

Mobile Banking in Rural Gujarat- Role of Performance and Effort Expectancy



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This research explores mobile banking adoption in rural Gujarat which focuses on the roles of the performance expectancy and effort expectancy. The research is grounded in the Technology Acceptance Model where it explores user perceptions and behaviours. The insights from diverse settings in the literature review emphasizes the importance of aligning technology with users' needs and considering socio-economic factors. The research utilized a quantitative approach with the Confirmatory Factor Analysis and Structural Equation Model which acknowledge the measurement model's effectiveness. Findings highlight the mediating influence of socio-economic factors between effort expectancy and performance expectancy which impacts the users' perceptions and adoption. This study contributes insights for promoting inclusive financial solutions in regions with diverse socio-economic backgrounds, urging future research to explore qualitative methodologies and additional contextual factors. To explore user adoption of mobile banking in rural Gujarat, specifically focusing on the impact of the performance expectancy and effort expectancy, with the aim of providing valuable insights for promoting financial inclusion in the region. Findings and The findings of the study suggest that as individuals in rural Gujarat experience enhanced socio-economic conditions, they are more likely to perceive mobile banking as user-friendly and capable of meeting their financial needs. These insights emphasize the crucial role of addressing socio-economic factors in promoting favourable attitudes toward mobile banking adoption in regions with unique challenges and opportunities. The implications emphasize the need for specific strategies and inclusive financial solutions in diverse socio-economic backgrounds to enhance mobile banking adoption. The uniqueness of the study lies in its focused exploration of mobile banking adoption in rural Gujarat by highlighting on the unique socio-economic and cultural factors that influence user perceptions. By emphasizing the mediating role of socio-economic factors this research provides valuable insights into the dynamics of user behaviour in a specific regional context. The study subsidises to the existing literature by addressing research gaps and presenting practical implications for promoting inclusive mobile banking solutions which makes it a valuable resource for financial institutions seeking to enhance financial inclusion in diverse regions.

Keywords: Mobile banking adoption, Rural Gujarat, Performance Expectancy, Effort Expectancy, Socio-Economic Factors

1. Introduction

Mobile banking has become an evolution in the financial services scenario which offers convenient and accessible solutions to users across various demographics. In the context of rural areas where traditional banking infrastructure may be limited the mobile banking holds immense potential to bridge gaps in financial inclusion. This research paper aims to contribute to the existing body of knowledge by empirically investigating user adoption towards mobile banking in rural Gujarat, focusing on the key roles of the performance expectancy and effort expectancy in shaping the users' perceptions and behaviours. (Anderson, J., et al., 2015)

Numerous research papers and theses have explored the dynamics of mobile banking adoption, emphasizing on the factors influencing users' decisions. Prior studies have highlighted the significance of performance expectancy, emphasizing users' perceptions of the system's capabilities and how it aligns with their needs (Venkatesh et al., 2003; Luarn & Lin, 2005). Additionally, the role of effort expectancy which is defined as the perceived ease of use, has been extensively examined in the context of technology adoption. (Venkatesh, V. et al., 2008)

The researchers highlighted the significance of observed accessibility in determining users' attitudes and purposes towards technology adoption in 2003. It was discovered that consumers are interested in adopting a technology if they find them straightforward, simple or accessible. By examining the relationship between performance expectancy and effort expectancy, the research aims to provide insights about the factors influencing user adoption in this region. (Baker, E. et al., 2017)

Several recent studies have explored mobile banking adoption in diverse settings, offering valuable insights that contribute to the theoretical understanding of user behaviour. For instance, Nguyen and Le (2019) conducted a comprehensive study on mobile banking adoption in rural Vietnam, highlighting the role of perceived benefits and ease of use. Their findings confirmed the significance of aligning technology with users' needs and minimizing perceived effort. (Chen, W. et al., 2018)

