



# ANALYZING THE EFFECT OF PERCEIVED FINANCIAL COST AND PERCEIVED COMPLEXITY ON THE USEFULNESS OF MOBILE BANKING TECHNOLOGY

<sup>1</sup>Palungbam Lerix Singh, <sup>2</sup>Prof N. Tejmani Singh

<sup>1</sup>Research Scholar, <sup>2</sup>Professor and Head

<sup>1</sup>Department of Commerce,

<sup>1</sup>Manipur University, Canchipur, Imphal, Manipur, India (795003)

**Abstract:** The study examined the impact of perceived financial cost and complexity on the usefulness of mobile banking services in Manipur. The hypotheses of the study were developed using Expectancy Value Theory, data was collected from a sample size of 202 respondents from the Imphal East and Imphal West districts of Manipur. The items were validated and hypotheses were tested using Structural Equation Modeling (SEM) in IBM AMOS 21 software. Findings showed that both perceived financial cost and complexity negatively affect mobile banking usefulness. Future researchers can explore social and cultural factors and conduct comparative studies across different states.

**Keywords:** *Perceived financial cost, usefulness of mobile banking, perceived complexity, Mobile banking*

## 1. INTRODUCTION

Banking sector has witnessed significant changes in the past few years due to the rise of Information and Communication Technologies, and such changes has enabled bank to reach a wider section of the population by integrating such technology to the banking network, Mobile banking is the product of such an integration, they are capable of performing Common banking amenities like settling credit card debts, paying utility bills, and executing fund transfers, and other services (Van et al., 2020). As time goes by the evolution of digital technology increases and it impacts the economic activities (Saputro & Achmad, 2015). India, the most populated country, has over 1,080.95 million smartphone users in 2024 (Statista, 2023). However the users of mobile banking are significantly less in comparison to the number smartphone users. There could be many reasons and underlying factors behind it. Determining the factors affecting the usefulness of mobile banking services could help in adoption of mobile banking services. Increased Mobile banking usage has the potential to greatly improve accessibility to fundamental financial services, which the traditional banking often struggles to accomplish. (Alalwan et al., 2016), claimed that mobile banking has a substantial potential to stimulate the rural economy. Mobile banking is cost-effective, time saving, reduces fraud, 24x7 account access (Malavika V S, 2022). It increases access to financial services aiding fight against poverty (Aberi & Jagongo, 2022).

Realizing the significance of immense potential of mobile banking services in the society it has garnered the attention of the research community. A critical examination of the literature indicates that there are many factors which are responsible for mobile banking adoption across different regions. (Dandena et al., 2020) and Elhajjar & Ouaida, 2019 highlighted that the factors which influence the adoption of banking technology varies across nations due to cultural, technological, and regulatory differences globally. Further, according to Aqilah & Fathoni, 2023 perceived ease of use, social influence, perceived trust significantly influence the usefulness of mobile banking services. Performance expectancy, effort expectancy, optimism are also some of the factors affecting adoption of mobile banking use (Saxena et al., 2023). In this study we aim to investigate the impact of perceived financial cost and perceived complexity of using mobile banking to the usefulness of using the service as these factors have rarely been considered in the context of its effect on the usefulness of mobile banking services. Therefore, in this research we seek to address the above mentioned gap. The study is structured as follows: section 2 of the paper covers a broad review of the theoretical base on which our hypothesis is formulated upon, section 3 presents the data and the methods used for the study, section 4 contains the study's results and findings followed by the last section which discussion related to the findings and the future research area regarding the study.

## II. REVIEW OF LITERATURE AND THEORETICAL FRAMEWORK

### 2.1. Perceived financial cost

Expectancy Value theory suggest that individual's attitude and behaviors are influenced by their expectations of outcome and the subjective value they place on these outcomes. However (Collins Njele & Phiri, 2021) have found negative impact on the usefulness of mobile services furthermore (Jeong & Yoon, 2013a) also found that financial cost does not positively impact mobile banking usefulness and cost can be a barrier to adoption for some users (Almaiah et al., 2023). While (Mutahar et al., 2022) have found that perceived financial cost does not directly impacts usefulness in mobile banking. Thus based on these literatures we hypothesize that

H1: Perceived financial cost has a negative impact on Usefulness of Mobile Banking service.

