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Factors influencing adoption and engagement with self-service banking technologies: An integrated TAM–TPB model approach

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ABSTRACT

This study examined factors influencing adoption and engagement with self-service banking technologies (SSTs) among bank customers in Batac City, Ilocos Norte, through an integrated Technology Acceptance Model (TAM) and Theory of Planned Behavior (TPB) framework. Using a quantitative descriptive-correlational design, data were collected from 300 SST users through a structured questionnaire and analyzed using mean, standard deviation, Pearson's *r*, and multiple regression. The results showed high levels of perceived usefulness, perceived ease of use, attitude, subjective norm, perceived behavioral control, banking habits, satisfaction, and engagement. Perceived usefulness and perceived ease of use were positively and significantly related to adoption intention, with perceived usefulness emerging as the stronger predictor. TPB variables also significantly predicted customer behavior, with attitude showing the strongest effect, followed by perceived behavioral control and subjective norm. When combined, TAM and TPB factors significantly predicted banking habits, which in turn strongly predicted satisfaction and engagement. The findings support the value of integrating TAM and TPB in explaining not only initial adoption but also continued use and customer outcomes in a local banking setting. The study contributes localized evidence from Batac City and offers practical implications for banks seeking to strengthen digital service design, customer support, and long-term customer engagement.

JEL Classification: M15

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Introduction

Self-service technologies (SSTs) have become central to contemporary banking because they allow customers to perform transactions more quickly, conveniently, and independently. Related studies consistently link SST use to convenience, efficiency, satisfaction, and loyalty, while the expansion of digital banking in the Philippines has been supported by ongoing financial inclusion and e-payment

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initiatives (De Leon et al., 2020; Ho et al., 2020; Bangko Sentral ng Pilipinas, 2021, 2023). The COVID-19 period further accelerated the normalization of remote and self-service transactions, prompting customers to rely more heavily on mobile and online channels for routine banking activities (World Bank Group, 2021; Debuque-Gonzales et al., 2023; McKinsey, 2021).

Although existing literature already explains digital banking adoption in terms of usefulness, ease of use, trust, service quality, and continuance intention, much of that work focuses on broader national settings, metropolitan populations, or single-theory explanations (Ly & Ly, 2022; Neves et al., 2023; Nguyen & Dao, 2024). In particular, TAM explains how perceived usefulness and perceived ease of use shape technology acceptance, whereas TPB explains how attitude, subjective norm, and perceived behavioral control shape behavior (Davis, 1989; Ajzen, 1991). However, fewer studies integrate these frameworks to explain not only adoption intention but also downstream outcomes such as banking habits, satisfaction, and engagement in smaller local contexts.

This gap is important in Batac City, where national digital banking trends do not automatically reveal how local bank customers evaluate SSTs, how confident they feel in using them, or how those perceptions translate into continued use and positive customer outcomes. Thus, this study examined factors influencing adoption and engagement with self-service banking technologies among bank customers in Batac City using an integrated TAM–TPB model. Specifically, it investigated the influence of perceived usefulness and perceived ease of use on adoption intention, the effects of TPB variables on customer behavior, and the combined contribution of TAM and TPB factors to banking habits, satisfaction, and engagement.

Literature review

Technology Acceptance Model (TAM)

The Technology Acceptance Model explains technology adoption through two central beliefs: perceived usefulness and perceived ease of use (Davis, 1989). Perceived usefulness refers to the degree to which users believe that a system enhances performance, whereas perceived ease of use refers to the degree to which the system is viewed as effortless to use. TAM has been widely applied in e-banking and mobile banking studies, where usefulness and ease of use consistently predict intention to adopt digital banking services (Venkatesh & Davis, 2000; Ho et al., 2020; Ly & Ly, 2022). Within the present study, these constructs explain why customers may be more willing to adopt SSTs when the technologies are perceived as convenient, efficient, and easy to operate.

Theory of Planned Behavior (TPB)

The Theory of Planned Behavior posits that behavior is shaped by attitude, subjective norm, and perceived behavioral control (Ajzen, 1991). Attitude refers to a person's positive or negative evaluation of the behavior, subjective norm captures perceived social pressure, and perceived behavioral control reflects the individual's sense of capability and access to resources. In digital banking research, TPB has been used to explain why customers adopt or continue using technology-based services when they feel positively toward the system, perceive support from significant others, and believe they are capable of using it effectively (Fishbein & Ajzen, 2010; Prastiawan et al., 2021; Sasidharan & Venkatakrishnan,

2024). In this study, TPB helps explain how behavioral and social factors complement technology-related beliefs in shaping SST use.

