What Drives Continuance Intention to Use Digital Postal Banking Services? A Combined Approach Using TAM and TTF Models

Melby George
Research Scholar, PG and Research Department of Commerce
Sree Narayana College, Kannur University, Kannur-670007, Kerala, India
Email id: melbygeorge658@gmail.com

Dr. Anil P. V
Assistant Professor, PG Department of Commerce,
Pazhassiraja N S S College, Mattannur, Kannur-670702, Kerala, India
Email id: anil1830@gmail.com

Abstract: *The study explores the variables determining the continuance intension to make use of digital postal banking services in India through the mixture of Technology Acceptance Model (TAM) and the Task-Technology Fit (TTF) model. Focusing on constructs such as task characteristics, technology characteristics, perceived usefulness, perceived ease of use, and continuance intention to use, the research highlights the interplay between technological attributes and user perceptions. By employing a well-structured questionnaire to collect data from 214 customers of India Post financial services, an integrated model has been built and tested. The association between continuing use of digital postal banking services and its antecedents is explained by the PLS-SEM results. The study emphasizes the significance of focusing on technological features and ensuring alignment between tasks and technology to boost user engagement and stimulate the continued use of digital postal banking services. In a fast-digitizing economy, our integrated TAM-TTF strategy provides insightful information for enhancing digital banking platforms, meeting the varied needs of users, and promoting long-term adoption. The findings have important implications for India Post in order to better comprehend how customers view digital postal banking services.*

***Keywords**: Digital postal banking services, Perceived usefulness, Perceived ease of use, Task characteristics, Technology characteristics, Continuance intention*

Introduction

India Post, one of the largest postal networks in the world, has embraced digital transformation as part of its modernization projects under the Digital India initiative. Through this initiative, India Post has sought to enhance its offerings and broaden its customer base by incorporating technology into traditional postal operations. Key innovations include the Core System Integration (CSI) for operational simplification, e-post for electronic message delivery, and the digitization of Postal Life Insurance and Rural Postal Life Insurance systems for improved customer service. Among these advancements, digital postal banking services stand out as a significant milestone, leveraging India Post's extensive network to offer financial solutions in both urban and rural areas. A leading endeavour in this domain is the India Post Payments Bank (IPPB), launched in 2018. IPPB has revolutionized access to banking by bringing digital financial services to millions, particularly in underserved rural areas. It provides basic banking services such as savings accounts, money transfers, utility payments, and financial inclusion services by leveraging the extensive postal network. Its unique integration of digital banking solutions with postal services seeks to close the digital divide in India, fostering financial inclusion and enabling citizens in remote areas to access banking services conveniently. These services, emerging as an easy-to-use substitute for traditional banks, provide competitive rates, simplified procedures, and schemes tailored to senior citizens, contributing to the expansion of the Indian banking sector and aiding the revival of the postal department (Prakash & Gurusamy, 2018).

Digital postal banking services, particularly those offered by IPPB, differentiate themselves from other digital banking platforms by utilizing the extensive physical network of post offices. These services are complemented by alternative delivery channels, including call banking, SMS banking, missed call banking, and doorstep banking. Such multi-channel accessibility ensures inclusivity, particularly in areas with limited internet connectivity. Customers can perform essential banking transactions using basic mobile phones or receive in-person assistance at home. As of May 2023, digital transactions through IPPB totalled [1] 3.048 trillion, reflecting its significant impact (Ministry of Communications, Govt. of India). Despite these achievements, challenges persist. A SWOT analysis by Maity and Ganguly (2019) highlighted key strengths, such as India Post's vast network and government backing, alongside challenges like digital literacy barriers and operational constraints. Enhancing financial literacy has emerged as a crucial strategy to sustain the growth and effectiveness of IPPB, particularly in fostering long-term financial empowerment of rural population (Azharuddin, 2024).

India Post's multi-channel approach further distinguishes it from traditional banks, which often rely exclusively on internet-based services requiring smartphones. Unique offerings like doorstep banking enhance convenience for remote and less-connected populations, positioning digital postal banking as a critical player in advancing financial inclusion. However, while IPPB's extensive network of over 1.5 lakh sites ensures short-term financial inclusion through formal banking services, sustained success will depend on continued improvements in financial literacy among target groups.

As these services expand, understanding how users perceive and interact with them becomes increasingly important. When digital platforms consistently deliver reliable, secure, and user-friendly services tailored to customer needs, it enhances long-term adoption. Moreover, persistent support and periodic upgrades that are in line with evolving user expectations can strengthen users' intent to continue using these services, ensuring the long-term viability and success of digital postal banking platforms. Continuance intention to use digital postal banking services predicated upon the sustained alignment between the platform's capabilities and user requirements. Davis (1989) emphasizes that when users find the system beneficial and easy to use, their intention to stick with a system gets a positive boost.

Review of Literature

In the modern digital era, the proliferation of technologies like digital platforms, mobile applications and e-services requires a framework to gauge how users will react to these innovations. Zhou et al. (2010) integrate Task-Technology Fit (TTF) and UTAUT models to explain continuance intention in mobile banking. Their study shows that when mobile banking features complement with user tasks, it enhances satisfaction and strengthens continued intention. Bhattacherjee (2001) proposes the Expectation-

Confirmation Model (ECM) of IS Continuance, which suggests that satisfaction, driven by initial expectations and perceived performance, significantly affects users' intention to continue using online banking services. Venkatesh et al. (2012) extends the Unified Theory of Acceptance and Use of Technology (UTAUT2) by including hedonic motivation and habit as key components. They discover that continued intention to use mobile banking is shaped by users' perceptions of performance expectancy and habit-forming behaviours**.** Tam and Oliveira (2016) reveal that performance expectancy, effort expectancy, and task-technology fit all have a big impact on how long people continue to use mobile banking services. Their work demonstrates that matching system features with user needs fosters higher retention. As stated by Oliveira et al. (2014), the intention to continue using mobile banking is influenced by perceived security, trust, and service quality. Their findings emphasize that how important it is to resolve user concerns regarding system dependability and data security in order to ensure long-term adoption.