### 2.2. Perceived Complexity

The term complexity is used informally both as a quality and as a quantity, as a quality, complexity has something to do with our ability to understand a system or object (Standish, 2008), numerous studies regarding complexity of mobile banking have been done in the past, According to Ahmad Khan & Mir, 2016 mobile banking adoption is viewed as a complex system framework, they used TAM for studying mobile banking adoption and proposed a framework for mobile banking adoption in a complex system. Furthermore, it was found that perceived complexity of using mobile banking services negatively affects perceived usefulness of mobile banking services (Prodanova et al., 2023; Šabotić et al., 2023). Based upon these past findings we hypothesize that

H2: Perceived complexity has a negative impact on the Usefulness of mobile banking services.

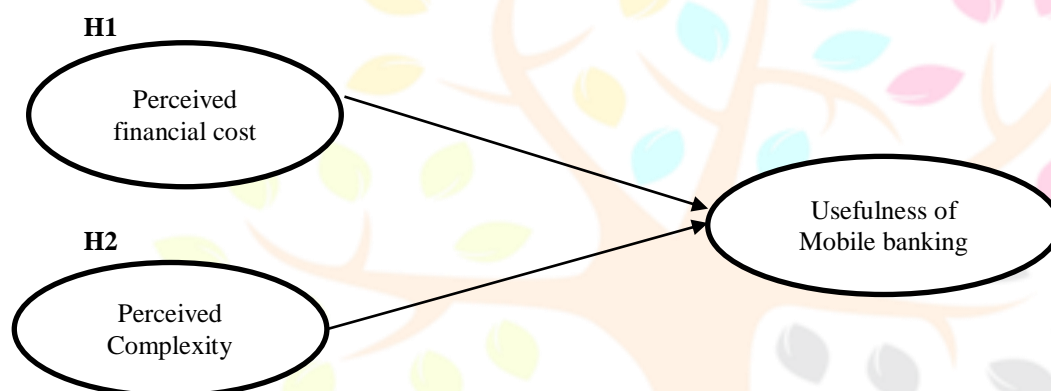


Fig.1. the Research Model

## III. Research Methodology

The Figure 2 represents the final standardized research model used for the study, which is the final version of all the latent variables used and the constructs used to measure them, derived from figure 1. In the figure, PFC= perceived financial cost, PC= perceived complexity and US= usefulness of mobile banking, as it is evident from the figure that PFC and PC are the latent variables and US is the endogenous variable.

### 3.1. Sample of the study

A quantitative approach was adopted for the study and a survey questionnaire was employed for the purpose of data collection. The target respondents of the study were people residing in Imphal East and Imphal West districts of Manipur, India, the demographic profile of which has been highlighted in table 1. All the questionnaire were manually checked to ensure that there were no missing responses, and the outliers from the questionnaire were removed to increase the accuracy of the results. In total the study obtained 210 respondents out of which 202 responses were usable for this study.

### 3.2. Scales

The questionnaire employed for the study was divided into 3 sections. Information regarding the demographic profile were collected from the first section of the questionnaire. In the second section information related to the latent variables used in the study namely, PFC, PC, US was obtained by employing a seven scale likert-scale with the end values (1)= strongly disagree to (7)= strongly agree. The sources of the scales used have been illustrated in table 2, followed by the third section which contained various open ended questions.

**Table.1. Demographic profile of the respondents**

Particulars		Frequency	Percentage
Gender	Male	100	49.51
	Female	102	50.49
Age	Less than 20	13	6.43
	21-30	168	83.16
	31-49	14	6.93
	50 & above	7	3.48
Education	Class X	6	2.97
	Class XII	15	7.42
	Graduate	76	37.62
	Post Graduate	79	39.10
	Others	26	12.89
Income	Less than 10,000	54	26.73
	10,000-20,000	103	50.99
	20,000 & above	45	22.28
Marital Status	Married	56	27.72
	Unmarried	146	72.28
Mobile Banking Usage	Daily	52	25.74
	Monthly	81	40.09
	Weekly	41	20.29
	Rarely	28	13.88

Source: Authors Calculation

**Table 2. Constructs**

Constructs	No. of Items	Source
Perceived financial cost	2	(Luarn & Lin, 2005)
Perceived complexity	3	(Gounaris & Koritos, 2008)
Usefulness of Mobile Banking services	4	(Suh & Han, 2002)

Source: Secondary Source

## IV. DATA ANALYSIS AND RESULTS

### 4.1. Confirmatory Factor Analysis (CFA)

To assess the reliability and validity of the constructs we proposed, we created a confirmatory factor analysis model (CFA) model using the Analysis of Moment Structures (AMOS) software version 21. Furthermore, the direct relationships between the independent and the dependent variable were analyzed using path coefficients. The results of the study confirmed the reliability and validity of the factors, as highlighted in Table 3.

