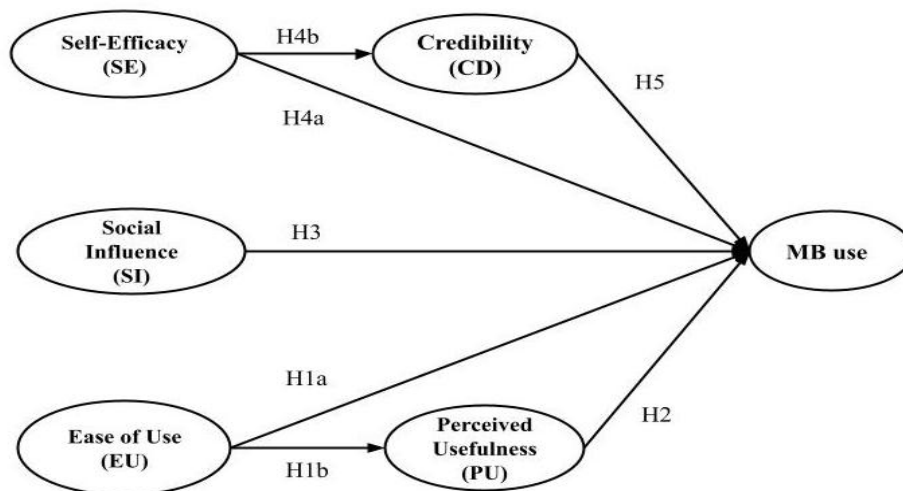
H4b: Self-efficiency influences Credibility on mobile banking.

3.5 Credibility

In the information systems literature, credibility refers that an integration of privacy and security ensured to the customers (Wang et al., 2003). It means that the security in respect of financial transaction and personal information. If the mobile banking provides enhanced privacy and security for the financial transactions and personal information, then the mobile banking adoption would be more. On this note we examined the following hypothesis.

H5: Credibility influences mobile banking use.

Figure 1: Research Model



4. Methodology:

A structured questionnaire has been designed in two parts for the study. The first part contained demographic profiles of respondents and the second part contained measurement variables to capture latent factors of the study; perceived ease of use, perceived usefulness, social influence, self-efficiency, and mobile

banking use. All the questionnaire statements of the constructs were measured with a 7-point Likert-scale, 1 for strongly disagree and 7 per strongly agree. Survey items were adapted from the literature on internet banking, mobile banking, and mobile payments adoption; 3 items of the ease of use adapted from Kim, (2010), 3 items of the perceived usefulness adapted from Susanto et al., (2016), 4 items of

the social influence adopted from Sobti, (2019), 4 items of the self-efficiency adapted from Susanto et al., (2016), 3 items of the credibility adapted from Yu, (2012), and 4 items of the mobile banking use adapted from Zhou et al., (2010).

Data has been collected from rural college undergraduate and postgraduate students, who have attained the age of 18 and current users of mobile banking, by sending a structured questionnaire in different online platforms, like WhatsApp, Facebook, Instagram, and email. All responses were voluntary, and the rate of responses was around 9 percent only. Finally, we were able to collect 351 samples. The respondents were aged between 18 to 25. The gender ratio of the respondents; female were 28 percent and males were 72 percent. Around 56 percent of the respondents were pursued under-graduation and 44 percent were post-graduation. 15 percent of the students had less than one year experience in mobile banking, around 56 percent of students had between 1 - 3 of experience in mobile banking, and around 29 percent of the respondents had above three years in experience of mobile banking. Further family income of respondents had been asked the respondents, around 11 percent of the students belonged to the family income below

2,00,000, 38 percent of students belonged to family income between 2,00,001 - 4,00,000, around 30 percent were belonged to family income between 4,00,001 - 6,00,000, around 15 percent belonged to family income between 6,00,001 - 10,00,000, and around 6 percent of the respondents belonged to the family income above 10,00,000.

Data analysis was undertaken in a two-step approach (Yang et al., 2012) using R software. In the first step; data reliability, validity, and measurement model fit were examined through confirmatory factor analysis (CFA). In the second step; structural model fit and hypothesis were examined through structural equation modeling (SEM).

5. Data Analysis and Interpretation:

5.1 Confirmatory Factor Analysis

Reliability, validity, and measurement model fitness were examined using CFA. Further, we examined the unidirectionality of item loadings on respective constructs, CFA analysis confirmed that all items loaded on their respective constructs only, item loadings were greater than the threshold values of 0.50 (Hair et al., 2014).

Table 1: CFA Factor Loadings.