Self-service technologies of banks

Self-service technologies (SSTs) have become increasingly important in banking due to their ability to improve the customer experience, reduce wait times, and strengthen customer retention. Prior studies have shown that convenience significantly predicts customer satisfaction at banking kiosks (Nguyen et al., 2023). Similarly, mobile banking innovations in Colombia reduce queues and safety concerns in branches while attracting new customers (Reyes-Rubiano et al., 2024). More broadly, information technology enables faster, safer, and more convenient access to financial services, strengthening customer retention (Vergallo & Mainetti, 2022). Satisfaction with waiting time and SST use are also linked to long-term loyalty, with satisfaction with waiting time partially mediating the relationship between SST use and sustained loyalty (Ayodeji et al., 2022). In the Philippine banking sector, SST adoption continues to grow to improve efficiency, convenience, and customer satisfaction. BDO has implemented digital kiosks, QR-based queue systems, and online appointment booking (BDO, 2022; Asian Banking & Finance, 2024). UnionBank has introduced fully digital branches, remote teller services, and smart cash management (UnionBank, 2020), while PBCOM uses a SaaS-based core banking system and mobile digital onboarding (PBCOM, 2021). LandBank has developed phygital branches combining physical services with self-service machines, digital onboarding, cardless ATMs, and digital queuing systems (LandBank, 2024; 2025). More generally, Philippine banks now offer bill payment kiosks, loan pre-screening, biometric authentication, real-time check scanning, and hybrid branches with digital ambassadors, reducing transaction time, lowering costs, and improving customer experience (Wavetec, 2025; Fintech News PH, 2024). These developments are supported by evidence that service quality dimensions in mobile and SST banking—functionality, security, convenience, assurance, and customization—significantly influence perceived value and customer satisfaction, which drive loyalty and competitive advantage (De Leon et al., 2020). However, the growth of digital finance in the Philippines also brings challenges. Debuque-Gonzales et al. (2023) note that while it improves efficiency, reduces costs, and expands access, it also introduces risks, including cyber threats, fraud, technical failures, and increased regulatory complexity.

Customers' behavior pre- and post-pandemic

Customer behavior in banking has shifted significantly before and after the COVID-19 pandemic, especially in digital financial transactions. Globally, digital payments, savings, and borrowing increased, with digital payments becoming a key entry point to financial services. The World Bank (2021) reported that 57% of adults in developing economies made or received a digital payment in 2021, up from 35% in 2014. McKinsey and Company (2021) also noted a rise in real-time and digital payments starting in 2020, alongside continued growth in omnichannel banking, although some pandemic-driven spikes later normalized. In the Philippines, the BSP Financial Inclusion Survey 2021 showed account ownership rising to 56% in 2021 (about 22 million more adults than in 2019's 29%). BSP e-payments data further show sustained growth in digital usage through 2023–2024, reflecting a shift from cash and branch banking to digital channels, while physical banking remains selectively used (BangkoSentral ng Pilipinas, 2023). Despite this digital shift, customers still value human interaction for complex or sensitive concerns. While automation improves efficiency, many still prefer human assistance for issues

like disputes and account problems (Enezian, 2022; Hall, 2025). Harvard Business Review (2019) notes that human representatives provide empathy, active listening, and flexibility, reducing perceived risk and strengthening trust. Thus, human support remains essential for satisfaction and loyalty even in digital banking environments.

