Enhancing Perceptions and Behavior: Exploring Factors Influencing Mobile Banking Services and Artificial Intelligence Adoption in Lipa City Batangas

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Abstract

The adoption of mobile banking is now low in the country, making it critical to understand consumer perceptions and behaviors toward it. This study utilized a descriptive and causal research design to investigate the respondents' perceptions of technology and non-technology-based determinants of mobile banking. The study also investigated the behavior of the respondents towards mobile banking usage and comfort using Artificial Intelligence (AI) mobile banking services. It also determined if technology and non-technology-based determinants significantly affect mobile banking usage and comfort using AI mobile banking services. Through purposive sampling, 150 mobile banking application users in Lipa City, Batangas, were chosen as the respondents. The data gathered were analyzed using simple percentage, mean and composite mean, and multiple linear regression. The study's results indicated that technology-based determinants positively and significantly affect mobile banking usage and comfort using AI mobile banking services. The study also found that the respondents often and will likely continue using mobile banking mainly due to its relative advantage. However, their high comfort level with mobile banking has yet to extend to AI mobile banking services.

Keywords: mobile banking; artificial intelligence; mobile banking services; digital financial services; financial inclusion; mobile banking adoption;

1. Introduction

1.1 Background of the Study

The banking industry's rapid adoption of digital technology and artificial intelligence continues to upend traditional banking channels (Ravikumar et al., 2021). Correspondingly, financial institutions in the Philippines seek opportunities to implement technological solutions that will enable them to modify their business models, improve operational performance, and strengthen their competitiveness (Piatos, 2022). These are demonstrated by the country’s tremendous growth in the number of mobile banking applications and continuous roll out of Artificial Intelligence (AI)- enabled mobile banking services (Yuet, 2022).

On one hand, mobile banking aims to close the gap between branch and self-service banking transactions as it allows self-service banking from anywhere (Strohm & Horton, 2023). In the same way, banks have fused

AI algorithms in their mobile banking services to automate different banking processes and also emulate activities that require human intellect (Tang, 2022). Further, AI is a technological innovation that enhances the banks' ability to meet their customers' needs and expectations; regardless if they are existing self-service technology users or not (Belwafi et al., 2018).

On the other hand, despite the significant benefits of mobile banking and Bangko Sentral ng Pilipinas (BSP)'s efforts to promote the digital transformation of financial services, only 10% of Filipinos with formal transaction accounts and mobile phones conduct financial transactions on mobile banking applications (BSP, 2020). Even so, the BSP evidently expresses its strong support for more Filipinos and not only the unbanked to embrace digital financial services (Capistrano, 2021).

Accordingly, the current study focused on Lipa City, Batangas whereby the responses from the chosen community of the researcher are consistent with the findings from existing literature. Specifically, the results of the community needs assessment suggest that majority of bank account holders in Lipa are not fully aware of digital financial services, particularly mobile banking. More importantly, most of them are discouraged to utilize mobile banking applications due to their perceived risks and threats. Consequently, they still visit the branch just to carry out basic financial transactions. More importantly, even existing mobile banking application users in Lipa found it difficult to explain why they weren't completely capable and at ease using mobile banking applications and maximizing their added features. In the same way, it is crucial to understand whether mobile banking application users will adopt artificial intelligence despite the continuous roll out of AI-enabled mobile banking services (Ordoña and Hosegood, 2018). Accordingly, this study delved in deeper to these issues by focusing on the users' behavior towards mobile banking usage and comfort using Artificial Intelligence (AI) mobile banking services, and their perception on non-technology and technology-based determinants of mobile banking usage and comfort using Artificial Intelligence (AI) mobile banking services. Furthermore, it also aimed to determine if non-technology and technology-based determinants of mobile banking have significant effect on mobile banking usage and comfort using AI mobile banking services. At the same time, it aimed to contribute to the existing literature by addressing research gaps on actual adoption choices made by consumers, as opposed to only the technological and technical aspects that restrict/influence mobile banking adoption (Harrison, 2017). Above all, the study was conducted to support UN's Sustainable Development Goal (SDG) 9: Fostering innovation, promoting inclusive and sustainable financial services, and constructing resilient infrastructure by addressing the issue of poor mobile banking adoption and investigating the potential of AI mobile banking services in the Philippines.