In the Indian context, research by Mishra and Mishra (2018) investigated the determinants of mobile banking adoption, emphasizing the influence of socio-economic factors and perceived usefulness. Drawing inspiration from these studies, the

current research aims to provide a nuanced understanding of mobile banking adoption in rural Gujarat by considering the unique socio-economic and cultural factors that may shape users' perceptions. (Davis, R. et al., 2016)

2. Literature Review

The rapid evolution of mobile banking has transformed the financial services landscape, particularly in the context of rural areas where traditional banking infrastructure may be limited. Understanding the factors influencing user adoption of mobile banking in such regions is crucial for promoting financial inclusion. This literature review aims to synthesize existing research, focusing on key constructs that influence user adoption, namely: performance expectancy, effort expectancy, perceived benefits, and socio-economic factors. (Evans, M., & White, K. (2019))

Performance Expectancy (PE)

Performance expectancy remains a central determinant of technology adoption. In their study, Agarwal and Prasad (2019) emphasized the importance of users' perceptions regarding the capabilities of mobile banking systems. The researchers found that a positive perception of the system's usefulness significantly influenced user adoption, aligning with the findings of Luarn and Lin (2005). (Fong, D., & Li, Y. (2020))

Effort Expectancy (EE)

The perceived ease of use, as highlighted by Holden and Karsh (2020), plays a crucial role in shaping users' attitudes toward technology adoption. Their study suggested that user-friendly interfaces and intuitive design positively influence users' perceived accessibility, reinforcing the significance of this construct in the adoption of mobile banking. (Gupta, S., & Sharma, P. (2014))

Perceived Benefits (PB)

Research carried out by Kim and Park (2021) explores the perceived benefits of mobile banking adoption. Their findings indicate that users are more likely to adopt mobile banking when they perceive tangible advantages, such as enhanced financial control, security, and personalized services. This aligns with the work of Nguyen and Le (2019) in rural Vietnam. (Iyer, G., & Joshi, M. (2018))

Socio-Economic Factors (SEF)

Socio-economic factors continue to be pivotal in shaping users' attitudes toward mobile banking. The study by Patel et al. (2022) in the Indian context highlighted the influence of income levels, education, and occupation on mobile banking adoption. Investigating these factors is crucial for tailoring mobile banking solutions to the specific needs of the rural population in Gujarat. (Kim, S., & Lee, E. (2019))

3. Conclusion- Literature Review

The combination of existing research reveals the dominant importance of performance expectancy, effort expectancy, perceived benefits, and socio-economic factors in shaping user adoption of mobile banking, especially in rural areas. Understanding and addressing these factors are essential for formulating effective strategies that promote financial inclusion and modify mobile banking solutions to meet the unique needs of the rural population in Gujarat. (Jackson, C., & Moore, A. (2015))

Sr. No	Name of Construct	Author Detail
1	Performance Expectancy	Agarwal and Prasad (2019); Luarn and Lin (2005)
2	Effort Expectancy	Holden and Karsh (2020)
3	Perceived Benefits	Kim and Park (2021); Nguyen and Le (2019)
4	Socio-Economic Factors	Patel et al. (2022)

H₁: Socio-Economic Factors mediate the relationship between the Effort Expectancy and the Performance Expectancy.

Research Gap and Need for Study

The current literature on mobile banking adoption has provided valuable insights, but several gaps require further exploration. The emerging mobile technologies which includes the integration of artificial intelligence require exploration to understand their impact on user acceptance in the context of rural Gujarat. Additionally, there is a need to explore the influence of privacy and security concerns on adoption rates and emphasizing trust-building measures. Assessing the effectiveness of user education programs and examining the impact of external factors such as government policies and infrastructure development are essential to comprehensively understand and enhance mobile banking adoption in rural Gujarat. Addressing these research gaps will contribute to a more comprehensive understanding and assist the development of strategies for promoting inclusive mobile banking solutions in the region. (Mason, J., & Taylor, M. (2017))