Conceptual framework

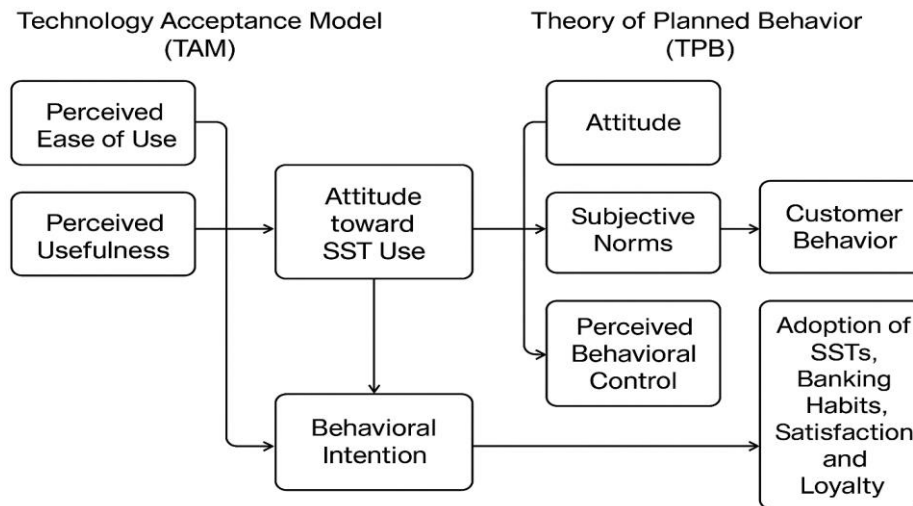


Figure 1. Conceptual framework of the study

The study's conceptual framework is anchored on the Technology Acceptance Model (TAM) by Davis (1989) and the Theory of Planned Behavior (TPB) by Ajzen (1991). In the model, perceived usefulness and perceived ease of use explain adoption intention, while attitude, subjective norm, and perceived behavioral control explain customer behavior toward self-service banking. The framework further assumes that favorable technology-related and behavioral factors contribute to stronger banking habits, which in turn are associated with satisfaction and engagement. Overall, the framework explains SST use as a function of both technology evaluation and behavioral disposition, thereby linking adoption beliefs with post-adoption customer outcomes.

Statement of the problem

Despite the continued expansion of digital banking in the Philippines, empirical evidence remains limited on how customers in Batac City adopt and engage with self-service banking technologies. Existing studies do not fully explain how perceptions of technology and behavioral factors jointly shape adoption intention, customer behavior, banking habits, satisfaction, and engagement in this local setting. Guided by an integrated TAM–TPB framework, this study addressed the gap by examining the factors influencing adoption and engagement with self-service banking technologies among bank customers in Batac City. This study aimed to examine adoption and engagement with self-service banking technologies among bank customers in Batac City. Specifically, it sought to answer the following questions:

1. What is the extent of perceived usefulness and perceived ease of use, and how do this influence adoption intention toward self-service banking technologies?

2. How do attitude, subjective norm, and perceived behavioral control affect customer behavior toward self-service banking?
3. How do the combined factors of TAM and TPB shape customers' banking habits, satisfaction, and engagement with self-service banking services?

Research methodology

Research design

This study employed a quantitative descriptive assessment and a correlational-predictive research design. The descriptive component summarized respondents' perceptions of perceived usefulness, perceived ease of use, attitude, subjective norm, perceived behavioral control, banking habits, satisfaction, and engagement. The correlational component examined the relationships among these constructs and tested their predictive influence on adoption intention and customer behavior. This design was appropriate because the study sought to describe existing conditions and estimate associations among naturally occurring variables without manipulating them.

Locale of the study

The study was conducted in Batac City, Ilocos Norte. The respondents were bank customers who actively used self-service technologies, including automated teller machines (ATMs), online banking platforms, mobile banking applications, and self-service kiosks.

Participants of the study

The study employed convenience sampling and included 300 bank customers with prior experience in using self-service banking technologies. Respondents were selected based on availability and direct exposure to banking SSTs, which made them relevant to the study's objectives. Although the sample captured a range of users, the use of convenience sampling means that the findings should be interpreted as reflecting the surveyed users rather than all bank customers in Batac City.

Research instrument

A structured survey questionnaire served as the primary data-gathering instrument. The first section gathered respondent background information and SST usage profile, while the remaining sections measured perceived usefulness, perceived ease of use, attitude, subjective norm, perceived behavioral control, banking habits, satisfaction, and engagement. The instrument underwent expert review for content validity and was aligned with the study's theoretical constructs. Because the questionnaire was researcher-developed, the findings should be interpreted in light of the need for further instrument refinement in future studies.

Data gathering

Data were collected through floating survey questionnaires distributed to bank customers who actively used self-service banking channels. Before administration, the respondents were informed of the purpose

of the study and that participation was voluntary. Completed questionnaires were retrieved, checked for completeness, and prepared for coding, tabulation, and statistical analysis.

Statistical treatment of data

Mean and standard deviation were used to describe the level of each study variable.

Pearson's r was used to determine the strength and direction of the relationships among the study variables.

Multiple regression analysis was used to test the predictive influence of the independent variables on adoption intention, customer behavior, banking habits, satisfaction, and engagement.

Ethical considerations

The study adhered to the Data Privacy Act of 2012 (Republic Act No. 10173) and observed principles of voluntary participation, informed consent, confidentiality, and anonymity. No personally identifiable information was collected, and all responses were reported in aggregate form. Respondents were informed that participation was voluntary and that they could decline or withdraw without penalty.

Data presentation and analysis

This section presents the findings in accordance with the study's three research questions. Descriptive statistics were used to summarize construct levels, Pearson correlation was used to examine associations, and regression analysis was used to test predictive relationships among the variables.

Interpretation Legend

4.21–5.00 = Very High

3.41–4.20 = High

2.61–3.40 = Moderate

1.81–2.60 = Low

1.00–1.80 = Very Low

Problem 1. What is the extent of perceived usefulness and perceived ease of use, and the influence on adoption intention toward self-service banking technology

Null Hypothesis 1: There is no significant relationship between perceived usefulness, perceived ease of use, and adoption intention.