1.2 Research Frameworks

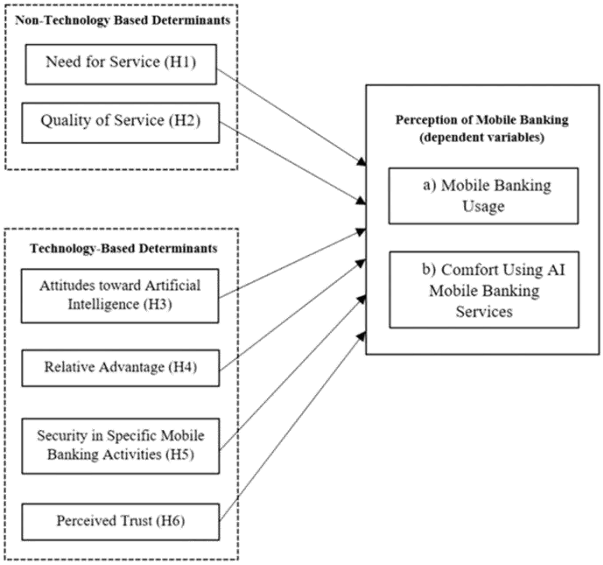

Figure 1. Antecedents and Perceptions of Mobile Banking and AI Mobile Banking Services

Source: Mobile banking and AI-enabled mobile banking: The differential effects of technological and non-technological factors on digital natives' perceptions and behavior (Payne, Peltier, and Barger, 2018)

This study adapted the research conducted by Payne et al. (2018) which aimed to investigate the growing influence of digital natives and mobile technology, and their potential to upend traditional banking channels. As such, Figure 1 shows the model developed by the authors, where the current study was based. Specifically, Figure 1 illustrates the independent variables: (2) non-technology-based determinants (need for service, and quality of service) and (4) technology-based determinants (attitudes toward artificial intelligence, relative advantage, security in specific mobile banking activities, and perceived trust) of mobile banking directly affecting the dependent variables: (a) mobile banking usage and (b) comfort using AI mobile banking services.

Based on the results of the original study, perceived trust, security in specific mobile banking activities, and attitudes toward AI are significant factors of both dependent variables. On the other hand, relative advantage has the most significant effect on mobile banking usage, while attitudes towards AI has the most significant effect on comfort using AI mobile banking services. In contrast, the study found that digital natives are not that comfortable in using AI mobile banking services just yet. Adding that such technology and services are in their infancy, and more research is needed to understand and assess the similarities and differences between mobile and AI mobile banking services. Lastly, the results also indicate that non-technology-based determinants do not have significant effect on mobile banking usage.

