Effect of Perceived Benefits and Risks on Continuance Intention of Using Mobile Banking Applications: User Satisfaction as Mediator

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Abstract

This article examines the link between perceived benefits, perceived risks and continuance intention of using mobile banking applications through the transmission mechanism of user satisfaction. The primary mode of data collection, comprising a structured questionnaire, was used, and a sample of 422 respondents belonging to the union territories of Jammu & Kashmir (J&K) and Ladakh was chosen. The mobile banking applications, namely Yono and Mpay Delight of two reputed banks, namely the State Bank of India and the Jammu & Kashmir Bank Ltd., respectively, were considered for study. Structural equation modelling and an independent samples *t*-test were used for analysing data. The results of the research study depicted a significant and positive effect of perceived benefits and user satisfaction, and a negative impact of perceived risks on continuance intention of using mobile banking applications. Moreover, user satisfaction partially mediated the link between perceived benefits and continuance intention. This study provides a fresh perspective for managerial practices to comprehend the crucial elements pertaining to users' desire to stick with mobile banking applications. This research advocates that engineering managers should provide straightforward and easy-to-use technology to increase the rate at which mobile banking applications are maintained. Furthermore, the findings suggest the crucial role of mobile banking in encouraging financial inclusion, thereby contributing to economic development. In this digital age, banks that provide mobile banking services may find strategic value in the study's conclusions.

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Introduction

Technology is seen as the cornerstone of today's rapidly changing world, which is developing at an alarming rate. Technology has permeated every part of our lives, as seen by its development and applications. Many jobs are now finished electronically due to the extensive use of information and technology at work and at home. As a result, time and location are no longer significant to various trades, making the internet a truly global marvel. Our daily lives have been impacted and transformed by the expansion and development of the internet and information technology (Mladenovic & Krajina, 2020; Raudeliuniene et al., 2018).

With the introduction of this wonder, practically every industry changed. The financial industry also began making large investments in this technology after realising its importance. Because banks needed to automate their operations to meet the ever-increasing demands of their customers and keep up with the technological changes occurring globally, the 'evolution of electronic banking that started from the use of automatic teller machines (ATM) and passed through telephone banking, direct bill payment, electronic fund transfer, and the revolutionary mobile banking' was the outcome (Baabdullah et al., 2019). Banks serve their clients' diverse requirements and desires, which are becoming more and more specific (Komulainen & Saraniemi, 2019). Online banking, mobile banking, and near field communication are some of the technologically oriented delivery platforms that banks use to provide banking services (Shankar et al., 2020).

Mobile banking was the most significant change that represented a significant departure from traditional banking among the positive innovations brought forth by the banking industry. It is regarded as the most valuable and adaptable business application currently available (Singh & Srivastava, 2018), whose rise can be 'ascribed to technological advancement and evolving consumer demands in terms of affordability, flexibility, choice, and convenience' (Chawla & Joshi, 2017).

As cited by Mullan et al. (2017), Mobile banking is defined as 'A transaction in which a client connects to the service provider through a mobile gadget, like a smartphone or Personal Digital Assistant'. Through the extension of remote correspondence, mobile banking has made it easier to develop and expand commercial transactions. It has also created a wide range of business opportunities by making it easier to trade, acquire goods and services, pay bills, and conduct fund transactions. This advancement has not only improved the bank's operations in terms of staff workload reduction, catering time reduction, digital device use, and customer acquisition, but it has also made customers' daily banking activities more convenient, which is why the industry is moving toward digitalisation.

Thus, researchers' assertion that this banking administration approach has paved the way for innovative economic advancement in both wealthy and developing nations is supported.

> Mobile banking is a great example of a mobile technology innovation in the banking industry, allowing customers to independently conduct financial transactions (such as checking their balance, transferring funds, or paying bills) using smartphones, PDAs, or mobile devices at any time and location of their choosing. (Alalwan et al., 2017)

Furthermore, increased smartphone usage has increased interest in M-banking services, leading nearly all financial institutions to provide this ground-breaking service along with a new suite of goods and apps designed to increase their clientele (Mohammed & Rozsa, 2024). Therefore, the mobile phone has become an essential tool for banking clients' daily tasks.

When the internet revolution became apparent in the late 1990s, the idea of mobile banking was developed. The first service was initiated and launched by a German company called Pay-box in collaboration with Deutsche Bank (Shaikh & Karjaluoto, 2015). Banks in India have been particularly competing with one another to adopt innovation in order to provide and improve better customer services and to move toward a computerised shift in order to stay competitive.

For this reason, banks must look into mobile banking trends to comprehend the market and stay ahead of the competition. However, numerous financial institutions have made an effort to integrate this innovation into their banking procedures throughout time. According to industry projections, India is becoming the fastest-growing portable market (Chawla & Joshi, 2017), with advertisers projecting growth of over 75% of the population by the end of 2025 (Global System for Mobile Communications, 2018). Analysts must give this rapidly changing consumer of the massive mobile banking sector considerable thought. Since India was a latecomer to the demonetisation wave, the Central Government and the nation's financial regulatory body have focused on facilitating an ever-increasing number of cashless transactions.