Null Hypothesis 2: Perceived usefulness and perceived ease of use do not significantly predict adoption intention.

Table 1. Extent of perceived usefulness, perceived ease of use, and adoption intention

Variable	Items	Mean	SD	Interpretation
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Perceived Usefulness (PU)	(1) Using self-service banking improves the efficiency of my banking transactions.	4.21	0.62	Very High
	(2) Self-service banking enhances my overall banking experience.			
	(3) Self-service banking saves me time compared to traditional banking.			
	(4) Using self-service banking helps me manage my finances better.			
	(10) Using self-service banking is beneficial for my daily banking needs	4.15	0.68	High
	Overall PU	4.18	0.63	High
Perceived Ease of Use (PEOU)	(5) I find self-service banking easy to use.	4.05	0.70	High
	(6) Learning to operate self-service banking channels is straightforward.			
	(7) Navigating self-service banking platforms does not require much effort.			
	(8) I can perform banking transactions independently using self-service technology.			
	(21) The bank application is easy to navigate through the services.	4.08	0.66	High
	(22) My banking needs are met when I use a bank application.			
	(23) The bank application is responsive when I use it.			
	(24) I can use minimal internet data and connection.			
	Overall PEOU	4.07	0.68	High
Adoption Intention (AI)	(9) I like using self-service banking.	4.12	0.65	High
	(11) I enjoy using self-service banking channels.			
	(12) I prefer using self-service banking over traditional methods whenever possible.			

Source: Field survey data from bank customers in Batac City (n = 300), processed by the researcher.

Table 1 shows generally favorable evaluations of self-service banking technologies among the respondents. Perceived usefulness obtained a high overall mean of 4.18 (SD = 0.63), while perceived ease of use also registered a high overall mean of 4.07 (SD = 0.68). Adoption intention likewise yielded a high mean of 4.12 (SD = 0.65), indicating that the respondents were generally willing to adopt and continue using self-service banking technologies. Overall, the findings suggest that favorable evaluations of usefulness and ease of use are accompanied by a strong intention to use self-service banking services.

Table 2. Correlation between perceived usefulness, perceived ease of use, and adoption intention

Variables	PU	PEOU	AI
Perceived Usefulness (PU)	1	0.62**	0.68**
Perceived Ease of Use (PEOU)	0.62**	1	0.64**
Adoption Intention (AI)	0.68**	0.64**	1

Note: $p < 0.01$, Pearson's r .

Source: Field survey data from bank customers in Batac City ($n = 300$), processed by the researcher.

Table 2 shows that perceived usefulness, perceived ease of use, and adoption intention are positively and significantly correlated at the 0.01 level. Perceived usefulness is strongly associated with adoption intention ($r = 0.68$), indicating that customers who perceive greater benefits from self-service banking are more likely to adopt it. Perceived ease of use is also strongly related to adoption intention ($r = 0.64$), suggesting that customers who view the system as user-friendly are also more likely to use it. In addition, perceived usefulness and perceived ease of use are positively correlated ($r = 0.62$), indicating that systems perceived as easier to use are also viewed as more useful. These results lead to the rejection of Null Hypothesis 1.

Table 3. Regression analysis: Predicting adoption intention

Predictor	B (Unstandardized)	SE	Beta (Standardized)	t	p	Interpretation	
Perceived Usefulness (PU)	0.41	0.05	0.44	8.20	<0.001	Significant predictor	positive
Perceived Ease of Use (PEOU)	0.35	0.06	0.38	6.25	<0.001	Significant predictor	positive
Model Summary	$R^2 = 0.52$, $F(2, 297) = 161.5$, $p < 0.001$					Indicates PU and PEOU jointly explain 52% of the variance in adoption intention	

Source: Field survey data from bank customers in Batac City ($n = 300$), processed by the researcher.

Table 3 shows that both perceived usefulness and perceived ease of use are significant positive predictors of adoption intention. Perceived usefulness has the stronger effect ($\beta = 0.44$, $t = 8.20$, $p < 0.001$), followed by perceived ease of use ($\beta = 0.38$, $t = 6.25$, $p < 0.001$). The model explains 52% of the variance in adoption intention ($R^2 = 0.52$), indicating that more than half of the variation in customers' intention to adopt self-service banking is explained by these two TAM variables. Thus, Null Hypothesis 2 is rejected.

Problem 2. How do attitude, subjective norm, and perceived behavioral control affect customer behavior toward self-service banking?

Null Hypothesis 3: There is no significant relationship between attitude, subjective norm, perceived behavioral control, and customer behavior.

Null Hypothesis 4: Attitude, subjective norm, and perceived behavioral control do not significantly predict customer behavior toward self-service banking.