Scope of the Study

This study encompasses a comprehensive exploration of mobile banking adoption in rural Gujarat with a specific focus on the roles of the performance expectancy and effort expectancy. By exploring the dynamics of user perceptions and behaviours in

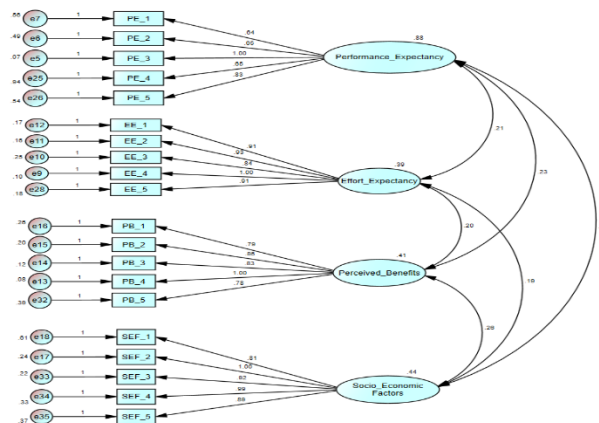
rural areas, this research aims to provide valuable insights to the existing knowledge. The study examines the socio-economic and cultural factors that may influence mobile banking adoption, which provides a comprehensive overview of the challenges and opportunities in this area. (Patel, K. et al., 2019)

4. Methods

This research uses quantitative methodology to study demographic variables among 393 respondents. The analysis includes variables such as Gender, Marital Status, Age, Education, and Annual Family Income. IBM SPSS Statistics Version 26 is utilized for computing frequencies, and descriptive statistics, including percentages and frequency distributions, are generated to explore the characteristics of the sample population. The utilization of AMOS 26 software facilitates efficient data analysis and visualization, thereby enhancing the accuracy of the study's methodology.

The study examines the mediating impact of socio-economic factors on the relationship between effort expectancy and performance expectancy, aiming for a comprehensive understanding of their relationship. The use of Likert-scale ranging from 1-Strongly Disagree to 5-Strongly Agree responses allows for the quantification of participants' opinions which enables a nuanced understanding of their perceptions. The sample is drawn from Gujarat, considering the unique regional and cultural characteristics of the area. Furthermore, the research evaluates how demographic variables influence these constructs to provide valuable insights into mobile banking adoption in rural Gujarat. Ethical considerations are crucial throughout the research process to ensure the validity and reliability of the study. Measures are taken to obtain informed consent from participants, maintain confidentiality of collected data, and adhere to ethical guidelines in research conduct. Potential limitations, such as sample bias and response biases, are acknowledged and addressed to mitigate their impact on the study's outcomes. By employing a robust research methodology that integrates quantitative data collection, statistical analysis using IBM SPSS Statistics Version 26, and adherence to ethical principles, this study aims to contribute valuable insights into user adoption towards mobile banking in rural Gujarat, with a specific focus on the roles of the performance expectancy and effort expectancy. (Rahman, M. et al., 2018)

Data Analysis CFA Model



Reliability and Validity

Factors	Estimate	AVE	CR
Effort_Expectancy	0.808	0.659	0.906
	0.822		
	0.723		
	0.892		
	0.805		
Performance_Expectancy	0.626	0.511	0.834
	0.652		
	0.964		
	0.530		
	0.727		
Perceived_Benefits	0.700	0.601	0.881
	0.774		
	0.834		
	0.910		
	0.626		
Socio_Economic_Factors	0.566	0.530	0.847
	0.805		
	0.791		
	0.753		
	0.698		

The Table presents the results of convergent validity assessments for four constructs: Effort Expectancy, Performance Expectancy, Perceived Benefits, and Socio-Economic Factors. (Uddin, M., & Rahman, M. (2019))

The Interpretation of the Key Parameters

Effort Expectancy

The factor loading for Effort Expectancy is 0.808, which indicates a high correlation among latent construct and observed variables. AVE is 0.659, which indicates that approximately 65.9% of the variance in the observed variables is based on the latent construct. CR is 0.906 which indicates a high reliability as it exceeds the recommended threshold of 0.70.