Numerous industries, including banking, have seen changes as a result of the widespread adoption of mobile phones, the creation of smartphones, and the more affordable, generally available internet (Domazet et al., 2018). Because of this, a growing number of banks, software firms, microfinance organisations, and service providers are now providing this innovative service in addition to new product and application sets meant to enhance client retention, boost market share, expand their clientele (including to unbanked populations), increase operational efficiency, and create new job opportunities (Shaikh, 2013). Banking is a highly regulated industry with relatively stable business models and significant transaction and operating costs. In a developing market like India, mobile banking still has a long way to go. Banks and Financial institutions have been focusing on cashless transactions, and the majority of banks have already released fully secure mobile banking software and applications.

Numerous research studies have used both qualitative and quantitative methodologies to examine M-banking and related aspects that affect customers'

adoption of it. It is possible for someone who used a certain technology in the first phase to quit using it for a variety of reasons. In their analysis of the factors influencing users' continuing intention to use (CI) of mobile banking technology, Foroughi et al. (2019) discovered that users will only stick with mobile banking if they find it helpful and are happy with their experience. Customers believe that using mobile banking is justified when the advantages (like convenience, cost savings or performance) outweigh the risks (like fraud involving transaction integrity or authenticity, reputational harm, privacy or confidentiality breaches; Chang et al., 2016). Therefore, it is critical to comprehend the benefits and risks of mobile banking from the viewpoint of the user.

There is not much peer-reviewed literature on mobile payments, even if the number of papers has increased. Numerous studies on mobile banking have been published in recent years due to the FinTech industry's explosive expansion and the complexity of the factors impacting its use and adoption. Recent research indicates that numerous articles have looked at the components that have a bearing on the results, consumer approval, and adoption of different mobile payment platforms, particularly following the COVID-19 pandemic, as well as customer satisfaction, security concerns, design features, and innovation (Al-Qudah et al., 2022; Dahlberg et al., 2015; Makki et al., 2016).

There is a dearth of literature on the usage of M-banking apps in India, particularly in J&K and Ladakh. Therefore, the current study intends to assess the use of different mobile banking apps of select banks operating in J&K and Ladakh. The study would provide implications for various stakeholders, namely, banks, the government, and customers, by making thorough research on the use of mobile banking applications. As the leading financial institutions in the union territories of J&K and Ladakh, the State Bank of India and the J&K Bank have also launched the high-end applications, 'Yono' and 'Mpay Delight', respectively. However, M-banking is still relatively new in J&K and Ladakh compared to online banking; hence, the bank's job is to make it more appealing to clients to recognise using the mobile channel for banking services. Yono is a mobile application introduced by the premier institution of India, namely the State Bank of India. There are 250 computerised SBI branches across J&K and Ladakh. Mpay Delight is a mobile application introduced by the most prominent bank, namely J&K Bank, in the UT of J&K and Ladakh. The said bank owns a wide network of 1,001 computerised branches across J&K and Ladakh. Given their clientele, the research has a lot of room to grow because these banks are leading the way in the valley's transition to a digital economy. J&K and Ladakh are perfect locations for the study because of the high percentage of mobile users, the rapid expansion of m-commerce, and the clients' preference for more modern banking services.

The current study was carried out in order to learn how users react to mobile banking, especially in light of the lack of adequate banking services, especially in remote areas, and the periodic interruptions of banking services for a variety of reasons. Given that the Kashmir Valley has been a region plagued by conflict over the past 30 years, with regular strikes and the occasional suspension of banks and other commercial facilities, the current study is especially important. Customers can choose to use mobile banking to get uninterrupted financial services

whenever it is convenient for them, which will help them get out of this unpleasant scenario. Nevertheless, in spite of everything, there does not appear to be any favourable reaction to the customers' usage of M-banking. In order to resolve the concerns, a comprehensive investigation is required to determine the causes of any potential inhibition, hesitation, internet troubles, or ignorance among mobile users regarding the usage of mobile banking in general.

The current research is being conducted with the following objectives:

1. To study the effect of perceived benefits on continuance intention of using mobile banking applications.
2. To understand the effect of perceived risks on the continuance intention of using mobile banking applications.
3. To know the effect of user satisfaction on continuance intention of using mobile banking applications.
4. To explore the mediating relationship of user satisfaction between perceived benefits & continuance intention of using mobile banking applications.
5. To assess the difference in perceived benefits, perceived risks, user satisfaction and continuance intention of two mobile banking applications, namely Mpay Delight and Yono.

The primary source of data collection was used comprising of a well-structured questionnaire to attain the specific objectives of the research. These research questions are at the centre of the primary research problem that motivates our investigation: (a) How much (if at all) does the likelihood that users will continue (or stop) using mobile banking applications depend on their perceptions of the risks and benefits? (b) To what extent (if at all) do user-perceived benefits and the satisfaction of consumers play a vital role in using mobile banking applications?

A review of the literature on the impact of several prognosticators on the intention to continue using mobile banking applications is included in the next portion of this research study. The study framework and the formulation of the hypotheses are based on the literature review. The section addressing the study sample's descriptive statistics and methods, along with its variables, comes next. The results are next discussed, and then the conclusions, limitations, implications, and future directions of the research are covered.