TAM offers a systematic approach to evaluate user acceptance by assessing whether individuals find digital tools useful and easy to use. This model has proven particularly relevant in sectors where user interaction with technology dictates success, such as e-commerce, healthcare, and digital banking. For instance, research indicates that PU is a primary driver for the adoption of mobile banking services, as illustrated by Baptista and Oliveira (2015). By integrating TAM insights into platform design, financial institutions can ensure their services are both effective and user-friendly, this should boost customer loyalty.

The TTF model, created by Goodhue and Thompson (1995), emphasizes that technology adoption and performance benefits arise when the capabilities of a technology align with the tasks it is intended to support. Unlike TAM, which stresses user perceptions of ease and usefulness, TTF examines the actual fit between technology features and work requirements, ensuring the right tools are implemented to improve performance, productivity, and user satisfaction. Gebauer, Shaw, and Gribbins (2005) lay the theoretical foundation for a mobile-specific TTF model, which emphasizes mobility, ease of data access, and connectivity. Their empirical study (2010) validates the model by demonstrating that features aligned with user tasks improve satisfaction and performance. Tam and Oliveira (2016) further illustrate how TTF significantly enhances user satisfaction and continued intention in mobile banking by aligning platform functionalities with user task requirements.

To investigate the continued use of digital postal banking services, this study adopts a combined approach utilizing the Technology Acceptance Model (TAM) and the Task-Technology Fit (TTF) model. TAM, proposed by Davis (1989), provides insights into user perceptions, focusing on key factors such as Perceived Usefulness (PU) and Perceived Ease of Use (PE), which significantly influence the willingness to adopt and continue using digital banking services (Davis, 1989; Venkatesh & Davis, 2000). However, while TAM effectively captures general attitudes toward technology adoption, it may overlook the practical effectiveness of the technology in supporting specific user tasks. This is where the TTF model complements TAM by evaluating how well the features of digital postal banking services align with the actual financial tasks users need to perform. TTF focuses on how well technology supports task requirements, impacting performance and user satisfaction (Goodhue & Thompson, 1995). Researchers have argued that combining TAM with TTF provides a comprehensive understanding of user behaviour by incorporating both personal perceptions and the suitability of technology to tasks (Dishaw & Strong, 1999; Wu & Wang, 2006). This integrated approach has been shown to improve predictive power over TAM or TTF alone, particularly in contexts requiring complex user interactions, such as e-learning and mobile banking (Lee et al., 2007; Lin & Huang, 2008). Furthermore, empirical studies have demonstrated that task-technology fit positively influences perceived usefulness, subsequently enhancing technology acceptance (Klopping & McKinney, 2004; Zhou et al., 2010). The integrated framework has been instrumental in fields like healthcare and e-commerce, where task alignment with technology is crucial (Wang et al., 2008; Yen et al., 2010). Consequently, the TAM-TTF model provides a robust theoretical framework for understanding the nuanced factors influencing user adoption and is widely applicable across various technological settings (McFarland & Hamilton, 2006; Wang & Wu, 2009).

Research Objectives

1. To identify the major factors affecting users' continuance intention to use digital postal banking services.
2. To construct a model illustrating the relationships between the antecedents of continuance intention in the context of digital postal banking services.

Conceptual Model

By combining TAM's focus on user acceptance with TTF's emphasis on task-specific utility, this study aims to provide a comprehensive understanding of user continuance intention. This dual approach enables a deeper exploration of both subjective factors, such as perceptions of ease and usefulness, and objective factors, such as the alignment between technology and task performance. This study employs a conceptual framework that integrates the TAM and TTF model, incorporating six factors (i.e., those associated with TAM and those associated with TTF model) as illustrated in Fig. 1.