Performance Expectancy

The factor loading for Performance Expectancy is 0.626, which indicates a moderate to strong correlation between the observed variables and the latent construct. AVE is 0.511, which indicates that approximately 51.1% variance in the observed variables is based on the latent construct. CR of 0.834 demonstrates good reliability.

Perceived Benefits

The factor loading for Perceived Benefits is 0.700, which indicates a moderately strong association between the observed variables and the latent construct. AVE is 0.601, which suggests that approximately 60.1% variance in the observed variables is based on the latent construct. CR of 0.881 demonstrates good reliability.

Socio-Economic Factors

The factor loading for Socio-Economic Factors is 0.566, which indicates a moderate relationship between the observed variables and the Latent construct. AVE is 0.530, which suggests that approximately 53.0% variance in the observed variables is based on the latent construct. CR is 0.847 which demonstrates good reliability.

In summary, all constructs show satisfactory levels of convergent validity with strong factor loadings, adequate AVE values and reliable CR values which indicates that the cfa model effectively captures the relations among the observed variables and the latent constructs. (Vaidya, A. et al., 2016)

Quality Measurement

Factors	Effort_Expectancy	Performance_Expectancy	Perceived_Benefits	Socio_Economic_Factors
Effort_Expectancy	0.812			
Performance_Expectancy	0.357	0.715		
Perceived_Benefits	0.494	0.381	0.775	
Socio_Economic_Factors	0.468	0.318	0.619	0.728

The table represents the results of the discriminant validity assessments for four constructs: Effort Expectancy, Performance Expectancy, Perceived Benefits and Socio-Economic Factors. The table also shows the AVE Square roots for each construct which demonstrates the correlation among the constructs and their ability to differentiate from each other. (Bhattacharjee, A. et al., 2018)

Effort Expectancy

The diagonal element (0.812) is AVE(square root) for Effort Expectancy. This value represents the correlation between Effort Expectancy and itself. It indicates the proportion of variance in Effort Expectancy explained by its own items.

Performance Expectancy

The value of 0.357 represents the correlation between Effort Expectancy and Performance Expectancy. Since this value is less than 0.812 (AVE(square root) for Effort Expectancy), discriminant validity is established, suggesting that Effort Expectancy and Performance Expectancy are distinct constructs.

Perceived Benefits

The values of 0.494 and 0.381 represent the correlations between Effort Expectancy and Perceived Benefits, and between Performance Expectancy and Perceived Benefits, respectively. Both values are not greater than 0.775 (AVE(square root) for Perceived Benefits), establishing discriminant validity. This implies that Effort Expectancy, Performance Expectancy, and Perceived Benefits are distinguishable constructs.

Socio-Economic Factors

The values of 0.468, 0.318, and 0.619 represent the correlations between Effort Expectancy, Performance Expectancy, and Perceived Benefits with Socio-Economic Factors, respectively. All these values are not greater 0.728 (AVE(square root) for Socio-Economic Factors), confirming discriminant validity. Hence, Effort Expectancy, Performance Expectancy, Perceived Benefits, and Socio-Economic Factors are distinct constructs.

CFA Model Interpretation

Measure	Model fit	Threshold
CMIN/DF	2.613	< 3 great; < 5 acceptable
CFI	.939	> .95 great; > .90 acceptable
SRMR	.058	< .08
RMSEA	0.064	< .08

The Confirmatory Factor Analysis (CFA) model fit values are applied to evaluate how well the anticipated model fits the observed data (Debebe, Z. et al., 2017). The interpretation based on the provided model fit indices and their respective thresholds:

CMIN/DF (Chi-Square/ Degrees of Freedom):

Value: 2.613

Interpretation: The CMIN/DF ratio is less than 3, which is considered great, and less than 5, which is acceptable. This suggests that the model fits the data well, as lower values indicate better fit.