Literature Review and Hypothesis Development

Theoretical Background of Mobile Banking

Scholars have defined mobile banking differently and used a variety of terminologies to describe it. Liu et al. (2009) have referred to it as M-banking, Ivatury and Mas (2008) termed it as branchless banking, and Donner and Tellez (2008) called it M-finance. Muñoz-Leiva et al. (2017) described it as a remote service provided by financial organisations to meet the needs of their clients via

mobile devices, PDAs, tablets, etc., whereas Tam and Oliveira (2017) proposed that 'M-banking is a service or product offered by financial institutions that makes use of portable technologies'. Accordingly, this study defines M-banking as a platform that allows users to access information associated with their bank accounts and conduct financial transactions using a mobile device at any time and from any location. Over time, a variety of theoretical stances have emerged, including well-known models to examine the adoption of mobile banking, such as the Unified Theory of Acceptance and Use of Technology (UTAUT) by Venkatesh et al. (2003), the Task-technology Fit by Goodhue and Thompson (1995), the Technology Acceptance Model (TAM) by Davis (1989), the Social Cognitive Theory by Bandura (1989), and the Innovation Diffusion Theory (IDT) by Rogers (1983).

Perceived Benefits and Continuance Intention of Using Mobile Banking Applications

Relatively little research has been conducted on continuance intention in comparison to the bulk of studies on initial adoption. It was confirmed that the intention to continue using mobile internet services was influenced by perceived enjoyment, familiarity, utility, uncertainty avoidance, and access quality (Lee et al., 2007; Shin et al., 2010; Zhou, 2011). Likewise, researchers have discovered that consumers' intentions to stick with mobile data services can be influenced by elements like perceived enjoyment, social impact, information quality, and perceived cost (Choi et al., 2011; Kim, 2010; Kim et al., 2009). Chen (2012) proposed that the intention to stick with mobile banking is significantly influenced indirectly by service quality and technological preparedness. According to Chen (2012), users' expectations are positively impacted by the ongoing development of mobile content services. According to Kang et al. (2012), three key factors that influence long-term M-banking use are perceived value, channel preference, and usability.

The influence of service quality and justice on the happiness of users, which in turn influences the intention to continue using mobile value-added services, was investigated by Zhao et al. (2012). They investigated how user satisfaction is impacted by service quality and fairness, and how this influences users' intentions to continue using mobile value-added services.

Thus, we formulated the hypotheses as:

H_1: Perceived benefits have a positive impact on continuance intention to use mobile banking applications.

User Satisfaction and Mobile Banking Continuance Intention

In order to determine which elements need to be addressed in order to enhance the system's service quality and, consequently, please consumers, researchers are also investigating how satisfied users are with mobile banking (Khan et al., 2018).

User satisfaction is a critical and potent response to purchase situations in retail banking. Numerous scholarly studies indicate that satisfaction with mobile banking is a component that affects its results (Mohammadi, 2015; Püschel et al., 2010). The idea of net valence states that customers should only utilise a product or service if they feel the benefits outweigh the risks in order to maximise the product's or service's net value (Featherman et al., 2006; Li & Wang, 2017). Because they have a positive attitude toward a product or service, consumers are more likely to use it when they intend to (Fishbein & Ajzen, 1975). According to this hypothesis, the belief that the benefits of a product or service outweigh the drawbacks is the foundation for the intention to keep using it (Yousafzai et al., 2010). In their examination of consumers' inclination to utilise (and persist in utilising) mobile payment systems, Qasim and Abu-Shanab (2016) clarified that consumers' propensity to use mobile banking is influenced by their perceptions; therefore, the more highly they value a product or service, the more likely they are to use it. Accordingly, it is hypothesised as:

H_2: User satisfaction bears a positive influence on continuance intention to use mobile banking applications.

Perceived Risks and Continuance Intention of Using Mobile Banking Applications

The results of Alonso-Dos-Santos et al. (2020) revealed that there exists a strong relationship between perceived risk and mobile banking usage. According to net valence theory, users perceive a number of risks associated with utilising mobile banking, including operational, legal, security, and financial risks. Perceived risk is a significant aspect in e-banking that indicates a user's intention to continue using a product or service (Arner et al., 2015). Due to the growing global context of mobile banking, the most recent study in the field by Marafon et al. (2018) indicated that the analytical model needs to be improved, particularly in order to comprehend the relationship between intention to use mobile banking and perceived risk. Real or perceived hazards or challenges related to a product or service, like mobile banking, lead to negative views that deter use (Britton et al., 2019). Research on innovation, information systems, and consumption indicates that if consumers perceive a risk involved in using IT services, their intentions to do so are negatively influenced (Zhou, 2015). Zhou examined the advantages and disadvantages of location-based services from the perspectives of enablers (benefits of usefulness and trust) and inhibiters (privacy risks). The results showed that propensity to use a product or service was correlated with perceived benefits (like trust), outweighing risks. He did this by using the dichotomy of facilitators and inhibitors to evaluate the elements that influence the uptake of location-based services. Wu and Wang (2005) discovered that behavioural intentions in e-commerce are significantly influenced by perceived risk. According to various studies, one of the primary factors influencing users' acceptance of M-banking is perceived risk (Brown et al., 2003; Luarn & Lin, 2005). Therefore, it is hypothesised that:

H_3: Perceived risks have a negative impact on continuance intention to use M-banking applications.

User Satisfaction as a Mediator Between Perceived Benefits and Continuance Intention to Use M-banking Applications

Satisfaction has a mediating role between application continuing intention and hedonic advantages. Additionally, the relationship between application continuing intention and utilitarian gains is mediated by satisfaction (Akel & Armağan, 2021). The relationship between different customer-perceived benefits, including learning, self-realisation, and hedonic benefits, and the intention to continue in online China brand communities is mediated by satisfaction (Han et al., 2018). Based on the above literature, it is hypothesised that:

H_4: User satisfaction mediates the relationship between perceived benefits and continuance intention to use M-banking applications.