Factor	Indicator	Estimate
Ease of Use (EU)	EU1: Learning mobile banking easy for me.	0.857
	EU2: Interaction with mobile banking is clear and understandable.	0.872
	EU3: Interaction with mobile banking does not require much efforts.	0.928
Perceived	PU1: Mobile banking enables me access financial services quickly.	0.923

Usefulness (PU)	PU2: Mobile banking convenience to access financial services.	0.971
	PU3: Mobile banking is efficient to initiate financial transactions.	0.932
Social Influence (SI)	SI1: People at college suggested me using mobile banking.	0.871
	SI2: My family and friends suggested me using mobile banking.	0.846
	SI3: It is current trend to use mobile banking.	0.924
	SI4: Mass media have influence on me to use mobile banking.	0.832
Self-Efficacy (SE)	SE1: I can use mobile banking without help.	0.792
	SE2: I can use mobile banking by following manual or online help.	0.786
	SE3: I have ability to use mobile banking	0.764
	SE4: I can use mobile banking if I get assistance at first time.	0.707
Credibility (CD)	CD1: Mobile banking is not safe for financial transactions.	0.764
	CD2: Mobile banking divulge my personal information.	0.799
	CD3: Mobile banking environment not safe.	0.834
Use	U1: I use mobile banking for purchase of goods and services.	0.729
	U2: I use mobile banking for payment of bills.	0.623
	U3: I use mobile banking for remittances.	0.936
	U4: I use mobile banking for investments.	0.906

Cronbach’s alpha (α) was calculated for all constructs in the research model. It’s results for all the constructs were above the minimum threshold of 0.70 (Bagozzi& Yi, 1988); perceived ease of use (EU) 0.914, perceived usefulness (PU) 0.958, social influence 0.924, self-efficiency (SE) 0.847, credibility (CD) 0.838, and use 0.865.

Convergence validity was calculated using composite reliability (CR) and average variance extracted (AVE) from standardised factor loadings of CFA. Results of CR obtained for all constructs were above threshold values of 0.7 (Hair et al., 2014); perceived ease of use (EU) 0.917, perceived usefulness (PU) 0.960, social influence (SI) 0.925, self-efficiency (SE) 0.848, credibility (CD) 0.841, and use 0.870. Results of AVE

obtained for all constructs were above threshold values of 0.50(Hair et al., 2014); perceived ease of use (EU) 0.917, perceived usefulness (PU) 0.960, social influence (SI) 0.925, self-efficiency (SE) 0.848, credibility (CD) 0.841, and use 0.870.

Discriminant validity was calculated using the square root of average variance extracted (AVE) for all constructs. Results of the square root of AVE obtained greater than the correlations of constructs and estimated discriminant validity. In **Table 2**the square root of AVE values was presented diagonally with bold letters and correlations were presented off-diagonally. All reliability and validity values of the measurement model were presented in **Table 2**.

Table 2: Reliability, Validity, and Correlations.

Constructs	A	CR	AVE	EU	PU	SI	SE	CD	Use
EU	0.914	0.917	0.788	0.888					
PU	0.958	0.96	0.89	0.495	0.943				
SI	0.924	0.925	0.756	0.358	0.427	0.869			
SE	0.847	0.848	0.584	0.305	0.271	0.309	0.764		
CD	0.838	0.841	0.639	0.332	0.174	0.241	0.363	0.799	
Use	0.865	0.87	0.631	0.636	0.485	0.448	0.42	0.424	0.794

The goodness of measurement model fit examined using normed Chi-square (X^2/df), Comparative Fit Index (CFI), Tucker-Lewis Index (TLI), Bentler-Bonett Normed Fit Index (NFI), Bollen's Relative Fit Index (RFI), Bollen's Incremental Fit Index (IFI), Relative Noncentrality Index (RNI), Standardized Root Mean Square Residual (SRMR), and Root Mean Squared Error of Approximation (RMSEA). The results of fit indices listed in

Table 3 were established a very good measurement model.

Table 3: Model Fit Indices

Fit Measures	CFA	SEM
X^2 / df	1.487	1.748
Comparative Fit Index (CFI)	0.985	0.976
Tucker-Lewis Index (TLI)	0.981	0.971
Bentler-Bonett Normed Fit Index (NFI)	0.955	0.945
Bollen's Relative Fit Index (RFI)	0.945	0.935
Bollen's Incremental Fit Index (IFI)	0.985	0.976
Relative Noncentrality Index (RNI)	0.985	0.976
SRMR	0.035	0.076
RMSEA	0.049	0.046

5.2 Structural Equation Modeling

SEM is a robotic technique that examines the underlying relation of all variables including measurement variables and latent variables. Before testing hypotheses, it is necessary to confirm that the data validity for the structural

model and the goodness of model fit. Goodness of the structural model was calculated using same fit indices of CFA. The results of fit indices established a very good model fit (**Table 3**).