**Table 3. Summary of Confirmatory Factor Analysis**

Variables	Label	Standardized Loadings	R <sup>2</sup>	CR	AVE	MSV
PFC	PFC1	0.83	0.69	0.817	0.691	0.596
	PFC2	0.83	0.70			
PC	PC1	0.89	0.79	0.926	0.807	0.731
	PC2	0.90	0.80			
	PC3	0.91	0.82			
US	US1	0.84	0.70	0.934	0.779	0.731
	US2	0.88	0.77			
	US3	0.91	0.83			
	US4	0.90	0.81			

Source: Authors calculation

Figure 2 depicts the result of CFA for different constructs with their factors. The indicators from the AMOS output affirm that all variables yield favorable results and are above the required threshold of > 0.50 (Hu & Bentler, 1999) showcasing robustness of the constructs and their associated factor, this signifies that each observed variable effectively captures its intended constructs, and no items are required to be dropped.

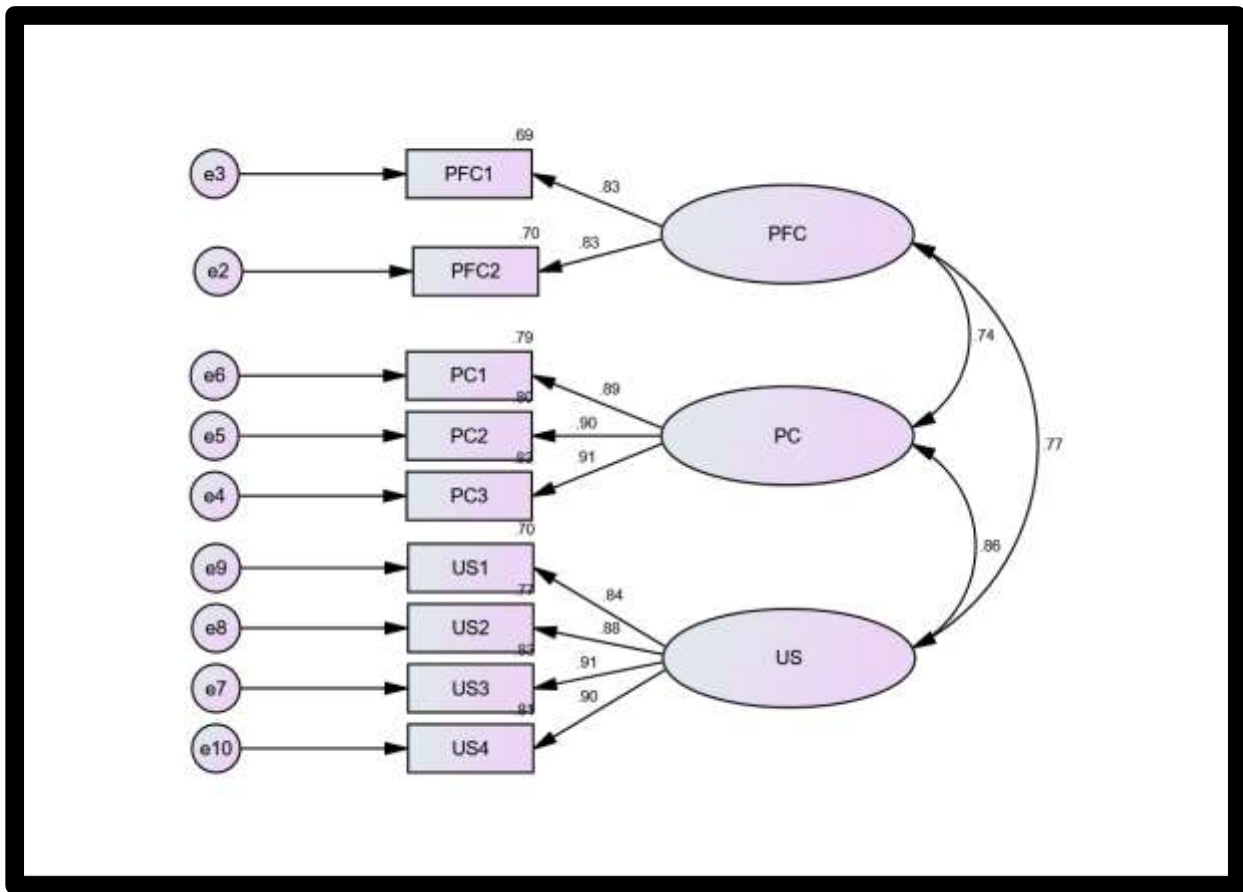


Fig 2. Measurement Model

Source: Authors Calculation

Table 4. Discriminant Validity

Items	CR	AVE	MSV	MaxR(H)	PFC	PC	US
PFC	0.817	0.691	0.583	0.817	<b>0.831</b>		
PC	0.926	0.807	0.674	0.927	0.736***	<b>0.898</b>	
US	0.952	0.833	0.674	0.957	0.764***	0.821***	<b>0.913</b>

Note: Where \*p<0.050, \*\* p< 0.010 & \*\*\* p<0.001

Table 4 represent the discriminant validity of the constructs. A valid result should suggests that the square root of AVE (diagonal elements) should exceed the correlation between any pair of constructs (W.Chin, 1998). As indicated in the table all the values of correlation are less than the square root of AVE hence, there are no validity concerns in the study.