Based on the objectives of the study and the proposed study model (Figure 1), further hypotheses were framed as:

H_5: A significant difference occurs between Mpay and Yono users with respect to perceived benefits.
H_6: A significant difference occurs between Mpay and Yono users with respect to user satisfaction.

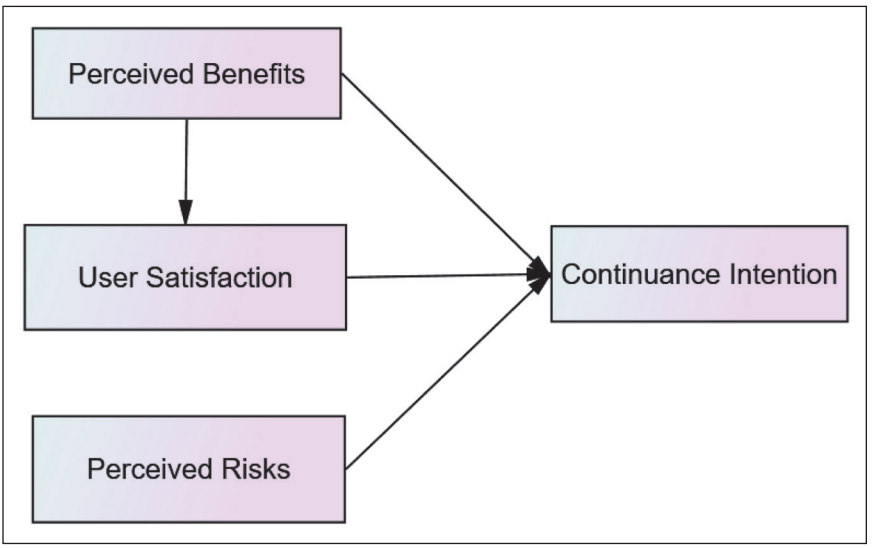

Figure 1. The Proposed Research Model.

H_7: A significant difference occurs between Mpay and Yono users with respect to continuance intention.

H_8: A significant difference occurs between Mpay and Yono users with respect to perceived risks.

Research Methodology

Population and Sample

The proposed study is delimited to the mobile banking applications of select banks operating in Jammu and Kashmir. The data was collected from customers of the select banks operating in Jammu and Kashmir. A questionnaire survey was used to perform this cross-sectional investigation. The main method of data analysis was structural equation modelling (SEM), which uses a two-step process that combines measurement and structural models to concurrently create a graphical depiction of the research relationships. Also, an independent samples *t*-test was used to check the difference between two mobile banking applications in different aspects covered under the objectives of the study.

This study was conducted between September 2024 and February 2025. The usage of mobile banking applications is increasing day by day. As such, many banks are providing mobile banking services to their customers to satisfy their changing requirements (Etikan et al., 2016). We selected convenience sampling because it is widely accepted in the social sciences and ensures timely availability and accessibility, geographical vicinity, and respondents' willingness to participate. The lack of a suitable sample frame led to the adoption of convenience sampling, which allowed researchers to collect data that would have been impossible otherwise.

The population targeted comprised employees working in different public and private organisations, professionals, businessmen, students and scholars belonging to the union territories of J&K and Ladakh. The non-probability sampling method of snowball sampling was employed to gather responses because it was difficult to reach such a broad group of interest. Questionnaires were physically distributed among the respondents. Participants were made aware of the purpose of the study prior to the survey being administered.

The sample size for the study was calculated as per Krejcie and Morgan's (1981) formula, as 384, as the total population exceeded 10 lakhs. The total number of 422 questionnaires was distributed, taking the attrition rate of 10%. Twenty-two questionnaires were omitted from the study due to incomplete replies. As a result, only 400 questionnaires were deemed suitable for the data analysis.

Research Design

The survey questionnaire was divided into two sections: the first portion gathered demographic data from the respondents, while the second part contained

information regarding the study constructs (refer to Appendix A). Below is a comprehensive overview of these two sections:

The participant's age and gender were ascertained in the first segment.

The second section involves: Perceived benefits -this construct was measured using Rahim's twelve-item scale (Abdul-Rahim et al., 2022). This scale's representative item is, 'This application is user-friendly in terms of setting up, configuring and using the service'.

User satisfaction: A four-item scale was adapted from Geebren et al. (2021) to measure the user satisfaction construct. This scale's sample item is, 'I think I did the right thing when I selected this application'.

Perceived risks: A 10-item scale adapted from Lee (2009) was used to assess the perceived risks of the mobile banking construct. This scale's representative item is, 'This application may not perform well because of servers being down due to undergoing maintenance'.

Continuance intention: Poromatikul et al. (2020) provided a four-item scale, which we modified to assess the continuing intention construct. This scale's sample item is, 'I would continue using this application rather than discontinuing it'.

In order to document respondents' responses about the study items, a 5-point Likert scale was employed, with 1 denoting strongly disagree, and 5 denoting strongly agree. The study variables were confirmed using a pilot study comprising 30 respondents before the final data collection. To examine the links between the study variables, a confirmatory factor analysis (CFA) (using AMOS 24.0) is conducted after an exploratory factor analysis (EFA) (using SPSS 27.0). Additionally, the average variance retrieved, CR, and squared correlations were used to confirm the validity and reliability of the study components.