Table 4. Descriptive statistics of TPB variables and customer behavior toward self-service banking

TPB Variable	Items	Mean	SD	Interpretation
Attitude (AT)	1–4, 9–12	4.20	0.61	High
Subjective Norm (SN)	13–16	3.95	0.70	High
Perceived Behavioral Control (PBC)	17–20	4.05	0.65	High
Customer Behavior / Adoption (CB)	21–24	4.10	0.63	High

Source: Field survey data from bank customers in Batac City (n = 300), processed by the researcher.

Table 4 indicates a generally positive orientation toward self-service banking among the respondents. Attitude obtained the highest mean ($M = 4.20$, $SD = 0.61$), followed by customer behavior or adoption ($M = 4.10$, $SD = 0.63$), perceived behavioral control ($M = 4.05$, $SD = 0.65$), and subjective norm ($M = 3.95$, $SD = 0.70$). These findings suggest that the respondents generally hold favorable views toward self-service banking, perceive support from significant others, and feel capable of using such technologies.

Table 5. Correlation between TPB variables and customer behavior

Variables	AT	SN	PBC	CB
Attitude (AT)	1	0.42**	0.48**	0.65**
Subjective Norm (SN)	0.42**	1	0.40**	0.52**
Perceived Behavioral Control (PBC)	0.48**	0.40**	1	0.60**
Customer Behavior (CB)	0.65**	0.52**	0.60**	1

Note: $p < 0.01$, Pearson's r .

Source: Field survey data from bank customers in Batac City (n = 300), processed by the researcher.

Table 5 shows that attitude, subjective norm, and perceived behavioral control are all positively and significantly related to customer behavior at the 0.01 level of significance. Among the three, attitude has the strongest relationship with customer behavior ($r = 0.65$), followed by perceived behavioral control ($r = 0.60$) and subjective norm ($r = 0.52$). These findings indicate that customer behavior toward self-

service banking is more strongly associated with personal evaluation and perceived ability than with social influence alone. Since all relationships are statistically significant, Null Hypothesis 3 is rejected.

Table 6. Multiple regression analysis: Predicting customer behavior toward self-service banking

Predictor	B (Unstandardized)	SE	Beta (Standardized)	T	p	Interpretation	
Attitude (AT)	0.38	0.05	0.40	7.60	<0.001	Significant predictor	positive
Subjective Norm (SN)	0.26	0.06	0.28	4.33	<0.001	Significant predictor	positive
Perceived Behavioral Control (PBC)	0.31	0.05	0.33	6.20	<0.001	Significant predictor	positive
Model Summary	R² = 0.56, F(3, 296) = 124.8, p < 0.001					TPB variables jointly explain 56% of the variance in customer behavior	

Source: Field survey data from bank customers in Batac City (n = 300), processed by the researcher.

The regression results in Table 6 show that attitude, subjective norm, and perceived behavioral control are all significant positive predictors of customer behavior toward self-service banking. Attitude emerged as the strongest predictor ($\beta = 0.40$, $t = 7.60$, $p < 0.001$), followed by perceived behavioral control ($\beta = 0.33$, $t = 6.20$, $p < 0.001$) and subjective norm ($\beta = 0.28$, $t = 4.33$, $p < 0.001$). The model explains 56% of the variance in customer behavior ($R^2 = 0.56$), indicating that these TPB variables jointly account for a substantial portion of the variance in customers' self-service banking behavior. Thus, Null Hypothesis 4 is rejected.

Problem 3. How do the combined factors of TAM and TPB shape customers' banking habits, satisfaction, and engagement with self-service banking services?

Null Hypothesis 5: There is no significant relationship among TAM variables, TPB variables, and customer outcomes.

Null Hypothesis 6: TAM and TPB variables do not significantly predict banking habits, satisfaction, and engagement.

Table 7. Combined influence of TAM and TPB on customers' banking habits, satisfaction, and engagement

Variable	Survey questionnaire items	Mean	SD	Interpretation
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Perceived Usefulness (PU)	(1) Using self-service banking improves the efficiency of my banking transactions. (2) Self-service banking enhances my overall banking experience. (3) Self-service banking saves me time compared to traditional banking. (4) Using self-service banking helps me manage my finances better. (10) Using self-service banking is beneficial for my daily banking needs.	4.20	0.62	High
Perceived Ease of Use (PEOU)	(5) I find self-service banking easy to use. (6) Learning to operate self-service banking channels is straightforward. (7) Navigating self-service banking platforms does not require much effort. (8) I can perform banking transactions independently using self-service technology. (21) The bank application is easy to navigate through the services. (22) My banking needs are met when I use a bank application. (23) The bank application is responsive when I use it. (24) I can use minimal internet data and connection.	4.10	0.66	High
Attitude (AT)	(9) I like using self-service banking. (11) I enjoy using self-service banking channels. (12) I prefer using self-service banking over traditional methods whenever possible.	4.18	0.61	High
Subjective Norm (SN)	(13) People important to me encourage me to use self-service banking. (14) My friends and colleagues frequently use self-service banking. (15) Social influence motivates me to adopt self-service banking. (16) I feel pressure from peers to use self-service banking.	3.95	0.69	High
Perceived Behavioral Control (PBC)	(17) I am confident in my ability to use self-service banking effectively. (18) I have the necessary resources (internet, devices) to access self-service banking.	4.05	0.64	High