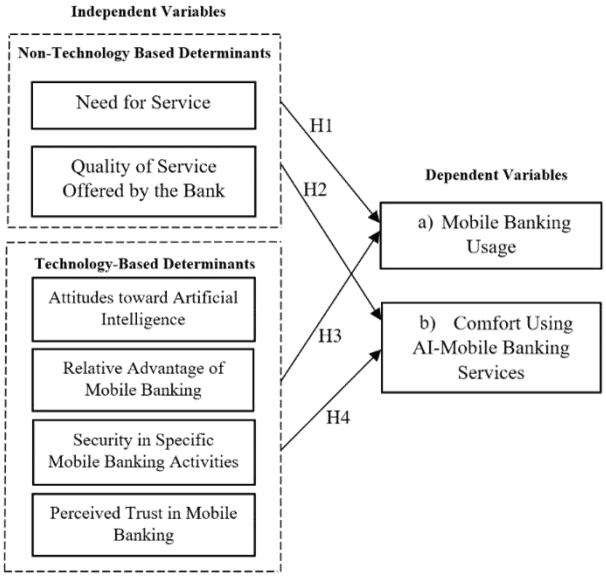

Figure 2. Operational Framework

The original study of Payne et al. (2018) which was conducted in the United States, was adapted in Lipa City, Batangas, Philippines. Therefore, the operational framework used in the study was based on Figure 1 and is composed of the independent variables consisting of the non-technology-based determinants (need for service, and quality of service offered by the bank) and technology-based determinants (attitudes toward artificial intelligence, relative advantage, security in specific mobile banking activities, and perceived trust in mobile banking), and dependent variables consisting of mobile banking usage, and comfort using AI mobile banking services. Accordingly, the dependent and independent variables remained the same as those presented in the conceptual framework. On the other hand, the arrows of the framework were graphically modified while the dependent variables were distinctly represented to better illustrate the relationships between the independent and dependent variables, and at the same time show more congruence with the hypotheses. The operational framework of the study is shown above (Fig. 2).

1.3 Objectives of the Study

This study determined the technology and non-technology based determinants affecting the perceptions and behavior of mobile banking application users in Lipa City, Batangas, toward mobile banking usage and comfort using AI mobile banking services. Specifically, it identified:

1. The perception of the respondents on technology-based determinants of mobile banking in terms of:
    a) attitudes toward artificial intelligence;
    b) relative advantage of mobile banking;
    c) security in specific mobile banking activities; and
    d) perceived trust in mobile banking.

2. The perception of the respondents on non-technology based determinants of mobile banking in terms of:
    a) need for service and
    b) quality of service offered by the bank.
3. The behavior of the respondents towards mobile banking usage and comfort using AI mobile banking services.
4. If technology-based determinants have significant effect on mobile banking usage and comfort using AI-mobile banking services.
5. If non-technology -based determinants have significant effect on mobile banking usage and comfort using AI-mobile banking services.

1.4 Hypotheses

Ho_1: Non-technology based determinants have no significant effect on mobile banking usage.
Ho_2: Non-technology based determinants have no significant effect on comfort using AI-mobile banking services.
Ho_3: Technology-based determinants have no significant effect on mobile banking usage.
Ho_4: Technology-based determinants have no significant effect on comfort using AI-mobile banking services.

2. Materials and Methods

2.1 Research Design

In line with the established objectives, the study utilized a descriptive and causal research design to investigate the independent variables – technology-based determinants (attitudes toward artificial intelligence, relative advantage, security in specific mobile banking activities, and perceived trust in mobile banking) and non-technology-based (need for service, and quality of service offered by the bank), and dependent variables – mobile banking usage, and comfort using AI mobile banking.

2.2 Locale of the Study

The research was conducted in Lipa City, Batangas. According to PDIC (2021), Lipa City had the highest number of banking offices, bank accounts, and total amount of deposits in the province of Batangas at the end of 2021. These are clear indicators that the banking sector is thriving in the area.

2.3 Respondents of the Study

The respondents of the study are universal/commercial bank account holders in Lipa City, Batangas who use mobile banking applications. They were chosen as respondents because they possess relevant knowledge and experience with mobile banking applications and Artificial Intelligence mobile banking services. As such, a total of 150 mobile banking application users provided data for the study.

2.4 Sampling Design

The researcher utilized purposive probability sampling. It focuses on specific persons with identified criteria set by the study within a population. With the use of power analysis, the researcher with the help of an

experienced statistician was able to get the minimum sample requirement of 146 respondents.

2.5 Research Tools and Instruments

The research instrument (see Appendix E) used in the study was adapted from the studies of Payne et al. (2018) and Abu-Taieh et al. (2022). Specifically, the survey questionnaire was divided into four sections and ten portions. The first section contained the informed consent, while the second comprised the respondents' personal and demographic information. The third section contained eight portions relating to technology-based determinants of mobile banking, whereas the fourth section contained two portions relating to non-technology-based determinants of mobile banking.

Accordingly, the research instrument underwent pilot testing on 30 mobile banking application users to ensure its reliability. The results of the pilot test indicated high levels of internal consistency with Cronbach's Alpha that ranged from 0.828 to 0.949. The specifications of the survey questionnaire are presented in Table 1.