Reliability and Validity

The reliability was assessed using composite reliability (CR) and convergent validity using average variance extracted (AVE) (Table 1). Reliability is indicated by the composite reliability estimates above 0.70 values, which is the minimal criterion (Zafiropoulos et al., 2012). In order to evaluate dependability, this study gave CR values precedence over Cronbach's alpha because the latter can provide biased findings (Peterson & Kim, 2013). Furthermore, when evaluating reliability,

Table 1. The Average Variance Extracted (AVE), Composite Reliability (CR) and Shared Variance Estimates.

	AVE	CR	Continuance	Benefits	Risks	Satisfaction
Continuance	0.694	0.900	0.833			
Benefits	0.779	0.977	0.395	0.883		
Risks	0.619	0.942	0.441	0.395	0.786	
Satisfaction	0.725	0.912	0.410	0.544	0.374	0.851

the CR is superior to Cronbach's alpha. Since the AVE values are higher than the 0.50 level, or the lowest threshold level, the results also show convergent validity (Fornell & Larcker, 1981).

We adhered to Fornell & Larcker's (1981) suggestion that the AVE estimates of any two constructs be greater than the shared variance estimate (squared correlations) in order to guarantee discriminant validity. Since the AVE estimates for each factor are greater than their corresponding squared correlations, the results demonstrate discriminant validity (Table 1).

Therefore, the above results indicate the reliability and validity of the dataset.

The Descriptive Statistics of the Study Sample and Its Variables

Respondents Demographic Profile

Most respondents were male, that is, 84%, followed by females, 16%. Regarding age, 30% of the respondents belonged to the 18–30 years; 43.30% were from 31 to 45 years age group, followed by those above 45 (26.80%) (see Table 2).

Exploratory and CFA

Principal components analysis with Promax rotation was employed in EFA to investigate the study constructs. According to the EFA results, every item had loadings greater than 0.6 on its corresponding factor (see Table 3). Furthermore, according to Ford et al. (1986), factor loadings higher than 0.4 lessen subjectivity in the interpretation of data. The validity of the study constructs is thus indicated by the EFA results.

Also, CFA was used to validate the factor structure that was taken from EFA. For reliable outcomes, it is essential to have higher model-fit values (Moslehpour et al., 2018). According to the findings, every fit index met the suggested threshold values (see Table 4). As a result, the study's suggested model aligns well with the empirical data.

Table 2. The Demographic Information.

Category	Frequency	%
Gender		
Male	336	84.00
Female	64	16.00
Age (in Years)		
18–30	120	30.00
31–45	173	43.30
Above 45	107	26.80

Table 3. Pattern Matrix.

	Component			
	1	2	3	4
PB1	0.786			
PB2	0.847			
PB3	0.881			
PB4	0.931			
PB5	0.933			
PB6	0.906			
PB7	0.961			
PB8	0.810			
PB9	0.857			
PB10	0.873			
PB11	0.952			
PB12	0.936			
PR1		0.591		
PR2		0.849		
PR3		0.859		
PR4		0.841		
PR5		0.831		
PR6		0.813		
PR7		0.842		
PR8		0.780		
PR9		0.784		
PR10		0.812		
SAT1				0.896
SAT2				0.951
SAT3				0.899
SAT4				0.660
CONT1			0.845	
CONT2			0.865	
CONT3			0.894	
CONT4			0.906	

Notes: Extraction Method: Principal Component Analysis. Rotation method: Promax with Kaiser normalisation.

[a]Rotation converged in five iterations.

Table 4. The Model-fit Summary.

Fit Index	Resultant Value	Recommended Value (Source)
CMIN/df	2.872	≤3.00 (Carmines et al., 1981)
GFI	0.838	Closer to 0.90 (Hooper et al., 2008)
AGFI	0.885	Closer to 0.90 (Hooper et al., 2008)
NFI	0.917	Closer to 0.90 (Hooper et al., 2008)
CFI	0.944	Closer to 0.90 (Hooper et al., 2008)
RMSEA	0.068	<0.10 (Bollen, 1989; Browne & Cudeck, 1993)
RMR	0.072	<0.10 (Bollen, 1989; Browne & Cudeck, 1993)

Hypothesis Testing

Structural Equation Modelling

SEM was employed for testing the study's proposed hypotheses (H_1 to H_3). Research model compatibility is confirmed, and causal linkages are assessed through the use of SEM (Tobbin, 2010). In the structural model, the path coefficients are represented by the standardised betas (β) (Saadé & Bahli, 2005). Furthermore, since the correlations between the independent variables were less than 0.8, there were no problems with multicollinearity.

The results show that the model explains cumulative variance of 75.61%, with 44.61% of the variance in perceived benefits, 16.95% in perceived risks, 7.99% in user satisfaction, and 6.03% in Continuance intention. The findings validated the hypothesised connections regarding H_1, H_2, and H_3 (Table 5).

Mediation Analysis Using Hayes Approach

According to several researchers, SEM is the best method for examining the mediation effect in any study (Baron & Kenny, 1986; Frazier et al., 2004; Hoyle & Smith, 1994; Preacher & Hayes, 2004). This is because it liberates the mediator and the dependent variables from their measurement mistakes; if they are not included, the correlation between the variables is diminished. By examining numerous independent and dependent variables at once, SEM is also far more adaptable and examines the complete causal model. In the present study, mediation analysis has been used to examine whether the causal effect of perceived benefits on continuance intention of using mobile banking applications is caused by user satisfaction (refer to Figure 2). Preacher and Hayes (2004) state that determining whether the indirect pathway from independent variable to mediator to dependent variable is statistically significant is a prerequisite for obtaining evidence in favour of mediation. With this method, the overall impacts are divided into direct and indirect effects.