#### 4.2. Model fit indices

Past studies show that there is a negative relationship between perceived financial cost, perceived complexity and the usefulness of the mobile banking service. The researcher have also tried to explore the relationship between these variables and their relation with the usefulness of mobile banking services among the people of Manipur. The relationship between these variables has been accomplished using AMOS graphics, as it is presented in Table 5 (model fit). The values of GFI, Tucker-Lewis index (TLI), comparative fit index (CFI), Normal fit index (NFI), relative fit index (RFI) and incremental fit index (IFI) fulfills the conditions of model fit, as they are more than 0.90. The values of CMIN/df is also less than 5 and RMSEA value is < 1.0.

Table 5 Model fit Measures

Indices	Acceptable value	Value	Interpretation
GFI	>0.95	0.985	Excellent
TLI	>0.95	0.975	Excellent
CFI	>0.95	0.985	Excellent
NFI	>0.95	0.977	Excellent
RFI	>0.95	0.961	Excellent
IFI	>0.95	0.986	Excellent
CMIN	Between 1 and 3	2.713	Acceptable
RMSEA	<0.06	0.075	Acceptable
SRMR	<0.08	0.026	Acceptable
PClose	Between 0.01 and 0.05	0.037	Acceptable

Source: Authors calculation

#### 4.6. Path Analysis

Path analysis was done to test the hypothesis of the study. The result of the path analysis is shown in table 6, firstly, perceived financial cost (PFC) was found to have a significant negative influence on the perceived usefulness (US) of mobile banking services as indicated by the  $p < 0.001$ , the beta value of 0.429 indicates that for every one unit increase in perceived financial cost, there is a decrease of approximately 0.429 units in the perceived usefulness. Thus we accept H1. Furthermore, Perceived complexity (PC) also exhibits a significant negative impact on perceived usefulness with a beta value of 0.590 and  $p < 0.001$ . Thus we accept the H2.