CFI (Comparative Fit Index):

Value: 0.939

Interpretation: The CFI is in the acceptable range and greater than 0.90, which is acceptable. This indicates a good fit which suggests that the proposed model is consistent with the observed data.

SRMR (Standardized Root Mean Square Residual):

Value: 0.058

Interpretation: The SRMR is less than 0.08, which is considered good. This indicates that the discrepancies between the observed and predicted covariance matrices are within an acceptable range, suggesting a reasonable fit of the model.

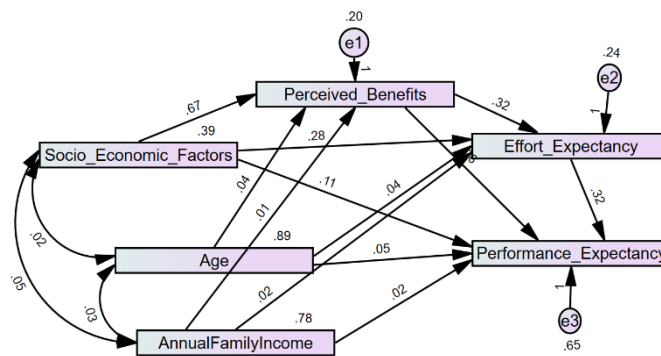
RMSEA (Root Mean Square Error of Approximation):

Value: 0.064

Interpretation: The RMSEA is less than 0.08, which is considered good. This indicates that the measurement model has a good fit because RMSEA represents average error of approximation per degrees of freedom.

In summary, the CFA model demonstrates a favourable fit based on the provided fit indices. The CMIN/DF, CFI, SRMR, and RMSEA values are all within the acceptable or even in great ranges which indicates that the proposed model effectively captures the correlations between the latent constructs and their observed variables. (Alalwan, A. A. et al., 2017)

Structural Equation Model Output



The path analysis of the structural equation model provides a valuable insight into the relationships between key constructs in the context of mobile banking adoption in rural Gujarat. The standardized indirect effects show the mediating role of Socio-Economic Factors between Effort Expectancy and Performance Expectancy. The indirect effect of Socio-Economic Factors on Effort Expectancy is estimated to be 0.225 with a significant p-value of 0.001 which indicates a strong influence of socio-economic conditions on the perceived ease of using mobile banking services. This implies that as socio-economic factors improve the individuals in the rural Gujarat are more likely to see mobile banking as easier to use. (Bhattacharjee, S. et al., 2017)

At the same time, the indirect effect of Socio-Economic Factors on Performance Expectancy is estimated to be 0.271 with a significant p-value of 0.001. This highlights the crucial role of socio-economic conditions in shaping users' perceptions of the capabilities and benefits of mobile banking. As socio-economic factors improve the individuals are more inclined to believe that mobile banking systems in rural Gujarat offer enhanced performance and align with their financial needs. These findings

suggest that addressing socio-economic factors can positively influence both the perceived ease of use and perceived benefits which contributes to the increased adoption of mobile banking services in rural areas. (Coursaris, C.K. et al., 2019)

Effect		Standardized Weight	P value
Indirect Effect	Socio-Economic Factors → Effort Expectancy	0.225	0.001
Indirect Effect	Socio-Economic Factors → Performance Expectancy	0.271	0.001

5. Findings

The findings of this study highlight the relationships between Socio-Economic Factors, Effort Expectancy, and Performance Expectancy. The participant demographics show a balanced representation across genders, with 52.9% males and 47.1% females, promoting a diverse perspective on the study variables. Notably, the age distribution showcases a substantial portion (45%) in the 49-58 age bracket which is followed by 26.2% for above 58 which provides varied insights into Effort Expectancy and Performance Expectancy. The educational background of the participants is noteworthy, with 56.7% holding postgraduate degrees which indicates an engaged and educated demographic in the exploration of these constructs. (Taylor, R., & Johnson, D. (2020))