Independent Sample t-test.

An independent sample *t*-test has been performed to assess the disparity between the means in two unrelated groups, that is, whether the mean value of the test variables (perceived benefits, user satisfaction, perceived risks and continuance intention) for one banking application, namely J&K Bank Mpay Delight differs

Table 5. Structural Model Coefficients (*Hypothesis Testing:* H_1 to H_3).

Hypotheses	Path	Standardised Beta (β)	Result
H_1	Perceived Benefits→ Continuance Intention	0.157*	Supported
H_2	User Satisfaction→ Continuance Intention	0.196***	Supported
H_3	Perceived Risks→ Continuance Intention	–0.290***	Supported

Note: ***$p < .001$; *$p < .05$.

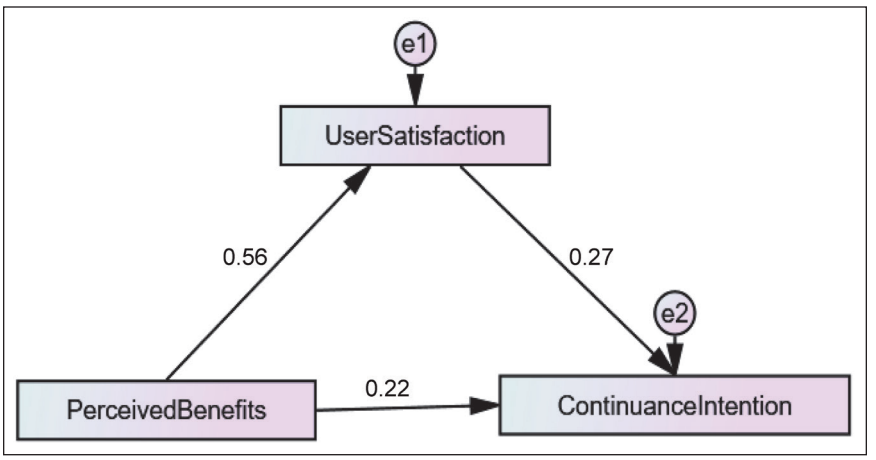

Figure 2. The Mediation Model.

significantly from the mean value for the other one, that is, Yono SBI. The results of the test are depicted in Table 7.

Findings and Discussion

This study explored the continuance intention of mobile banking applications through the perceived benefits, user satisfaction and perceived risks mechanisms. Existing models were used to accommodate the research constructs. The constructs included perceived benefits, user satisfaction and perceived risks as the antecedents and continuance intention as the outcome variable. The inclusion of user satisfaction as the intermediary variable in the current research model strengthens the validity of the study's conclusions, as responsiveness and security features have a big impact on people's acceptance of technology (Barnes & Vidgen, 2002; Parasuraman et al., 1985).

Our results support H_1, that is, a significant positive relationship between perceived benefits and continuance intention ($\beta = 0.157$; $p < .05$). This finding supports prior studies (Looney et al., 2004) and signifies that the more benefits offered by mobile banking applications to the users, the greater their willingness to continue with the mobile application. Moreover, Additionally, this emphasises how crucial it is to promote mobile banking's benefits to guarantee its continued growth and use (Baganzi & Lau, 2017). Further, H_2, a significant and positive association between user satisfaction and continuance intention, is also supported ($\beta = 0.196$; $p < .001$). This finding supports the existing literature (Mohammadi, 2015; Püschel et al., 2010). It may be because when the users are highly satisfied with the services of a mobile banking application, their continuance intention of using the application would also be positive. Because happy customers are more likely to intend to make additional purchases in the future, happiness has thus historically been recognised as an antecedent (Chiang et al., 2008).

H_3, a negative relationship between perceived risks and continuance intention of using mobile banking application, is also supported (β = –0.290; p < .001). The financial, performance, security/privacy, time and social risk of mobile banking adversely affect its continuance intention to use. This finding also aligns with the literature (Abrahao et al., 2016; Alonso-Dos-Santos et al., 2020; Lee, 2009; Zhou, 2015). As depicted in Table 6, the perceived benefits exert their effect on continuance intention both directly and indirectly. There is partial mediation of user satisfaction between perceived benefits and continuance intention, indicating significant values (β = 0.218; p < .001) and (β = 0.149; p < .001) for both direct and indirect effects, respectively. We can conclude that there is a positive effect of both perceived benefits and user satisfaction on continuance intention of using mobile banking applications. This aligns with the previously established literature (Akel & Armağan, 2021; Han et al., 2018). The user satisfaction does not fully mediate the perceived benefits and continuance intention relationship.

As depicted in Table 7, the findings of the study reflect that there is a significant difference in perceived benefits with respect to Mpay Delight and Yono with (t = –6.822, p < .001). Hence, H5 is accepted. It was found that the Yono provides more benefits in comparison to Mpay Delight. There is also a significant difference in user satisfaction with respect to Mpay Delight and Yono (t = –6.422,

Table 6. The Mediation Results (Hypothesis Testing: H_4).