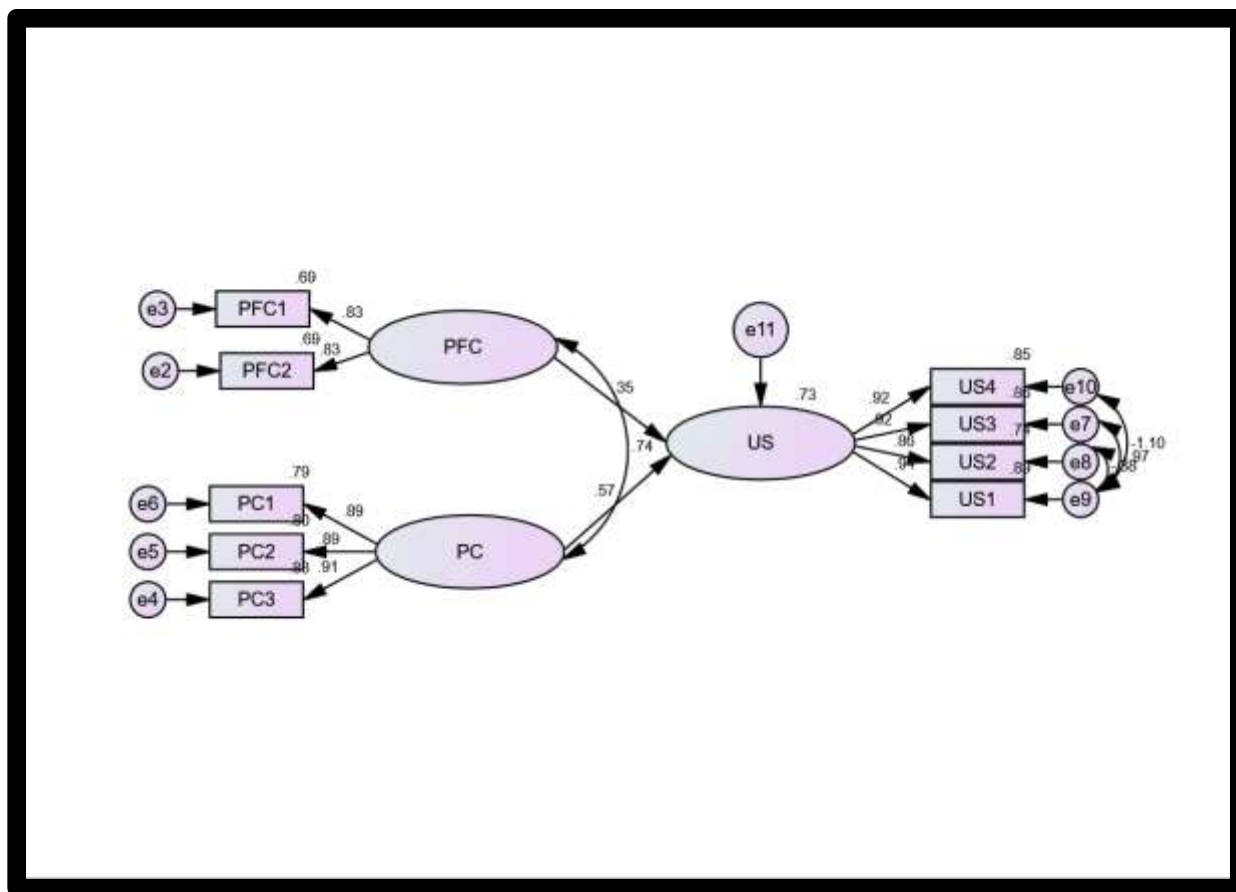


Fig 3. Final standardized model

Source: Authors Calculation

Table 6 Hypothesis testing

Path	Beta Value	S.E.	C.R	P value	Result
PFC → US	0.429	0.077	5.575	***	Supported
PC → US	0.590	0.063	9.339	***	Supported

Source: Authors Calculation

#### V. DISCUSSION AND PRACTICAL IMPLICATIONS

The study aimed to examine the impact of perceived financial cost and perceived complexity of using mobile banking services on the usefulness of the service. The result of the study i.e. perceived financial cost and perceived complexity have a negative impact on the usability of mobile banking services are in line with the previous findings of various past researchers (Almaiah et al., 2023; Chonnam National University et al., 2013; Esmaili et al., 2021; Mutahar et al., 2018; Van et al., 2020). Initially we assumed that Manipur with its unique geographical location and culture would infer a different result and since very few researches have been done regarding the impact of perceived financial cost and perceived complexity on the usefulness of mobile banking services, with this research this research would help to fill those gap exploring the dimension of the mentioned variables to a unique set of demographics.

Today, it has become very important to determine the effects of various factors on the usefulness of using mobile banking services due to its increased relevance, and India moving towards a digital economy. The present study has multitude of implications. Firstly, the findings emphasize the importance of designing mobile banking services with a focus on user experience. Secondly, since the perceived financial cost was found to have a negative impact on usefulness of mobile banking services by the people, it is imperative that service providers ensure that transparency regarding the charges associated with the service. Lastly, addressing the perceived complexity of using the service requires educational support and guidance to the users. Service providers can give special emphasize on offering more tutorials and guides to its users.