Table 1. Questionnaire Specifications

Portion	Variables	Number of Items	Cronbach's Alpha
I.	Mobile Banking Usage (frequency)	1	
II.	Mobile Banking Usage (likelihood)	1	0.828
III.	Mobile Banking Usage (continued intention to use)	6	
IV.	Relative Advantage of Mobile Banking	8	0.945
V.	Perceived Trust in Mobile Banking	6	0.949
VI.	Security in Specific Mobile Banking Activities	6	0.920
VII.	Attitudes toward Artificial Intelligence	7	0.938
VIII.	Comfort Using AI Mobile Banking Services	7	0.949
IX.	Quality of Service Offered by the Bank	6	0.949
X.	Need for Service	6	0.914

2.6 Data Analysis and Interpretation

Descriptive statistics and simple percentage technique were used to interpret the profile of the respondents. Moreover, mean and composite mean were used to determine the respondents' perception on the independent variables and their behavior towards the dependent variables. At the same time, multiple linear regression analysis was used to determine if non-technology-based determinants and technology-based determinants have significant effect on mobile banking usage, and comfort using AI mobile banking services.

Table 2 illustrates the 1 to 5 response scale adapted from the studies of Payne et al. (2018) and Abu-Taieh et al. (2022). It also represents how the survey results were classified and interpreted. In detail, the response scale denotes the measure of a respondent's agreement or disagreement with a survey item, frequency and likelihood of mobile banking usage, and continued intention to use mobile banking, level of

importance on need for service, and comfort levels with AI mobile banking services.

Table 2. Response Scale

Likert Scale	Mean Range	Need for Service (Payne et al., 2018)	Mobile Banking Usage (Frequency) (Payne et al., 2018)	Mobile Banking Usage (Likelihood) (Payne et al., 2018)	Mobile Banking Usage (Continued Intention to Use Mobile Banking) (Abu-Taieh et al., 2022)	Comfort Using AI mobile baking services (Payne et al., 2018)	Quality of service, Attitudes toward Artificial Intelligence, Relative Advantage, Security in Specific Mobile Banking Activities, and Perceived Trust (Payne et al., 2018)
5	4.51 - 5.00	Very Important	Very Often	Very Likely	Strongly Agree	Very Comfortable	Strongly Agree
4	3.51 - 4.50	Important	Often	Likely	Agree	Comfortable	Agree
3	2.51 - 3.50	Neutral	Sometimes	Neutral	Neutral	Rather Uncomfortable	Neither Agree nor Disagree
2	1.51 - 2.50	Unimportant	Rarely	Unlikely	Disagree	Uncomfortable	Disagree
1	1.00 - 1.50	Very Unimportant	Never	Very Unlikely	Strongly Disagree	Very Uncomfortable	Strongly Disagree

2.7 Ethical Considerations

In conducting the study, the researcher adhered to appropriate research ethics and procedures. Accordingly, the researcher was fully aware of the importance of having personal integrity and being truthful when citing the contributions of other authors. This prevented any biases, misrepresentations, or inappropriate citation of data. Furthermore, the researcher ensured to secure proper permission for the use of the respondents' provided data by completing the survey and obtaining their informed consent. The right to withdraw from the study was correctly granted, and the researcher respected the respondents' voluntary participation. In effect, the respondents were given enough time to contemplate their opinions and ideas before responding to the study questionnaires. To safeguard the privacy of their data, the confidentiality of the responses was rigorously upheld. The anonymity of the respondents was preserved and revealing their identities was purely based on their consent. Additionally, the researcher informed the respondents about any risks they might run into. Through appropriate questions, investigation, and background checks, the researcher ensured that the persons providing the data are eligible to do so. Likewise, finding the best approach and methodologies in line with the study's objectives and research questions was another area of emphasis for the researcher. All in all, the researcher thought about the ethical problems that the study raised and was aware of the ethical rules that must be followed upon entering this study.

3. Results and Discussion

3.1 Descriptive Statistics

The results presented in Table 3 shows that most of the respondents are female (69%), single (63%), in the age group of 21 – 30 years old (55%), employed (78%), and have been mobile banking application users for 1 to 5 years or longer (90%). Lastly, most of the respondents utilized BPI (31%) and BDO (23%) mobile banking applications.