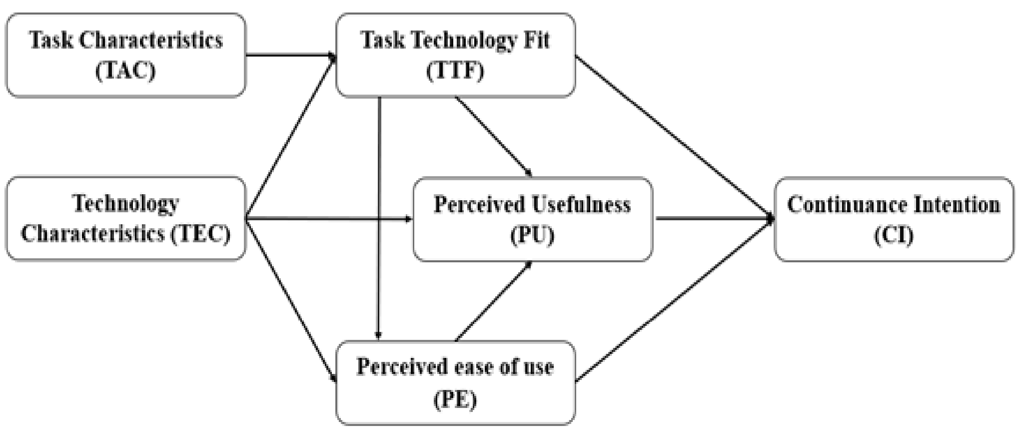

Figure 1: Conceptual Model

Task Characteristics and Task Technology Fit

Task Characteristics (TAC) refer to features of tasks, such as complexity, importance, and frequency, that determine the efficiency of task completion and the support required from technology. In digital banking, TAC impacts secure money transfers, account management, and balance inquiries, shaping the need for reliable and efficient systems (Dishaw & Strong, 1999; Goodhue & Thompson, 1995). These traits shape the design and functionality of digital banking systems to ensure they effectively meet user expectations and support various transaction types (Dishaw & Strong, 1999; Goodhue & Thompson, 1995). Task-Technology Fit (TTF) is the extent to which technology capabilities align with the requirements of the task, enhancing the user's ability to complete tasks accurately and efficiently. TTF reflects how well a platform's features—secure authentication, user-friendly interfaces, and transaction speed—align with task demands, enhancing user satisfaction and performance (Zhou et al., 2010; Yen et al., 2010). A strong relationship between TAC and TTF helps tailor technology to meet task demands, improving user experience. When systems address essential requirements like security and accessibility, TTF increases, fostering satisfaction and continued use (Goodhue & Thompson, 1995; Dishaw & Strong, 1999; Klopping & McKinney, 2004). Studies highlight that aligning mobile banking services with user tasks enables real-time financial management and quick responses to urgent needs, enhancing user performance and acceptance (Oliveira et al., 2014; Zhou et al., 2010).

H1: Task characteristics (TAC) positively influence Task-Technology Fit (TTF) in digital postal banking,

Technology Characteristics and Task Technology Fit

Technology characteristics (TEC) refer to the attributes and capabilities of technological instruments or services that determine how effectively they support user tasks (Afshan & Sharif, 2016). These include functionality, reliability, ease of use, accessibility, security, and flexibility, which shape user satisfaction and engagement (Dishaw & Strong, 1999; Klopping & McKinney, 2004). Robust security protocols, 24/7 access, and user-friendly interfaces are essential for meeting diverse needs, from routine balance inquiries to urgent fund transfers (Tam & Oliveira, 2016). The match between technology characteristics and task requirements is critical for improving Task-Technology Fit (TTF). When technology features like security, speed, and accessibility are well-matched to user needs, such as managing transactions anytime and anywhere, they enhance TTF, fostering efficient, reliable, and satisfying interactions with the system (Goodhue & Thompson, 1995; Yen et al., 2010). High TTF supports effective task completion, increasing user satisfaction and encouraging adoption and continued use (Zhou et al., 2010).

H2: Technology characteristics (TEC) positively influence Task-Technology Fit (TTF) in digital postal banking

Technology Characteristics and Perceived Usefulness

Perceived Usefulness (PU) refers to the extent to which users suspect that a technology improves their task performance, making their work more efficient, effective, or convenient (Davis, 1989; Venkatesh & Davis, 2000). PU is a central concept in the Technology Acceptance Model (TAM), which suggests that when users perceive a technology as useful, they are more likely to adopt and continue using it (Davis, 1989). For example, digital banking is seen as useful if it enables users to perform tasks like checking account balances, transferring funds, and paying bills quickly and without needing to visit a physical office (Oliveira et al., 2014).

Strong technology characteristics, such as ease of navigation, reliability, security, and availability of essential features, enhance users' perceived usefulness of the technology. A well-designed digital banking app with secure and user-friendly features fosters confidence and ease in managing finances, thereby increasing PU. When the technology aligns with users' needs and expectations, it improves their overall experience and drives greater acceptance (Tam & Oliveira, 2016; Zhou et al., 2010). Therefore, when technology characteristics are strong, users are more likely to perceive it as beneficial, which positively impacts their productivity and satisfaction, reinforcing their perception of its usefulness (Davis, 1989).

H3: Technology characteristics (TEC) positively influence Perceived usefulness (PU) in digital postal banking

Technology Characteristics and Perceived Ease of Use

Perceived Ease of Use (PE) refers to the degree to which a user believes that using a technology will be facile. In the Technology Acceptance Model (TAM), PE is a critical factor influencing user adoption; if a technology is simple to use, users are more inclined to use it because they perceive minimal effort required to learn and operate it (Davis, 1989; Venkatesh & Davis, 2000). A simple, intuitive interface, quick response times, accessible help features, and an organized layout can make tasks such as checking balance\s, transferring money, or paying bills easier. When services are easy to use, users experience less frustration, which increases engagement and loyalty to the platform (Oliveira et al., 2014). For instance, an app that loads quickly with clear labels and instructions enhances perceived ease of use. Therefore, technology characteristics play a crucial role in improving PE, helping users feel more comfortable and confident in managing their finances through digital postal banking (Tam & Oliveira, 2016; Yen et al., 2010). When technology is user-friendly, it reduces cognitive and physical effort, leading to higher adoption rates and user satisfaction (Davis, 1989).

H4: Technology characteristics (TEC) positively influence Perceived ease of use (PE) in digital postal banking

Task Technology Fit and Continued Intension

Continued Intention in the context of postal digital banking refers to a user's sustained desire to continue using the platform, indicating loyalty and ongoing engagement beyond initial adoption. It is influenced by satisfaction and perceived value of the service, and it plays a crucial role in building long-term customer relationships (Bhattacherjee, 2001; Venkatesh et al., 2011).