Hypotheses of research model examined with the help of β - values and t- values at 95

percent confidence level. All hypothetical relations of the research model found significant influence on mobile banking adoption (**Table 4**). Among all hypotheses of research model, it observed that the perceived ease of use (EU) has established major determinants of mobile banking adoption among rural students ($\beta = 0.448, t = 7.26, p < 0.001$) and it is also observed that significant indirect influence ($\beta = 0.067, t = 2.492, p < 0.013$) through perceived usefulness on mobile banking. Second important factor influencing mobile banking is self-efficacy (SE) ($\beta = 0.183, t = 3.25, p < 0.001$) and self-efficacy has significant indirect influence through

credibility ($\beta = 0.061, t = 2.616, p < 0.009$). Social influence (SI) ($\beta = 0.143, t = 3.09, p < 0.002$), credibility ($\beta = 0.139, t = 2.74, p < 0.006$), and perceived usefulness ($\beta = 0.125, t = 2.53, p < 0.011$) have significant influence on mobile banking adoption among rural students. Further, it is observed from the results, perceived ease of use has significant influence on perceived usefulness ($\beta = 0.524, t = 10.13, p < 0.001$) and Self-efficacy also has significant influence on credibility ($\beta = 0.44, t = 6.82, p < 0.001$). The research model explained 55.4 percent of variation in mobile banking adoption ($r^2 = 0.554$).

Table 4. Hypotheses Results.

Relationships	Estimate	SE	β -values	t-values	p-values	Results
EU → Use	0.302	0.042	0.448	7.26	<.001	Accepted
EU → PU	0.524	0.052	0.533	10.13	<.001	Accepted
PU → Use	0.086	0.034	0.125	2.53	0.011	Accepted
SI → Use	0.104	0.034	0.148	3.09	0.002	Accepted
SE → Use	0.163	0.05	0.183	3.25	0.001	Accepted
SE → CD	0.492	0.072	0.44	6.82	<.001	Accepted
CD → Use	0.111	0.04	0.139	2.74	0.006	Accepted

6. Discussion and Conclusion:

This study aimed to identify the determining factors of mobile banking adoption among rural students. Statistical results of the study observed that perceived ease of use (EU) has a significant impact on adoption of mobile banking among rural students. It indicates that the ease of operating and understand causes for wide acceptance of mobile banking. Further, it observed that

perceived ease of use has a significant impact on perceived usefulness. Perceived usefulness also found a significant influence on mobile banking. Perceived usefulness describes that the more usefulness of mobile banking would drives more adoptions of mobile banking among rural people. Hence, it concludes that the effect of TAM constructs has significant impact on mobile banking adoption among the rural students and these outcomes are consistent with previous studies on internet

banking and mobile banking (Deb & Lomo-David, 2014; Renu Aggarwal & Monica Bhardwaj, 2014; Chawla & Joshi, 2017)

Self-efficacy has been found a second important influence factor on mobile banking adoption among rural students. This indicates that the user's ability and confidence are important elements in adoption of mobile banking. Self-efficacy also has a significant influence on credibility. These results imply that individuals' confidence and ability are the significant impact on use of mobile banking and further self-efficacy improves trust on mobile banking services. Therefore, we can

conclude that self-efficacy another important factor to mobile banking adoption. These results are consistent with previous studies on digital banking adoption (Wang et al., 2003; Hamdi et al., 2017; Makanyeza, 2017).

Our results also found that credibility has significant influence on mobile banking adoption among rural students. It means that the security, privacy, and trust are important elements in using mobile banking. Credibility also is another important factor for the use of online services if less credibility on online services causes a low rate of adoption. Therefore, banks and financial institutions should focus on security and privacy aspects of online services. Our credibility results are consistent with previous studies (Koenig-Lewis et al., 2010; Daud et al., 2011; Anouze & Alamro, 2020; Chawla & Joshi, 2017).

Social Influence also found a significant impact on the mobile banking adoption. These results describe that people use to contact

family members, friends, and teaches regarding mobile banking operations and to learn how to use. This result indicates that social networks of the people have significant influence among the rural people to adopt mobile banking. Our social influence findings are in consistent with previous studies on digital banking (Al-Ajam & Md Nor, 2015; Phonthanakitithaworn et al., 2016; Boateng et al., 2016)

Therefore, we advocate that for the banks and financial institutions to design mobile financial services and applications that should be easy to operate and understand with high security. Otherwise, they cannot retain rural market longer time. It is also suggesting them do social campaigns and training sessions for rural people to empower and improve customers' ability to use digital financial services.

7. Limitations and Scope future research:

This study drawn data at single point of time from rural students who were presently pursued UG and PG programmes of the study in the State of Andhra Pradesh, India. Future research may extend mobile banking use including all adult rural population to draw better conclusions. Further, researchers can conduct studies using longitudinal data rather cross-sectional data.

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