Table 3. Profile of the Respondents

Item	Details	Frequency N = 150	Percentage
Gender	Male	47	31.0
	Female	103	69.0
Residence	Lipa City Resident	150	100.0
	Non-Lipa City Resident	-	-
Marital Status	Single	94	63.0
	Married	56	37.0
Age Group	18-20 years old	5	3.0
	21-30 years old	82	55.0
	31-40 years old	39	26.0
	41-50 years old	17	11.0
	51-60 years old	4	3.0
Employment Status	Yes	117	78.0
	No	33	22.0
Years of Mobile Banking Usage	Less than 1 year	15	10.0
	1-3 years	59	39.0
	4-5 years	30	20.0
	Above 5 years	46	31.0
Preferred Mobile Banking App	BPI	46	31.0
	BDO	35	23.0
	Security Bank	18	12.0
	Unionbank	16	11.0
	Metrobank	15	10.0
	DBP	14	9.0
	Landbank	3	2.0
	Chinabank	2	1.0
	PNB	1	1.0

The results shown in Table 4 indicate that the respondents mainly utilize mobile banking due to their perceived relative advantage as it gathered the highest composite mean (M = 4.45). Likewise, the respondents strongly agree that they utilize mobile banking because it is convenient (M = 4.60), and it allows them to bank from anywhere (M = 4.55). They also agree that it provides essential access to their accounts (M = 4.49). This is supported by the findings of Muslim (2022), which stated that customers utilize mobile banking applications because they get a relative advantage on its convenience, ease of use, and because it allows cash and bank accounts management. Correspondingly, the findings also positively affect mobile banking applications as relative advantage has significant effect on the customers' satisfaction of mobile banking services (Jahan and Shahria, 2021).

Table 4. Perception of the respondents on relative advantage

Statements	MEAN	SD	Interpretation
1. Fast banking	4.48	0.7393	Agree
2. Ease of use	4.47	0.6523	Agree
3. Banking from anywhere	4.55	0.6511	Strongly Agree
4. Greater control for managing personal finances	4.33	0.7728	Agree
5. Convenience	4.60	0.6346	Strongly Agree
6. Banking information that customers need	4.24	0.7569	Agree
7. Essential access to my accounts	4.49	0.7212	Agree
8. Access to a wide range of services	4.39	0.6833	Agree
Over-all Mean for relative advantage	**4.45**	**0.6037**	**Agree**

The results presented in Table 5 shows the respondents' agreement that mobile banking can be trusted (M = 3.95). Moreover, the respondents trust mobile banking applications to protect their financial information (M = 3.92) and keep their financial data private (M = 3.97). This implies that the respondents believe that it is necessary for mobile banking applications to safeguard financial information, data, and transactions in order to build and maintain their trust. As such, the findings of Hossain (2019) stated that perceived trust is the most important variable in building customer satisfaction in mobile banking. Likewise, the study of Zhang (2018), found out that attaining client trust is crucial in mobile banking adoption.

Table 5. Perception of the respondents on perceived trust

Statements	MEAN	SD	Interpretation
1. Financial information is protected	3.92	0.7555	Agree
2. It is secure	3.91	0.7267	Agree
3. Overall, mobile banking can be trusted	3.95	0.7449	Agree
4. Financial data are kept private	3.97	0.7504	Agree
5. Unauthorized people cannot gain access to accounts	3.89	0.8634	Agree
6. It is difficult to hack	3.58	0.8994	Agree
Over-all Mean for perceived trust	**3.87**	**0.6959**	**Agree**

Table 6 shows the perception of the respondents on security in specific mobile banking activities. Overall, the respondents agree that they feel safe in conducting specific mobile banking activities (M = 4.09). This implies that the respondents perceive security as an essential feature that makes them feel safe to conduct financial transactions in mobile banking applications. Accordingly, the study of Naruetharadhol et al. (2021) found that security is an essential element for mobile banking adoption. Morever, the findings of Fadila et al. (2022) suggest that mobile banking application users must have confidence that mobile banking services are secure and risk-free.