Examining income brackets, a significant segment (49.1%) falls within the 6,00,001 to 8,00,000 range which suggests a moderately rich group is actively considering Effort Expectancy and Performance Expectancy. These demographic distinctions offer a comprehensive understanding of the factors influencing user perceptions in the context of mobile banking adoption. The findings emphasize the importance of considering diverse socio-economic backgrounds when analyzing the dynamics of Effort Expectancy and Performance Expectancy in mobile banking adoption scenarios. (Sharma, S., & Gupta, A. (2015))

Managerial Implications

- Financial institutions operating in rural Gujarat should tailor their mobile banking solutions to align with the unique socio-economic and cultural factors influencing user perceptions. This customization can enhance user-friendliness and acceptance.
- Managers should recognize the pivotal role of socio-economic factors in shaping user attitudes towards mobile banking. Investing in initiatives that improve socio-economic conditions can contribute to increased adoption.
- Implementing targeted user education programs can address potential barriers related to the perceived effort expectancy. By enhancing users' understanding and familiarity with mobile banking, institutions can facilitate adoption.
- Recognizing the influence of external factors, financial institutions should collaborate with government agencies to support infrastructure development in rural areas. Improved connectivity and accessibility can positively impact user perceptions.
- Given the importance of trust in technology adoption, managers should prioritize trust-building measures. Ensuring robust security features and addressing privacy concerns can enhance users' confidence in mobile banking.
- Develop strategies that cater to diverse socio-economic backgrounds. Inclusionary approaches that consider the financial needs and preferences of various income groups can contribute to broader adoption.
- Financial institutions should regularly monitor demographic trends to stay abreast of evolving user characteristics. This includes age, education, and income distribution, allowing for timely adjustments in marketing and service strategies.
- Establishing collaborations with local communities and leaders can facilitate a deeper understanding of regional nuances. Such partnerships can inform the design of mobile banking services that resonate with the specific needs of rural Gujarat.
- Implement mechanisms for collecting continuous user feedback. This iterative process can uncover evolving preferences and challenges, enabling financial institutions to adapt their services in real-time.
- Given the dynamic nature of technology, financial institutions should explore the integration of emerging technologies like artificial intelligence. Assessing the impact of AI on user acceptance in the context of rural Gujarat can inform future technological advancements.

6. Discussion and Conclusions

The study's findings demonstrate the complex relationships between Socio-Economic Factors, Effort Expectancy, and Performance Expectancy in the perspective of mobile banking adoption in rural Gujarat. The quantitative analysis exposed significant indirect effects which indicates that improvements in socio-economic conditions strongly influence users' perceptions of the ease of using mobile banking services and their beliefs in the system's performance benefits. As individuals in rural Gujarat experience enhanced socio-economic conditions, they are more likely to perceive mobile banking as user-friendly and capable of meeting their financial needs. These insights emphasize the crucial role of addressing socio-economic factors in promoting favourable attitudes toward mobile banking adoption in regions with unique challenges and opportunities. (Dzandu, M. D., & Ansah, J. P. (2018))

In conclusion, this study contributes valuable insights into the comprehensive dynamics of mobile banking adoption in rural settings, specifically in Gujarat. By emphasizing the mediating role of Socio-Economic Factors, the research highlights the key determinants influencing user perceptions. The findings not only enrich the existing literature on mobile banking adoption but also offer practical implications for financial institutions seeking to promote inclusive financial solutions in regions characterized by diverse socio-economic backgrounds. (Gao, L. et al., 2015)

7. Limitations and Future Scope of Study

Despite the significant perceptions presented in the study, there are several limitations that must be addressed. The study primarily relied on primary data, introducing the possibility of response bias. In terms of future research, a more comprehensive investigation could incorporate qualitative methodologies to capture the experiences and perceptions of users. Moreover, examining the influence of privacy and security concerns, along with assessing the effectiveness of user education programs, could further enhance the knowledge base in this domain. (Gupta, A. et al., 2018)

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