	(19) I can easily overcome any obstacles to using self-service banking.			
	(20) I feel in control when performing banking transactions using self-service channels.			
Banking Habits (BH)	(1–24) Behavioral items included in the questionnaire as operationalized in the study.	4.12	0.63	High
Satisfaction (SAT)	(10) Using self-service banking is beneficial for my daily banking needs. (22) My banking needs are met when I use a bank application.	4.14	0.61	High
Engagement (ENG)	(11) I enjoy using self-service banking channels. (12) I prefer using self-service banking over traditional methods whenever possible. (21) The bank application is easy to navigate through the services.	4.09	0.63	High

Source: Field survey data from bank customers in Batac City ($n = 300$), processed by the researcher.

Table 7 shows that the respondents generally have favorable perceptions of self-service banking technologies and positive behavioral outcomes. Perceived usefulness, perceived ease of use, attitude, subjective norm, and perceived behavioral control all registered high mean scores. These favorable evaluations are mirrored by high levels of banking habits ($M = 4.12$, $SD = 0.63$), satisfaction ($M = 4.14$, $SD = 0.61$), and engagement ($M = 4.09$, $SD = 0.63$). Overall, the results suggest that favorable TAM and TPB factors are associated with greater routine use, satisfaction, and engagement with self-service banking.

Table 8. Correlation among TAM variables, TPB variables, and customer outcomes

Variables	PU	PEOU	AT	SN	PBC	BH	SAT	ENG
PU	1	0.63**	0.66**	0.42**	0.48**	0.71**	0.69**	0.66**
PEOU	0.63**	1	0.64**	0.40**	0.53**	0.69**	0.67**	0.65**
AT	0.66**	0.64**	1	0.42**	0.50**	0.73**	0.70**	0.68**
SN	0.42**	0.40**	0.42**	1	0.40**	0.56**	0.54**	0.52**
PBC	0.48**	0.53**	0.50**	0.40**	1	0.63**	0.62**	0.60**
BH	0.71**	0.69**	0.73**	0.56**	0.63**	1	0.79**	0.76**
SAT	0.69**	0.67**	0.70**	0.54**	0.62**	0.79**	1	0.81**

ENG	0.66**	0.65**	0.68**	0.52**	0.60**	0.76**	0.81**	1
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Note: $p < 0.01$, Pearson's r .

Source: Field survey data from bank customers in Batac City ($n = 300$), processed by the researcher.

Table 8 shows that all TAM and TPB variables, as well as customer outcomes, are positively and significantly correlated at the 0.01 level. Perceived usefulness and perceived ease of use are strongly related to banking habits, satisfaction, and engagement, indicating that customers who perceive self-service banking as beneficial and easy to use are more likely to develop stronger usage habits and report more favorable customer outcomes. Among the outcome variables, banking habits are strongly associated with satisfaction ($r = 0.79$) and engagement ($r = 0.76$), while satisfaction and engagement show the strongest relationship ($r = 0.81$). Thus, Null Hypothesis 5 is rejected.

Table 9. Multiple regression analysis: Predicting banking habits, satisfaction, and engagement

Outcome Variable	Predictor	B (Unstandardized)	SE	Beta (Standardized)	t	p	Interpretation
Banking Habits (BH)	PU	0.31	0.05	0.32	6.20	<0.001	Significant positive predictor
	PEOU	0.28	0.06	0.29	4.67	<0.001	Significant positive predictor
	AT	0.34	0.05	0.35	6.80	<0.001	Significant positive predictor
	SN	0.18	0.06	0.19	3.00	0.03	Significant positive predictor
	PBC	0.22	0.05	0.23	4.40	<0.001	Significant positive predictor
Model Summary (BH)	$R^2 = 0.64$, $F(5, 294) = 104.8$, $p < 0.001$						TAM and TPB factors jointly explain 64% of the variance in BH
Satisfaction (SAT)	BH	0.58	0.04	0.60	14.5	<0.001	Banking habits strongly predict satisfaction
Engagement (ENG)	BH	0.55	0.05	0.57	12.3	<0.001	Banking habits strongly predict engagement

Source: Field survey data from bank customers in Batac City ($n = 300$), processed by the researcher.