Table 6. Perception of the respondents on security in specific mobile banking activities

Statements	MEAN	SD	Interpretation
1. I feel safe ... Checking bank account balances	4.13	0.7263	Agree
2. I feel safe ... Managing accounts	4.15	0.6491	Agree
3. I feel safe ... Transferring money	4.11	0.7061	Agree
4. I feel safe ... Making check deposits	3.96	0.7498	Agree
5. I feel safe ... Locating ATMs	3.99	0.8109	Agree
6. I feel safe ... Paying bills	4.23	0.7274	Agree
Over-all mean for Security in Specific Mobile Banking Activities	**4.09**	**0.6434**	**Agree**

The results presented in Table 7 reveal that the respondents' perception on attitudes toward artificial intelligence gathered the second to the lowest mean (M = 3.71). This indicates that the respondents may enjoy and be confident using Artificial Intelligence but they don't exactly know what to expect from the service/innovation yet. Still, the respondents agree that AI is essential. The study of Noreen et al. (2023) revealed that the user's ability to recognize the perceived usefulness (expected benefits) of AI banking services has a positive effect on its adoption. Similarly, the study of Rahman et al. (2021) found that attitudes concerning Artificial Intelligence (AI) significantly influence the intention to adopt AI in financial services.

Table 7. Perception of the respondents on attitudes toward artificial intelligence

Statements	MEAN	SD	Interpretation
1. I would enjoy using AI	3.79	0.8135	Agree
2. Overall, I would be comfortable interacting with AI	3.67	0.7999	Agree
3. I want to use AI	3.72	0.8444	Agree
4. AI is exciting	3.76	0.8409	Agree
5. I think that AI is essential	3.63	0.8625	Agree
6. I am confident that I can use AI	3.79	0.8298	Agree
7. AI is not intimidating	3.60	0.8747	Agree
Over-all mean for attitude towards artificial intelligence	**3.71**	**0.7477**	**Agree**

The results indicate that the respondents often use mobile banking (M = 4.19) and they will likely continue using it in the future (M = 4.46). Table 8 also shows the behavior of the respondents towards mobile banking usage. The results imply the respondents' agreement on all of the items referring to continued intention to use mobile banking. Particularly, they plan to keep doing more business or personal transactions with the current mobile banking system (M = 4.26). Furthermore, they also foster mobile banking usage by agreeing that they would recommend it to other people (M = 4.34). Equally, the study of Ruano-Arcos et al. (2020) indicated that other people are likely to adopt mobile banking if recommended by friends, family, other users and key stakeholders.

Table 8. Behavior of the respondents towards mobile banking usage

Statements	MEAN	SD	Interpretation
Frequency			
1. Overall, how often do you use mobile banking?	4.19	0.8305	Often
Likelihood			
1. Likelihood of continuously using mobile banking in the future	4.46	0.8563	Likely
Continued intention to use mobile banking			
1. I tell other people how much I like mobile banking.	3.78	0.9186	Agree
2. Those who seek my advice on such matters should consider mobile banking.	3.99	0.7942	Agree
3. I would recommend mobile banking to friends and family.	4.34	0.6935	Agree
4. On some Internet message boards, I would post positive messages about the mobile banking service I use.	3.35	1.0307	Agree
5. I intend to keep doing business or personal transactions with the current mobile banking system.	4.26	0.7275	Agree
6. I plan to do more business or personal transactions with the current mobile banking system.	4.25	0.8022	Agree

The respondents' behavior towards comfort using AI mobile banking services is presented in Table 9. The results show that it gathered the lowest composite mean (M = 3.62). Further, this indicates that both items referring to AI mobile banking services obtained the lowest composite means. A possible explanation is that AI services are in their early stages and much is not known about their purpose and usage (Payne et al., 2018). On the other hand, the respondents still agreed that they are comfortable with the idea of using AI mobile banking services in the future. Therefore, this implies high anticipated usage of AI mobile banking services.