#### 5.1. Limitations and future Scope of study

The study under consideration suffers from some limitations. Firstly, the study was conducted in Manipur which limits the generalizability of the findings. Secondly, the sample size of the study which is only 202 respondents. Lastly, the study employed

only 2 variables and its effect on the usefulness of mobile banking services, future researchers can include more variables to make the study more comprehensive and expand its dimensions to include social and cultural factors. Furthermore, a comparative study between the people of different states could also be conducted.

## REFERENCES

- [1] Aberi, V. A., & Jagongo, A. O. (2022). Mobile Banking Services and Financial Performance of Selected Youth Enterprises in Nairobi City County, Kenya. *International Journal of Current Aspects in Finance, Banking and Accounting*, 4(2), 60–76. <https://doi.org/10.35942/ijcfa.v4i2.270>
- [2] Ahmad Khan, C. B., & Mir, M. (2016). A complex system perspective of technology acceptance and diffusion for mobile banking. *2016 4th International Symposium on Computational and Business Intelligence (ISCBI)*, 1–5. <https://doi.org/10.1109/ISCBI.2016.7743250>
- [3] Alalwan, A. A., Dwivedi, Y. K., Rana, N. P. P., & Williams, M. D. (2016). Consumer adoption of mobile banking in Jordan: Examining the role of usefulness, ease of use, perceived risk and self-efficacy. *Journal of Enterprise Information Management*, 29(1), 118–139. <https://doi.org/10.1108/JEIM-04-2015-0035>
- [4] Almaiah, M. A., Al-Otaibi, S., Shishakly, R., Hassan, L., Lutfi, A., Alrawad, M., Qatawneh, M., & Alghanam, O. A. (2023). Investigating the Role of Perceived Risk, Perceived Security and Perceived Trust on Smart m-Banking Application Using SEM. *Sustainability*, 15(13), 9908. <https://doi.org/10.3390/su15139908>
- [5] Aqilah, S., & Fathoni, M. A. (2023). FACTORS DETERMINING THE USE OF MOBILE BANKING IN INDONESIA. *International Journal of Banking and Finance*, 18. <https://doi.org/10.32890/ijbf2023.18.2.2>
- [6] Chonnam National University, Cheng, S., Lee, S.-J., Chonnam National University, Lee, K.-R., & Chonnam National University. (2013). Perceived Risk of Mobile Banking in China. *Advanced Science and Technology Letters*, 137–140. <https://doi.org/10.14257/astl.2013.42.32>
- [7] Collins Njele, C., & Phiri, J. (2021). Factors Affecting Usage of Mobile Money Services and Their Impact on Financial Inclusion: Case of Lusaka Province. *International Journal of Business and Management*, 16(7), 104. <https://doi.org/10.5539/ijbm.v16n7p104>
- [8] Dandena, S., Abera, T., & Mengesha, T. (2020). Factors affecting the adoption of mobile banking: The case of United Bank Addis Ababa city customers. *Journal of Process Management. New Technologies*, 8(1), 30–37. <https://doi.org/10.5937/jouproman8-24520>
- [9] Elhajjar, S., & Ouaida, F. (2019). An analysis of factors affecting mobile banking adoption. *International Journal of Bank Marketing*, 38(2), 352–367. <https://doi.org/10.1108/IJBM-02-2019-0055>
- [10] Esmaeili, A., Haghgoo, I., Davidavičienė, V., & Meidutė-Kavaliauskienė, I. (2021). Customer Loyalty in Mobile Banking: Evaluation of Perceived Risk, Relative Advantages, and Usability Factors. *Engineering Economics*, 32(1), 70–81. <https://doi.org/10.5755/j01.ee.32.1.25286>
- [11] Gounaris, S., & Koritos, C. (2008). Investigating the drivers of internet banking adoption decision: A comparison of three alternative frameworks. *International Journal of Bank Marketing*, 26(5), 282–304. <https://doi.org/10.1108/02652320810894370>
- [12] Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*, 6(1), 1–55. <https://doi.org/10.1080/10705519909540118>
- [13] Jeong, B. K., & Yoon, T. E. (2013a). An Empirical Investigation on Consumer Acceptance of Mobile Banking Services. *Business and Management Research*, 2(1), p31. <https://doi.org/10.5430/bmr.v2n1p31>
- [14] Jeong, B. K., & Yoon, T. E. (2013b). An Empirical Investigation on Consumer Acceptance of Mobile Banking Services. *Business and Management Research*, 2(1), p31. <https://doi.org/10.5430/bmr.v2n1p31>
- [15] Luarn, P., & Lin, H.-H. (2005). Toward an understanding of the behavioral intention to use mobile banking. *Computers in Human Behavior*, 21(6), 873–891. <https://doi.org/10.1016/j.chb.2004.03.003>
- [16] Malavika V S. (2022). A Study on Behaviour of Customers towards the Mobile Banking Services with Reference to Athirappillygrama Panchayath. *International Journal of Advanced Research in Science, Communication and Technology*, 439–443. <https://doi.org/10.48175/IJARST-7396>
- [17] Mutahar, A. M., Aldholay, A., Isaac, O., Jalal, A. N., & Kamaruddin, F. E. B. (2022). The Moderating Role of Perceived Risk in the Technology Acceptance Model (TAM): The Context of Mobile Banking in Developing Countries. In M. Al-Emran, M. A. Al-Sharafi, M. N. Al-Kabi, & K. Shaalan (Eds.), *Proceedings of International Conference on Emerging Technologies and Intelligent Systems* (Vol. 299, pp. 389–403). Springer International Publishing. [https://doi.org/10.1007/978-3-030-82616-1\\_34](https://doi.org/10.1007/978-3-030-82616-1_34)
- [18] Mutahar, A. M., Daud, N. M., Thurasamy, R., Isaac, O., & Abdulsalam, R. (2018). The Mediating of Perceived Usefulness and Perceived Ease of Use: The Case of Mobile Banking in Yemen. *International Journal of Technology Diffusion*, 9(2), 21–40. <https://doi.org/10.4018/IJTD.2018040102>
- [19] Prodanova, J., Martín, S. S., & Jiménez, N. (2023). Customers' predisposition to use mobile banking: Resource's availability is decisive. *International Journal of Mobile Communications*, 21(2), 159. <https://doi.org/10.1504/IJMC.2023.128818>
- [20] Šabotić, Z., Vehapi, S., & Lekpek, A. (2023). Customers' Intention in Terms of Using Mobile Banking Services in Serbia. In S. Benković, A. Labus, & M. Milosavljević (Eds.), *Digital Transformation of the Financial Industry* (pp. 151–169). Springer International Publishing. [https://doi.org/10.1007/978-3-031-23269-5\\_9](https://doi.org/10.1007/978-3-031-23269-5_9)
- [21] Saputro, E. P., & Achmad, N. (2015). Factors Influencing Individual Belief on The Adoption of Electronic Banking. *Mediterranean Journal of Social Sciences*. <https://doi.org/10.5901/mjss.2015.v6n4p442>