Hypothese: H_4	Direct Effect	Indirect Effect	Result
Perceived Benefits→ User Satisfaction→ Continuance Intention	0.218***	0.149***	Partial mediation

Table 7. Independent Samples *t*-test for Perceived Benefits; User Satisfaction, Perceived Risks and Continuance Intention with Respect to Mobile Banking Applications (Hypothesis Testing: H_5 to H_8).

Hypotheses	Mobile Banking Application	Construct	*N*	Mean	Standard Deviation	*t*-value	*p* Value	Result
H_5	J&K Bank Mpay Delight	Perceived benefits	200	3.0500	1.2971	–6.822	.000	Supported
	Yono SBI		200	3.8583	1.0607			
H_6	J&K Bank Mpay Delight	User satisfaction	200	3.0500	1.2123	–6.422	.000	Supported
	Yono SBI		200	3.7963	1.1093			
H_7	J&K Bank Mpay Delight	Perceived risks	200	2.1300	0.6944	3.441	.194	Not supported
	Yono SBI		200	1.8870	0.7176			
H_8	J&K Bank Mpay Delight	Continuance intention	200	3.5875	1.1129	–4.126	.000	Supported
	Yono SBI		200	3.9925	0.8296			

$p < .001$). Hence, H6 is also accepted. User satisfaction was more prominent in case of Yono users than Mpay users. With respect to perceived risks regarding Mpay Delight and Yono ($t = 3.441$, $p = .194$), indicating there is no significant difference between the two groups. Therefore, H7 is rejected. It was seen that there is a slight difference in the perceived risks of both Yono and Mpay Delight. There is a significant difference in continuance intention between Mpay Delight and Yono with ($t = –4.126$, $p < .001$), thereby leading to acceptance of H8. The intention of users to continue using Mpay Delight was found to be negative as compared to those using Yono.

Implications

Theoretical Implications

This research study proposed and tested a mobile banking continuance model in the Indian context. This study explored the continuance intention of mobile banking applications through the perceived benefits, user satisfaction and perceived risks mechanisms. First, the results of the study contribute to the understanding and explanation of the prognosticators of technology adoption by advancing the TAM and UTAUT models, especially mobile banking continuance (Davis, 1989; Venkatesh et al., 2003). Second, our study results show that perceived benefits and user satisfaction together play a vital role in enhancing and maintaining continuity with mobile banking applications of different users. These benefits include convenience, ease of use, security, privacy, control, customisation, interactivity, and so on (Alalwan et al., 2016).

Furthermore, on account of findings of the study, it is inferred that risks perceived by users in terms of poor performance of banking applications on account of servers being down due to ongoing maintenance, fear of losing money due to information leakage, and so on, affect the continuance intention of users. In this regard, banking organisations should focus on improvement in facilitating hassle-free service to their customers, such as minimising the updating time for applications, leading to the least interruption of server operations and superior performance. Also, the banks can enhance security measures and develop trust of their users by introducing biometric technology such as facial mapping, fingerprint and voice recognition.

Practical Implications

Regarding technology (mobile banking) suppliers and users, including the Indian financial services sector, our findings also have some ramifications for managers and regulators. Furthermore, this study sheds light on the core priorities of users regarding M-banking usage and continuity. For engineering management practice, this study has some commendable implications. For instance, this study highlights that engineering managers should simplify mobile banking applications to

increase their use and retention rate by creating solutions that are user-friendly and beneficial.

Moreover, our study signifies that J&K Bank engineering staff need to focus on technology specifications for stimulating tech continuance. Many respondents using Mpay Delight reported that giving both transaction personal identification number (TPIN) and mobile personal identification number (MPIN) details, waiting for one-time password (OTP) while making a simple transaction, becomes tedious for users. It adversely affects the continuance intention of users and makes them switch to other applications. Therefore, when it comes to mobile banking, engineering managers should put an emphasis on added value and simplicity. Enhancing technology's usability, cutting down on time waste, and speeding up transactions are all examples of the simplicity perspective, which is connected to the added value perspective.

To enable user-friendly products, technology providers can concentrate on improving the general user interface (UI) of their solutions. In order to help project managers, system developers, and human factor engineers, Opaluch and Tsao (1993) provided 10 ways to enhance usability engineering. Identifying end users, appointing a UI designer early on, and listing end-user tasks are some of these strategies. Furthermore, by increasing awareness of its features and advantages, mobile banking service providers can encourage users to keep using it. It becomes crucial to be aware of a new technology since its acceptance is preceded by user (organisation or individual) knowledge about how simple (easy-to-use) and valuable the technology is. To achieve the desired goal, internal marketing initiatives should concentrate on encouraging word-of-mouth advertising. This implies that customers must be aware of the advantages and capabilities of mobile banking in order to support its continuity. Furthermore, as mobile banking has been viewed as a promising element in this field, it is imperative that both the public and commercial sectors support it to assist India in achieving the goal of financial inclusion. To summarise, our study offers a candid view for banking organisations on improving the performance and overall continuance of their mobile banking applications.

Conclusion

This study is the first to explore the role of perceived benefits, user satisfaction, and perceived risks in influencing continuance intention of mobile banking applications in the union territories of J&K and Ladakh. The applications of two reputed banks, namely the State Bank of India and the Jammu & Kashmir Bank Ltd., have been taken into consideration. By incorporating these research constructs into the usage and continuation of mobile banking, this study contributes to the body of literature on TAM/technology acceptance theories.