Table 9. Behavior of the respondents towards comfort using AI mobile banking services

Statements	MEAN	SD	Interpretation
1. Comfort using AI for paying bills	3.68	0.8695	Comfortable
2. Comfort using AI for having a conversation with AI concerning your accounts	3.64	0.8995	Comfortable
3. Comfort using AI for managing my accounts	3.54	0.9021	Comfortable
4. Comfort using AI for making deposits	3.56	0.8935	Comfortable
5. Comfort using AI for getting personalized investment advice	3.61	0.9539	Comfortable
6. Comfort using AI for getting personalized spending advice	3.65	0.9278	Comfortable
7. Overall comfort banking with AI	3.66	0.8579	Comfortable
Overall mean for comfort using AI mobile banking services	**3.62**	**0.8181**	**Comfortable**

Table 10 shows the respondents' perception on need for service. Based on the results, the respondents perceive that it's still important for them to interact with employees in service settings (M = 4.21). As such, tangible services such as looking people in the eye (M = 4.01), socializing (M = 4.12), being called by name (M = 4.13), having personal contact (M = 4.00), and receiving personalized attention (M = 4.05) are all perceived as important by the respondents. This indicates that the need for human interaction is still important despite the presence of service features in mobile banking applications. This is supported by the study of Yin and Lin (2021) which states that human to human interaction has a significant effect on the users' perception and continued intention to use mobile banking.

Table 10. Perception of the respondents on need for service

Statements	MEAN	SD	Interpretation
1. Looking people in the eye	4.01	0.8394	Important
2. The overall importance of interacting with employees in service settings	4.21	0.7355	Important
3. Socializing	4.12	0.7851	Important
4. Being called by name	4.13	0.8052	Important
5. Having personal contact	4.00	0.7772	Important
6. Receiving personalized attention	4.05	0.8418	Important
Over-all Mean for need for service	**4.09**	**0.6924**	**Important**

Table 11 shows the respondents' perception on the quality of service offered by their respective banks. Based on the results, the respondents are all in agreement that their banks do an over-all good job of interacting with them (M = 4.01). This implies that the respondents still value visiting physical branches and having personal interactions with bank employees in spite of utilizing mobile banking applications and AI mobile banking services. In fact, the study of Elhajjar and Ouaida (2019) revealed that those who utilized and wanted to use mobile banking the most were those who visited their branches more regularly. Further, the findings of Kaur et al. (2021) indicated that effective in-branch communication between bank workers and clients has significant impact on customers' views and intentions to use digital banking channels.

Table 11. Perception of the respondents on quality of service

Statements	MEAN	SD	Interpretation
1. Overall, my bank does a good job of interacting with me	4.01	0.7373	Agree
2. My bank does a good job socializing with me	3.86	0.8029	Agree
3. My bank does a good job making personal contact with me	3.80	0.8274	Agree
4. My bank does a good job giving me personalized attention	3.76	0.8084	Agree
5. My bank does a good job calling me by name	3.86	0.8029	Agree
6. My bank does a good job looking me in the eye	3.67	0.8631	Agree
Over-all Mean for quality of service	**3.83**	**0.7096**	**Agree**

3.2 Multiple Linear Regression Analysis

Table 12 shows the effect of technology and non-technology based determinants on mobile banking usage. Based on the results, 51.5% of the variance is explained by the two predictors, ($F = 80.11$, $p = 0.000$). Furthermore, it was found out that technology based determinants have positive and significant effects on mobile banking usage ($ß = 0.642$, $p = 0.000$). This means that mobile banking application users show emphasis on the technological features of mobile banking applications before ultimately deciding to use/continuously use them. Furthermore, mobile banking usage tends to increase when technological features of mobile banking applications are continuously enhanced. Conversely, non-technology based determinants do not have significant effect on mobile banking ($ß = 0.108$, $p = 0.185$).

These findings are supported by the study of Purwati et al. (2018), which suggests that banks must continuously innovate their mobile banking services in order to provide the best service to its customers. Moreover, the technological aspects of mobile banking applications must enhance its usability, and ensure

compatibility with the language, culture, and beliefs of a locale or community (Aynadis et al., 2023). Correspondingly, mobile banking applications must also be reliable in a sense that downtimes must be kept to a minimum and services must be restored immediately. Hence, technical support and information dissemination regarding downtimes and system updates are of high importance as well (Gokmenoglu and Kaakeh, 2022).