- [22] Saxena, N., Gera, N., & Taneja, M. (2023). Factors influencing mobile banking adoption in India: The role of government support as a mediator. *THE ELECTRONIC JOURNAL OF INFORMATION SYSTEMS IN DEVELOPING COUNTRIES*, 89(6), e12287. <https://doi.org/10.1002/isd2.12287>
- [23] Standish, R. K. (2008). Concept and Definition of Complexity: In A. Yang & Y. Shan (Eds.), *Intelligent Complex Adaptive Systems* (pp. 105–124). IGI Global. <https://doi.org/10.4018/978-1-59904-717-1.ch004>
- [24] Statista. (2023, September 18). *Number of smartphone users in India in 2010 to 2023, with estimates until 2040(in millions)*. <https://www.statista.com/statistics/467163/forecast-of-smartphone-users-in-india/>
- [25] Suh, B., & Han, I. (2002). Effect of trust on customer acceptance of Internet banking. *Electronic Commerce Research and Applications*, 1(3–4), 247–263. [https://doi.org/10.1016/S1567-4223\(02\)00017-0](https://doi.org/10.1016/S1567-4223(02)00017-0)
- [26] Van, H. N., Pham, L., Williamson, S., Huong, V. T., Hoa, P. X., & Trang, P. L. H. (2020). Impact of perceived risk on mobile banking usage intentions: Trust as a mediator and a moderator. *International Journal of Business and Emerging Markets*, 12(1), 94. <https://doi.org/10.1504/IJBEM.2020.106202>
- [27] W.Chin, W. (1998). *Commentary: Issues and Opinion on Structural Equation Modeling*. 22(1), 7–16.