Task-Technology Fit (TTF) is significant in shaping continued intention, as it reflects how efficiently the technology meets users' specific task requirements. This sync between technology features and user tasks reinforces satisfaction, confidence, and trust in the system, strengthening users' intention to continue using it (Goodhue & Thompson, 1995; Zhou et al., 2010). When TTF is high, users find the postal digital banking services meet their needs, reducing effort and enhancing task performance. This positive experience fosters reliability and efficiency, increasing the likelihood that users will return to the platform regularly. Thus, TTF positively impacts continued intention by ensuring that technology consistently meets users' expectations, leading to higher engagement over the long term (Tam & Oliveira, 2016; Oliveira et al., 2014). Ultimately, strong TTF in postal digital banking not only helps user's complete tasks effectively but also builds trust, satisfaction, and ongoing use.

H5: Task Technology Fit (TTF) positively influence Continued Intension (CI) to use digital postal banking services

Perceived Ease of Use and Perceived Usefulness

Perceived Ease of Use (PE) is directly associated to Perceived Usefulness (PU) in technology acceptance. According to the Technology Acceptance Model (TAM), when users find a technology simple to use, they are more likely to view it as useful because it helps them accomplish tasks with less effort (Davis, 1989). In other words, the less complex a system is, the more beneficial it appears in supporting users' needs.

A user-friendly postal digital banking platform with intuitive navigation and clear instructions can enhance users' perception of both ease of use and usefulness. If accessing features like balance checks or fund transfers is simple and efficient, users are more likely to find the platform helpful for managing their finances quickly and effortlessly (Venkatesh & Davis, 2000). The positive relationship between PE and PU suggests that the more facile a technology is to use, the more valuable it becomes in the eyes of users. When users perceive minimal effort in using a system, they are more likely to recognize its advantages, making PU a key outcome of PE

(Venkatesh et al., 2003). Therefore, improving perceived ease of use can increase perceived usefulness, as users associate ease of interaction with greater task accomplishment and satisfaction.

H6: Perceived ease of use (PE) positively influences perceived usefulness (PU) to use digital postal banking services

Task-Technology Fit and Perceived Usefulness

Task-Technology Fit (TTF) is directly related to Perceived Usefulness (PU) because a strong alignment between a technology's capabilities and user tasks increases its perceived value. When TTF is high, users feel that the technology effectively supports their goals, making it more useful for completing tasks efficiently (Goodhue & Thompson, 1995).

Users are more likely to assume the system as beneficial when its capabilities directly support their financial management tasks (Oliveira et al., 2014). Thus, TTF positively impacts PU, as users view a well-matched technology as valuable and efficient for achieving their objectives. A strong task-technology fit encourages users to appreciate the technology's utility, motivating them to use it regularly (Dishaw & Strong, 1999). Therefore, ensuring a high TTF in postal digital banking can significantly enhance perceived usefulness and drive continued user engagement.

H7: Task Technology Fit (TTF) positively influence perceived usefulness (PU) to use digital postal banking services

Task-Technology Fit and Perceived ease of use

Task-Technology Fit (TTF) can enhance Perceived Ease of Use (PE) by aligning the technology's features with the user's specific task requirements, making interactions more intuitive and less effortful. When a technology is well-suited to the tasks it supports, users find it easier to navigate and operate, as they don't have to adapt to unnecessary or complicated features. This alignment reduces cognitive load, allowing users to accomplish tasks more smoothly and efficiently (Goodhue & Thompson, 1995). When the technology fits well with users' banking tasks, it raises their perception of ease of use (Tam & Oliveira, 2016). Thus, a high TTF contributes to greater PE, as users feel the system intuitively supports their needs, eliminating complexity and enabling them to complete tasks with minimal effort. This connection between TTF and PE makes users more inclined to engage with the technology, as it reduces the learning curve and promotes a smoother experience (Dishaw & Strong, 1999).

H8: Task Technology Fit (TTF) positively influence perceived ease of use (PE) in digital postal banking services

Perceived usefulness and Continued Intension

Perceived Usefulness (PU) has a strong influence on Continued Intention to use a technology. According to the Technology Acceptance Model (TAM), users are more inclined to adopt and sustain their use of a technology when they view it as valuable or beneficial for their tasks (Davis, 1989; Venkatesh & Davis, 2000). When a technology consistently enhances task performance and meets users' needs, it drives their continued use over time.

The convenience and effectiveness of the platform reinforce users' intention to integrate it into their routines, especially when it consistently meets their banking needs (Oliveira et al., 2014). The relationship between PU and Continued Intention shows that when a technology meets expectations for productivity and convenience, it strengthens user loyalty and commitment. A high PU encourages sustained use, as users recognize the ongoing value of the technology in achieving their goals (Bhattacherjee, 2001). Therefore, PU plays a crucial role in fostering continued intention, as satisfied users are more likely to continue engaging with a technology that consistently delivers benefits. Studies have shown that PU is a primary driver for the adoption of mobile banking services (Baptista & Oliveira, 2015).

H9: perceived usefulness (PU) positively influences continued intention (CI) to use digital postal banking services

Perceived ease of use and Continued Intension

Perceived Ease of Use (PE) significantly impacts Continued Intention to use a technology. According to the Technology Acceptance Model (TAM), when users find a system simple to operate, they are more inclined to continue using it over time because it requires minimal effort to perform tasks (Davis, 1989; Venkatesh & Davis, 2000). PE not only influences initial adoption but also sustains ongoing use, as users are more inclined to return to platforms that are intuitive and user-friendly.

A user-friendly interface reduces frustration, enhances satisfaction, and fosters positive experiences, all of which aid to a stronger intention to make use of the service regularly (Oliveira et al., 2014). The association between PE and Continued Intention shows that when users feel confident and comfortable using a technology, they are more inclined to incorporate it into their daily schedules. High PE encourages consistent use, as users feel less apprehensive about interacting with the system, creating a positive feedback loop that supports sustained engagement and loyalty (Bhattacherjee, 2001). Therefore, perceived ease of use directly fosters continued intention by making interactions more enjoyable and reducing the perceived effort of repeated use.