The regression results in Table 9 show that perceived usefulness, perceived ease of use, attitude, subjective norm, and perceived behavioral control are all significant positive predictors of banking habits. Among these variables, attitude has the strongest effect ($\beta = 0.35$, $p < 0.001$), followed by perceived usefulness ($\beta = 0.32$, $p < 0.001$), perceived ease of use ($\beta = 0.29$, $p < 0.001$), perceived behavioral control ($\beta = 0.23$, $p < 0.001$), and subjective norm ($\beta = 0.19$, $p = 0.003$). Together, these variables explain 64% of the variance in banking habits ($R^2 = 0.64$), indicating that TAM and TPB factors jointly account for a substantial portion of the variance in customers' habitual use of self-service banking.

The results further show that banking habits significantly predict satisfaction ($\beta = 0.60$, $t = 14.5$, $p < 0.001$) and engagement ($\beta = 0.57$, $t = 12.3$, $p < 0.001$). This means that respondents who use self-service banking more routinely are also more likely to report higher satisfaction and stronger engagement. Accordingly, Null Hypothesis 6 is rejected.

Discussion

The findings indicate that self-service banking has already become an accepted part of respondents' routine financial behavior in Batac City. High levels of perceived usefulness, perceived ease of use, attitude, perceived behavioral control, banking habits, satisfaction, and engagement suggest that customers do not merely access these technologies; they generally view them as practical and manageable tools for everyday banking. This pattern is consistent with prior studies showing that digital banking uptake is strengthened when customers perceive systems as efficient, easy to use, and valuable for managing transactions (Ho et al., 2020; Ly & Ly, 2022; De Leon et al., 2020).

The findings also support the core propositions of TAM and TPB. Perceived usefulness and perceived ease of use significantly predicted adoption intention, with usefulness exerting the stronger effect, which suggests that customers adopt SSTs primarily because they see concrete performance benefits in speed, convenience, and effectiveness. At the same time, attitude, subjective norm, and perceived behavioral control significantly predicted customer behavior, with attitude emerging as the strongest predictor. This indicates that adoption is not explained by technology-related beliefs alone; it is also shaped by customers' favorable evaluations of SSTs, their confidence in using them, and the social context surrounding digital banking behavior (Ajzen, 1991; Teka & McMillan, 2020; Sasidharan & Venkatakrishnan, 2024).

The theoretical contribution of the study lies in showing that an integrated TAM–TPB framework can explain both pre-adoption beliefs and post-adoption outcomes in a local banking context. Rather than stopping at intention, the model demonstrates that TAM variables explain adoption intention, TPB variables explain customer behavior, and banking habits serve as an important bridge to satisfaction and engagement. In this sense, the study extends the explanatory power of TAM and TPB beyond initial technology acceptance to continued, outcome-oriented use of banking SSTs. This contribution is particularly useful in local settings where technology adoption is shaped by both system characteristics and the user's readiness, confidence, and environment.

The study's policy contribution is equally important. The results suggest that digital banking expansion should not rely solely on system availability; it should also focus on usability, customer confidence, assisted onboarding, and sustained support. For banks operating in cities such as Batac, the findings support more inclusive phygital service strategies, clearer interface design, digital literacy support, and service safeguards that reduce uncertainty and encourage routine use. At a broader level, the study supports digital financial inclusion efforts that pair technological innovation with accessibility, trust-building, and user capability development, rather than treating adoption as a purely technical issue.

Conclusions

This study concludes that adoption and engagement with self-service banking technologies in Batac City are best explained through an integrated TAM–TPB perspective. Perceived usefulness and perceived ease of use significantly influence adoption intention, with perceived usefulness exerting the stronger effect. Attitude, subjective norm, and perceived behavioral control significantly shape customer behavior, with attitude emerging as the strongest predictor. When combined, TAM and TPB factors significantly influence banking habits, and habitual use, in turn, strongly predicts satisfaction and engagement. Overall, the study provides localized evidence that customer engagement with self-service banking depends not only on functional technology characteristics but also on behavioral and capability-related factors that sustain continued use.

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References

- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50(2), 179–211. [https://doi.org/10.1016/0749-5978\(91\)90020-T](https://doi.org/10.1016/0749-5978(91)90020-T)
- Ayinaddis, S. G., Taye, B. A., & Yirsaw, B. G. (2023). Examining the effect of electronic banking service quality on customer satisfaction and loyalty: An implication for technological innovation. *Journal of Innovation and Entrepreneurship*, 12(1). <https://doi.org/10.1186/s13731-023-00287-y>
- Bangko Sentral ng Pilipinas. (2021). *Financial inclusion initiatives*. <https://www.bsp.gov.ph>
- Bangko Sentral ng Pilipinas. (2023). *E-payments measurement report*. <https://www.bsp.gov.ph>
- Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13(3), 319–340.