Summarising the findings, it can be concluded that both J&K Bank and SBI are doing their best to deliver better mobile banking services to their customers. But J&K Bank needs to work a bit harder to improve the efficacy of Mpay Delight, as has been found from the study results that many Mpay Delight users

are switching to other mobile banking applications rather than continuing with the same one. The study recommends that engineering managers should offer simple and user-friendly technology to enhance the continuance rate of mobile banking applications. Additionally, the results emphasise the significance of mobile banking in encouraging financial inclusion, thereby contributing to economic development. Banks offering mobile banking services could use the study findings strategically in this digital era.

Limitations and Future Research Directions

This research has certain limitations despite its noteworthy achievements. First off, the quality and validity of the data were limited because this study used self-reported questionnaires, which are more likely to contain bias due to respondents concealing their genuine emotions (Fan et al., 2002). To get around this restriction, future research can concentrate on objective data. Second, this study focused on only two mobile banking applications, namely J&K Bank Mpay Delight and Yono SBI, limiting the results' generalizability. Moreover, the area of study was confined to the union territories of J&K and Ladakh, which again raises concern for the generalizability of results. Future studies could focus on more mobile banking applications to make more assertive statements. Third, this study was cross-sectional in nature; future studies could be longitudinal in nature.

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Appendix A

Informed Consent Form

Dear Respondent,

This questionnaire is purely for academic/research purposes. This questionnaire seeks to collect data on the topic: 'Effects of Perceived Benefits and Risks on Continuance Intention of Using Mobile Banking Applications: User Satisfaction as Mediator'. For this research, we need some information from users of Mpay Delight+/YONO SBI.

The data collected would be used in aggregate, and no individual's data would be named/quoted in the research. Please note that you are not required to disclose your identity while filling out this questionnaire. Therefore, you can be assured that your answers are completely confidential.

Your cooperation is highly important for the successful completion of the study. As such, it is requested to answer each statement included in the questionnaire correctly after due consideration.

Thanking you in advance.

Part A

General information

(1) Gender _____(2) Age in yrs_____(3) Contact No.(optional)_____

Select one of these mobile banking applications and mark your responses for the questions that follow.

JKB Mpay Delight + ☐ **YONO SBI** ☐

Part B

Instructions: Based on your experience of using a mobile banking application, please rate your responses by marking a tick (✓) on the scale of 1 to 5, where 1 = Strongly Disagree, 2 = Disagree, 3 = Neither Agree Nor Disagree (N), 4 = Agree and 5 = Strongly Agree.

S.No	Perceived Benefits	1	2	3	4	5
PB1	This application is easy to use and provides a user-friendly interface in terms of setting up, configuring and using the services					
PB2	This application provides round-the-clock accessibility					

(Continued)

(Continued)

S.No	Perceived Benefits	1	2	3	4	5
PB3	This application provides security via biometric and multi-factor authentication					
PB4	Using this application enables me to perform core banking functions more quickly (like making fund transfers, balance inquiry, checking account statements)					
PB5	It improves efficiency as it saves my time in performing banking tasks (avoiding going to branches and traffic jams)					
PB6	It offers me a wider range of banking products and services (like online account opening, apply for instant loans, cheque status enquiry)					
PB7	This application allows me trading in stocks and other financial market products directly					
PB8	This app allows me to invest in various government schemes					
PB9	Beyond standard banking, the app's connection with e-commerce platforms and lifestyle services for travel, shopping and entertainment adds value					
PB10	This application allows me to save money by providing best offers, rewards, discounts and coupons					
PB11	It is easy to become confident at banking application for the cell phones					
PB12	This application has 'all-in-one' functionality feature by consolidating numerous banking and financial services in one place					
S.No	**Perceived Risks**	**1**	**2**	**3**	**4**	**5**
PR1	This application may not perform well because the servers being down due to undergoing maintenance					
PR2	This application sometimes processes payments incorrectly					
PR3	Concerns regarding transaction problems, such as incorrect debits, inaccurate recipient information, or delays, lead to waste of time in fixing transaction errors					
PR4	When transaction errors occur, I am worried that I may not get compensation from the bank					
PR5	Transacting via unprotected public Wi-Fi networks carries a high risk					
PR6	I do not feel totally safe in providing personal information over this application because of falling for phishing scams that could lead to financial losses					

(Continued)

S.No	Perceived Benefits	1	2	3	4	5
PR7	The concern that a lost or stolen mobile device will be utilised for unauthorised transactions					
PR8	The complex user interface of this application limits its use among less tech-savvy users					
PR9	I am sure that if something went wrong with online transactions, my family, friends and colleagues would think less of me					
PR10	This app requires a functioning smartphone with a stable internet connection, which becomes a drawback and limits its use					
S.No	**Satisfaction**	**1**	**2**	**3**	**4**	**5**
SAT1	I think I did the right thing when I selected this application					
SAT2	I am satisfied with the way this application carries out transactions					
SAT3	I am satisfied with the services I avail using this application					
SAT4	Overall, I am delighted with this mobile banking application as it is secure and reliable					
S.No	**Continuance Intention**	**1**	**2**	**3**	**4**	**5**
CONT1	I would continue using this application rather than discontinuing it					
CONT2	I intend to continue using this application rather than using any alternative means (traditional or web-based banking)					
CONT3	I am likely to recommend this application to my friends, neighbours and relatives					
CONT4	I prefer this application over other available mobile banking applications					

Part C

What do you suggest for the overall improvement of this mobile banking application to enhance its future use?

_____

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Thank you for your precious time.