H10: perceived ease of use (PE) positively influences continued intention (CI) to use digital postal banking services

This integrated TAM-TTF model provides a holistic view, explaining both the task-technology alignment (TTF) and the cognitive perceptions of technology acceptance (TAM), making it ideal for understanding user perceptions toward digital postal banking services.

Research Methodology

A field survey utilizing a self-administered questionnaire was conducted to gather data from a convenience sample of postal banking customers across Kerala. While using a probability sampling technique could reduce sampling bias and improve the generalizability of the results (Bhattacherjee, 2012), it was challenging to implement such a method in this study. For instance, obtaining an up-to-date and comprehensive list of all digital postal banking users in Kerala, which is a key requirement for probability sampling (Bhattacherjee, 2012; Dwivedi et al., 2006), proved difficult. Banks do not disclose customer information such as contact details. Therefore, convenience sampling was deemed more appropriate for this study (Castillo, 2009; Dwivedi et al., 2006).

The study focused on customers' continued intention to make use of digital postal banking services, targeting real users of the system, including India Post Payment Bank customers and those participating in postal schemes. It also considered mobile banking services provided through specific mobile apps (India Post Payment Bank app, India Post mobile banking app), call banking, SMS banking, and online banking services. A total of 400 customers who had used digital postal banking were selected to complete the questionnaire, which was distributed using various methods. Many participants were approached through their banks, while others were contacted at their workplaces (Dwivedi et al., 2006). The questionnaire was divided into two sections: demographic information (age, gender, occupation, and income) and items related to the constructs, derived from relevant literature (21 scale items). For instance, items measuring Perceived Usefulness (PU) and Perceived Ease of Use (PEOU) were adapted from Davis et al. (1989), while the Task-Technology Fit (TTF) model items were based on Zhou et al. (2010) and Lin and Huang (2008). Items assessing continued intention to use were adopted from Venkatesh et al. (2012). Respondents rated their opinion with each statement on a scale from 1 (strongly disagree) to 5 (strongly agree).

Data Analysis

Of the 400 questionnaires distributed, 306 were returned. Among these, 214 were fully completed and valid, and therefore, only these 214 responses were used for further analysis. Table 1 summarises the respondent's demographic characteristics. The sample demographics reveal a balanced gender distribution, with slightly more females (54.3%) than males (45.7%). The majority of respondents are aged 28-43 (37.6%), followed by 44-59 (31.8%). Most are graduates (33.5%) or postgraduates (35.8%), with a significant share employed in the private sector (30.1%) or self-employed (28.9%). Monthly income predominantly falls in the ¹ 10,000-¹ 30,000 range (35.3%), while 60.7% have been using digital postal banking for over three years, indicating widespread adoption among experienced users.

Table 1: Demographics of Respondents

Gender	Male	45.7%
	Female	54.3%
Age	12-27	12.1%
	28-43	37.6%
	44-59	31.8%
	60-78	18.5%
Educational qualification:	Below Graduate	28.3%
	Graduate	33.5%
	Post Graduate	35.8%
	Others	2.3%
Occupation:	Student	13.3%
	Public Sector Employee	21.4%
	Private Sector Employee	30.1%
	Self Employed	28.9%
	Retired	6.4%
Monthly Income:	Below 10000	22%
	10000- 30000	35.3%
	30000-50000	27.2%
	above 50000	15.6%
How long using digital postal banking?	Less than 1 year	16.8%
	1 to 3 years	22.5%
	More than 3 years	60.7%

Source: *Field Survey*

Structural Equation Modelling

Partial Least Squares Structural Equation Modelling (PLS-SEM) is the commonly used variance-based method used to analyse complex relationships between latent variables, particularly in predictive and exploratory research. It is suitable for models with formative and reflective constructs, small sample sizes, or non-normal data distributions (Hair et al., 2011). PLS-SEM is widely applied in fields like marketing, technology adoption, and customer satisfaction to maximize explained variance in dependent variables rather than confirming theoretical fit (Henseler et al., 2015). For example, it is commonly used in studies on service quality and behavioural intentions to predict outcomes and test hypotheses simultaneously (Chin, 1998). Its flexibility and predictive focus make it a preferred choice in developing theories and analysing complex systems. In PLS-SEM, results are analysed using measurement model and structural model.

The measurement model in PLS-SEM evaluates the association between latent constructs and their associated indicators. In the measurement model of PLS-SEM, reliability and validity are assessed to ensure the quality of the constructs. Reliability measures the consistency of indicators in representing a latent construct. Reliability is evaluated through internal consistency, measured by Cronbach's alpha and composite reliability (CR), both of which should exceed 0.7 to indicate acceptable levels (Hair et al., 2017). Cronbach's alpha is often reported, though CR is preferred as it accounts for indicator loadings. Indicators' reliability is evaluated using outer loadings, where values e"0.70 are deemed acceptable (Sarstedt et al., 2014). Validity ensures that a construct measures what it is intended to. Validity is assessed in two dimensions: convergent and discriminant validity. Convergent validity, measured by the Average Variance Extracted (AVE), requires a threshold value of 0.5 or higher, indicating that constructs explain at least 50% of the variance in their indicators (Henseler et al., 2015). Discriminant validity ensures that constructs are distinct, with the Fornell-Larcker criterion being a common test; the square root of each construct's AVE should be greater than its correlations with other constructs (Chin, 1998). Additionally, the Heterotrait-Monotrait (HTMT) ratio is used, where values below 0.85 suggest sufficient discriminant validity (Henseler et al., 2015). By meeting these reliability and validity thresholds, the measurement model ensures accurate and meaningful results in PLS-SEM analysis.