- Debuque-Gonzales, M., Miral, M., Gerald, M., & Ruiz, C. (2023). Financial inclusion, financial technology, and the COVID-19 pandemic: The Philippine case (PIDS Discussion Paper Series No. 2023-45). Philippine Institute for Development Studies. <https://pidswebs.pids.gov.ph/CDN/document/pidsdps2345.pdf>
- De León, M. V., Atienza, R. P., & Susilo, D. (2020). Influence of self-service technology (SST) service quality dimensions on perceived value and customer satisfaction in a mobile banking application. *Cogent Business & Management*, 7(1). <https://doi.org/10.1080/23311975.2020.1794241>
- Fishbein, M., & Ajzen, I. (2010). Predicting and changing behavior: The reasoned action approach. Routledge.
- Ho, J. C., Wu, C.-G., Lee, C.-S., & Pham, T.-T. T. (2020). Factors affecting the behavioral intention to adopt mobile banking: An international comparison. *Technology in Society*, 63, 101360. <https://doi.org/10.1016/j.techsoc.2020.101360>
- Ly, B., & Ly, R. (2022). Internet banking adoption under the Technology Acceptance Model: Evidence from Cambodian users. *Computers in Human Behavior Reports*, 7, 100224. <https://doi.org/10.1016/j.chbr.2022.100224>
- McKinsey. (2021). *Global banking practice: The 2021 McKinsey global payments report*. <https://www.mckinsey.com>
- Neves, C., Oliveira, T., Santini, F., & Gutman, L. (2023). Adoption and use of digital financial services: A meta-analysis of barriers and facilitators. *International Journal of Information Management Data Insights*, 3(2). <https://doi.org/10.1016/j.jjime.2023.100201>
- Nguyen, G.-D., & Dao, T.-H. T. (2024). Factors influencing continuance intention to use mobile banking: An extended expectation-confirmation model with moderating role of trust. *Humanities and Social Sciences Communications*, 11(1). <https://doi.org/10.1057/s41599-024-02778-z>
- Nguyen, H., Nguyen, Q., Tran, P., Trinh, N., & Nguyen, Q. (2023). The relationship between service quality of banking kiosk and customer satisfaction: The moderating role of technology readiness. *International Journal of Quality and Service Sciences*, 15(4/5), 624–641. <https://doi.org/10.1108/IJQSS-01-2023-0004>
- Prastiawan, D. I., Aisjah, S., & Rofiaty, R. (2021). The effect of perceived usefulness, perceived ease of use, and social influence on the use of mobile banking through the mediation of attitude toward use. *Asia Pacific Management and Business Application*, 9(3), 243–260. <https://doi.org/10.21776/ub.apmba.2021.009.03.4>

Reyes-Rubiano, L., Amaya, I. Y., Mayorga, D., Muñoz-Villamizar, A., & Solano-Charris, E. (2024). How does technological innovation impact the service time and the attraction of new customers in the financial sector? Evidence from an emerging economy. *Operations Management Research*, 17, 644–660. <https://doi.org/10.1007/s12063-023-00437-1>

Sasidharan, A., & Venkatakrishnan, S. (2024). Intention to use mobile banking: An integration of the Theory of Planned Behavior (TPB) and the Technology Acceptance Model (TAM). *KSII Transactions on Internet and Information Systems*, 18(4), 1059–1074. <https://doi.org/10.3837/tiis.2024.04.011>

Teka, B. M., & McMillan, D. (2020). Factors affecting bank customers' use of electronic banking in Ethiopia: An application of structural equation modeling (SEM). *Cogent Economics & Finance*, 8(1), 1762285. <https://doi.org/10.1080/23322039.2020.1762285>

Venkatesh, V., & Davis, F. D. (2000). A theoretical extension of the technology acceptance model: Four longitudinal field studies. *Management Science*, 46(2), 186–204. <https://doi.org/10.1287/mnsc.46.2.186.11926>

Vergallo, R., & Mainetti, L. (2022). The role of technology in improving the customer experience in the banking sector: A systematic mapping study. *IEEE Access*, 10, 113644–113660. <https://doi.org/10.1109/ACCESS.2022.3218010>

Shell, M.A. & Buell, R.W. (2019). Why anxious customers prefer human customer service. *Harvard Business Review*. <https://hbr.org/2019/04/>

World Bank Group. (2021). *Global Findex database 2021: Report*. World Bank. <https://www.worldbank.org/en/publication/globalfindex/Report>

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