As shown in Table 2, the evaluation of the reflective measurement model confirms that all items meet the required thresholds for indicator reliability, internal consistency, and convergent validity. Standardized indicator loadings are above the recommended value of 0.70, demonstrating adequate indicator reliability (Hulland, 1999). Internal consistency reliability is ensured, as both composite reliability (CR) and Cronbach's alpha exceed the minimum threshold of 0.70 (Hair et al., 2012). Convergent validity is supported, with average variance extracted (AVE) values above 0.50 for all constructs (Fornell & Larcker, 1981).

Table 2: Construct Reliability and Validity

Construct	Items	Loading	CR	Cronbach's alpha	AVE
Task Characteristics (TAC)	TAC1	0.889	0.907	0.847	0.766
	TAC2	0.897			
	TAC3	0.838			
Technology Characteristics (TEC)	TEC1	0.845	0.883	0.801	0.715
	TEC2	0.856			
	TEC3	0.836			
Task Technology Fit (TTF)	TTF1	0.837	0.918	0.880	0.737
	TTF2	0.904			
	TTF3	0.865			
	TTF4	0.825			
Perceived Usefulness (PU)	PU1	0.767	0.881	0.820	0.649
	PU2	0.819			
	PU3	0.817			
	PU4	0.818			
Perceived Ease of use (PE)	PE1	0.820	0.903	0.856	0.699
	PE2	0.833			
	PE3	0.862			
	PE4	0.829			
Continued Intention (CI)	CI1	0.813	0.888	0.810	0.726
	CI2	0.863			
	CI3	0.879			

Source: *Field Survey*

Table 3 represents the Heterotrait-Monotrait Ratio (HTMT) matrix, a modern criterion for assessing discriminant validity. According to Henseler et al. (2015), HTMT values should ideally be d"0.85, or in less stringent cases, d"0.90. The table shows that all construct pairs fall within the acceptable HTMT thresholds, confirming adequate discriminant validity. Notably, higher HTMT values, indicate strong correlations but remain within permissible limits.

Table 3: Heterotrait-Monotrait Ratio (HTMT) Matrix

	CI	PE	PU	TAC	TEC	TTF
CI						
PE	0.821					
PU	0.831	0.817				
TAC	0.401	0.458	0.383			
TEC	0.642	0.786	0.763	0.489		
TTF	0.736	0.698	0.840	0.392	0.805	

Source: *Field Survey*

Table 4 presents the Fornell-Larcker criterion for assessing discriminant validity, where the diagonal elements (square roots of AVE) should exceed the off-diagonal correlations for each construct (Fornell & Larcker, 1981). Analysis confirms that all constructs meet this criterion, as their square roots of AVE are greater than their inter-construct correlations, indicating satisfactory discriminant validity. While some constructs show moderate correlations, these remain below their respective diagonal values, ensuring that each construct is distinct. This result supports the appropriateness of the measurement model for structural model evaluation. Thus, the reflective measurement model is reliable and valid for further analysis.

Table 4: Fornell-Larcker criterion Matrix

	CI	PE	PU	TAC	TEC	TTF
CI	0.852					
PE	0.684	0.836				
PU	0.683	0.693	0.806			
TAC	0.334	0.392	0.327	0.875		
TEC	0.518	0.652	0.623	0.405	0.846	
TTF	0.623	0.607	0.715	0.340	0.677	0.858

Source: *Field Survey*

Once the measurement model's reliability and validity are confirmed (Singh & Srivastava, 2020), the structural model is evaluated to ensure that the constructs are appropriate and effectively measure the relationships within the model. This second stage (Chin et al., 2021) ensures that the hypothesized relationships and interdependencies are accurately captured and supported by the data. Table 5 presents the path coefficients, statistical significance, and the strength of relationships in the structural model. Significant relationships are indicated by p-values d" 0.05 and T-statistics e" 1.96.

Table 5: Path coefficients and hypothesis testing results

Hypothesis	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values	Decision
H1: TAC->TTF	0.079	0.080	0.068	1.148	0.251	Rejected
H2: TEC -> TTF	0.645	0.638	0.074	8.746	<0.01	Supported
H3: TEC -> PU	0.088	0.082	0.066	1.341	0.180	Rejected
H4: TEC -> PE	0.446	0.441	0.072	6.150	<0.01	Supported
H5: TTF -> CI	0.192	0.190	0.077	2.490	0.013	Supported
H6: PE -> PU	0.376	0.377	0.061	6.125	<0.01	Supported
H7: TTF -> PU	0.427	0.428	0.068	6.306	<0.01	Supported
H8: TTF -> PE	0.305	0.305	0.073	4.163	<0.01	Supported
H9: PU -> CI	0.294	0.287	0.083	3.537	<0.01	Supported
H10: PE -> CI	0.364	0.367	0.067	5.470	<0.01	Supported

Source: *Field Survey*

The path from task complexity (TAC) to task-technology fit (TTF) is not significant, with an original sample value of 0.079, a standard deviation of 0.068, a t-value of 1.148, and a p-value of 0.251. Since the p-value exceeds 0.05 and the t-value is below 1.96, the hypothesis 1 is rejected. This suggests that task complexity does not play a significant role in determining task-technology fit, contrary to findings in some studies (Goodhue & Thompson, 1995).

The relationship between TEC and TTF is highly significant, with an original sample value of 0.645, a standard deviation of 0.074, a t-value of 8.746, and a p-value <0.01. The hypothesis 2 is accepted, indicating that technological characteristics are pivotal in determining task-technology fit. This finding is consistent with studies emphasizing the role of technology in aligning with task requirements (Goodhue & Thompson, 1995).

The path from TEC to PU is not significant, with an original sample value of 0.088, a standard deviation of 0.066, a t-value of 1.341, and a p-value of 0.180. Since the p-value exceeds 0.05 and the t-value is below 1.96, the hypothesis 3 is rejected. This suggests that technological characteristics do not directly influence perceived usefulness.

The impact of technological characteristics (TEC) on PE is significant, with an original sample value of 0.446, a standard deviation of 0.072, a t-value of 6.150, and a p-value <0.01. The results support this hypothesis 4, indicating that technological attributes strongly enhance ease of use. Similar findings are reported in studies examining user-friendly technology design (Sun & Zhang, 2006).

The impact of TTF on CI is significant, with an original sample value of 0.192, a standard deviation of 0.077, a t-value of 2.490, and a p-value of 0.013. Since the p-value is below 0.05 and the t-value exceeds 1.96, the hypothesis 5 is supported. This result demonstrates that aligning technology with tasks positively influences customer intention (Dishaw & Strong, 1999).

The path from PE to perceived usefulness (PU) also exhibits a significant positive relationship, with an original sample value of 0.376, a standard deviation of 0.061, a t-value of 6.125, and a p-value <0.01. The low p-value and high t-value confirm the hypothesis 6. This outcome indicates that perceived ease of use enhances the perception of usefulness, which is consistent with technology acceptance theories (Davis, 1989).

The path from TTF to PU is also significant, with an original sample value of 0.427, a standard deviation of 0.068, a t-value of 6.306, and a p-value <0.01. This supports the hypothesis 7, emphasizing the importance of task-technology fit in enhancing perceived usefulness (Dishaw & Strong, 1999).

The relationship between TTF and PE is significant, with an original sample value of 0.305, a standard deviation of 0.073, a t-value of 4.163, and a p-value <0.01. The low p-value and high t-value support the hypothesis 8, suggesting that task-technology fit enhances ease of use perceptions (Goodhue & Thompson, 1995).

The relationship between PU and CI is significant, with an original sample value of 0.294, a standard deviation of 0.083, a t-value of 3.537, and a p-value <0.01. Since the p-value is less than 0.05 and the t-value is above 1.96, this hypothesis 9 is supported. These findings highlight that customers' perception of a system's usefulness strongly influences their behavioural intentions (Venkatesh et al., 2003).

The relationship between perceived ease of use (PE) and customer intention (CI) is significant, with an original sample value of 0.364, a standard deviation of 0.067, a t-value of 5.470, and a p-value <0.01. Since the p-value is below the threshold of 0.05 and the t-value exceeds the critical value of 1.96, hypothesis 10 is supported. The results suggest that an increase in perceived ease of use positively impacts customer intention. These findings align with previous studies, which emphasize the importance of ease of use in fostering user intentions (Davis et al., 1989; Venkatesh & Davis, 2000).

The analytical results of the analysis are displayed in Fig. 2.

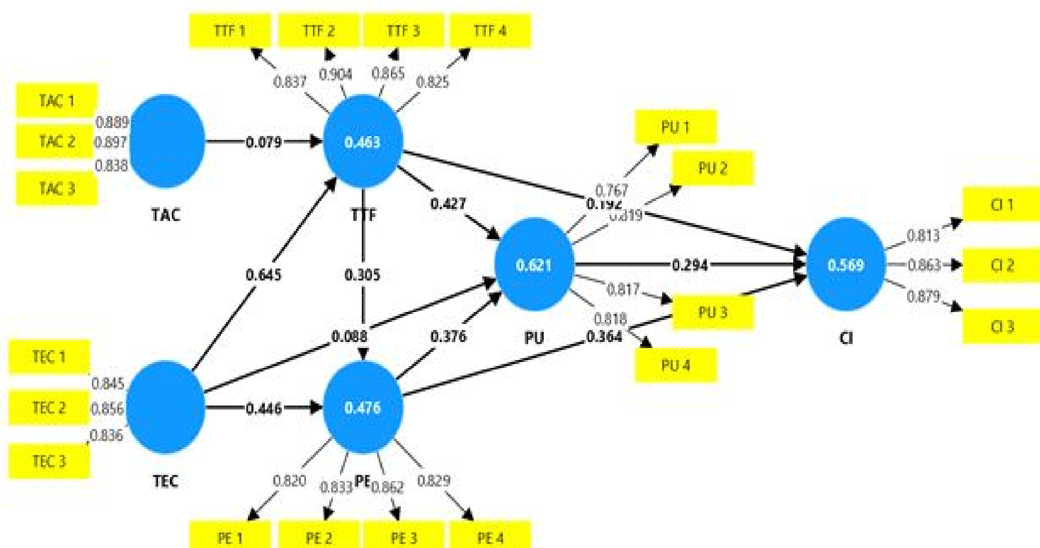

Figure 2: Validation of the conceptual model

Key findings demonstrate that perceived ease of use and task-technology fit play pivotal roles in enhancing continued usage. While technology characteristics significantly influence ease of use and task-technology fit, their direct impact on perceived usefulness is less pronounced. This highlights the importance of aligning platform features with users' task requirements to ensure optimal usability and performance. Additionally, the role of task-technology fit in mediating user perceptions and behaviours underscores its criticality in designing effective digital platforms.

Findings

This study provides valuable insights into the factors influencing the adoption and continued use of digital postal banking services. The findings reveal that Technology Characteristics (TEC) play a crucial role in shaping Task-Technology Fit (TTF), which in turn positively affects Continued Intention (CI) to use the service. Specifically, TEC significantly enhances Perceived Ease of Use (PE) and TTF, confirming the importance of technology alignment with task requirements for improving user experience. Furthermore, TTF itself has a substantial impact on both Perceived Usefulness (PU) and PE, supporting the idea that well-designed technology tailored to task needs boosts both the perceived utility and ease of use of digital banking platforms. The study also highlights the strong relationships between PE and PU, as well as between PU and CI, reinforcing the central role of user perceptions in driving continued usage intentions.

However, the hypothesis that Task Characteristics (TAC), particularly task complexity, positively influences TTF was not supported by the data. The lack of a significant relationship between TAC and TTF suggests that task complexity may not be a critical factor in determining how well technology fits with tasks in the context of digital postal banking. These findings contrast with prior studies, but they emphasize the predominant role of technology-related factors over task-related factors in shaping user perceptions and behaviours. Overall, this study underscores the importance of focusing on technological attributes and task-technology alignment to enhance user engagement and facilitate the adoption of digital postal banking services.

Conclusion

In postal digital banking, well-aligned technology characteristics ensure that users can perform tasks seamlessly and securely, thereby improving their overall experience and long-term engagement with the platform. This alignment reinforces the importance of tailoring technological features to meet specific task demands for optimal user performance and satisfaction The study investigates the factors influencing the continuance intention of users to adopt digital postal banking services by integrating the Technology Acceptance Model (TAM) and Task-Technology Fit (TTF) model. Through an analysis of constructs such as task characteristics, technology characteristics, perceived usefulness, perceived ease of use, task-technology fit, and continuance intention, the research offers valuable insights into the dynamics of user engagement with digital postal banking platforms. The study concludes that the success of digital postal banking services hinges on their ability to provide user-friendly, reliable, and task-specific solutions. By addressing challenges such as digital literacy gaps and operational inefficiencies, providers can enhance the alignment between platform capabilities and user needs, thereby ensuring sustained user engagement and financial inclusion. This integrated TAM-TTF approach not only deepens the understanding of user continuance intention but also offers a strategic framework for optimizing digital banking platforms.

Continuance intention to use digital postal banking services hinges on the sustained alignment between the platform's capabilities and user requirements. When digital platforms consistently deliver reliable, secure, and user-friendly services tailored to customer needs, they foster trust and satisfaction, which are critical for long-term adoption. Features like accessibility, ease of use, and task-specific functionality—such as seamless transactions and real-time updates—enhance user confidence and engagement. Additionally, proactive support and periodic upgrades aligned with evolving user expectations can strengthen users' intent to continue using these services, ensuring the sustained growth and success of digital postal banking platforms.

Scope for Further Research

Although the study investigates the factors influencing the continuance intention to use digital postal banking services in India by integrating the Technology Acceptance Model (TAM) and the Task-Technology Fit (TTF) model, several limitations remain. Notably, the moderating effects of demographic variables such as age, gender, income, and education were not explored, which could offer deeper insights into how different user groups respond to digital postal banking (Haider et al., 2018). Additionally, the study overlooks the role of personal and psychological factors like innovativeness, self-efficacy, perceived behavioural control, and the need for interaction, which may significantly shape user behaviour. Furthermore, by focusing solely on users' intention to continue using the services, the study does not address actual usage behaviour or customer satisfaction—both critical dimensions for evaluating the overall effectiveness and success of digital postal banking. Future research could enrich the findings by incorporating these factors.

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Appendix

Constructs	Definition	Items	Sources
Task Characteristics	Nature of the tasks that users need to perform using digital postal banking services (e.g., transferring money, paying bills, etc.).	TAC1 I need to manage my account anytime anywhere TAC2 I need to transfer money anytime anywhere TAC3 I need to acquire account information in real time	Zhou et al. (2010)

Technology Characteristics	Features of digital postal banking services, such as ease of use, security, mobile compatibility, and speed.	TEC1 Digital banking provides ubiquitous services TEC2 Digital banking provides real -time services TEC3 Digital banking provides secure services	Zhou et al. (2010)
Task Technology Fit	A good match between user needs (e.g., secure money transfers) an d the platform's capabilities reinforces satisfaction and engagement.	TTF1 The functionalities of Digital Postal banking are very adequate TTF2 The functionalities of Digital Postal banking are very appropriate TTF3 The functionalities of Digital Postal banking were very sufficient TTF4 The functions of Digital Postal banking fully meet my banking needs	Lin and Huang (2008)
Perceived Usefulness	Users continue using the service if they believe it consistently enhances their banking tasks, such as quick transactions and convenient access.	PU1 I find Digital Postal banking useful in my daily life PU2 Using Digital Postal banking increases my chances of achieving tasks that are important to me PU3 Using Digital Postal banking helps me accomplish tasks more quickly PU4 Using Digital Postal banking increases my productivity	Davis et al. (1989)
Perceived Ease of use	Intuitive, user -friendly platforms reduce effort and foster repeated usage.	PE1 Learning how to use Digital Postal banking is easy for me PE2 My interaction with Digital Postal banking is clear and understandable PE3 I find Digital Postal banking easy to use PE4 It is easy for me to become skilful at using Digital Postal banking	Davis et al. (1989)
Continuance Intention	user's sustaine d willingness or decision to keep engaging with digital postal banking services over time.	AI1 I intend to continue using Digital Postal banking in the future AI2 I will always try to use Digital Postal banking in my daily life AI3 I plan to continue to use Digital Postal banking frequently	Venkatesh et al. (2012)