Table 12. Effect of technology and non-technology-based determinants on Mobile Banking Usage

Model		Unstandardized Coefficients		Standardized Coefficients			
		B	Std. Error	Beta	t	p-value	Interpretation
1	(Constant)	0.731	0.268		2.730	0.007	
	Non-Technology Based Determinants	0.105	0.079	0.108	1.333	0.185	Not Significant
	Technology Based Determinants	0.725	0.091	0.642	7.946	0.000	Significant

R^2 = 0.522 F Value = 80.106 p-value = .000 Adjusted R^2 = 0.515
a Dependent Variable: Mobile Banking Usage

Similarly, technology-based determinants have positive and significant effects on comfort using AI mobile banking services as shown in Table 13 (ß = 0.695, p = 0.000). This implies the continuous emphasis of mobile banking application users on the technological innovations associated with mobile banking applications and services. In the same way, the users' level of comfort in using AI mobile banking services improves as innovations and technological advancements are introduced into mobile banking applications and services. Further, the results also indicate that non-technology and technology based determinants account for 30.2% of the variance in comfort using AI mobile banking services (F = 33.21, p = 0.000). On the other hand, non-technology-based determinants do not have significant effect on comfort using AI mobile banking services.

These findings are supported by the study of Suhartanto (2021) on technology-based determinants of AI mobile banking which suggests that technological innovations can provide better services to consumers. For instance, the study of Payne et al. (2018) found that AI has the ability to meet the service needs of customers through its predictive technology. In the same way, the findings of Lee and Chen (2022) suggested that the intelligence and anthropomorphism of AI mobile banking applications increase the users' intention to adopt mobile banking applications. Equally important, the study of Payne et al. (2021) indicated that users show more emphasis on the utilitarian value of AI mobile banking such as speed, convenience, and security. Therefore, a right mix of technological and service-oriented approach is needed to further improve AI mobile banking services. Summarily, AI has proven to be a useful innovation for enhancing the users' experience with mobile banking applications (Kandilian, 2023).

Table 13. Effect of technology and non-technology-based determinants on Comfort Using AI Mobile Banking Services

Model		Unstandardized Coefficients		Standardized Coefficients			
		B	Std. Error	Beta	t	p-value	Interpretation
1	(Constant)	0.092	0.436		0.212	0.832	
	Non-Technology Based Determinants	0.181	0.128	0.137	1.409	0.161	Not Significant
	Technology Based Determinants	0.695	0.149	0.453	4.672	0.000	Significant
$R^2 = 0.311$ F Value = 33.213 p-value = .000 Adjusted $R^2 = 0.302$							
a Dependent Variable: Comfort Using AI Mobile Banking Services							

4. Conclusion and Recommendations

The results indicate that non-technology-based determinants have no significant effect on mobile banking usage and comfort using AI mobile banking services. Therefore, Ho1 and Ho2 are supported. The results also revealed that technology- based determinants have significant effect on mobile banking usage. Therefore, Ho3 is not supported. Moreover, the results also indicate that technology-based determinants positively affect mobile banking usage. This means that mobile banking usage increases when technology-based features of mobile banking applications are enhanced. Similarly, technology-based determinants significantly affect comfort using AI mobile banking services, hence, Ho4 is not supported. Further, technology-based determinants also positively affect comfort using AI mobile banking services. This indicates that the users' level of comfort in using AI mobile banking services improves as technological innovations and advancements are further introduced into mobile banking applications and services.

Having found that technology-based determinants are key for mobile banking usage and comfort using AI mobile banking services, it is recommend that financial institutions continue enhancing the technological features of their mobile banking applications and services. Likewise, such enhancements should also contribute to the relative advantage of mobile banking which was found to be the main reason why the respondents utilized mobile banking applications. In the same way, security in specific mobile banking activities, and perceived trust must also be strongly considered in developing the enhancements. Furthermore, it is also recommended that financial institutions prepare their existing and potential mobile banking application users for the technological changes that they will implement. As such, it was revealed in the study that the respondents' level of comfort with mobile banking applications hasn't extended yet to AI mobile banking services. Surprisingly, the respondents still value personal interactions with bank employees which means that branch banking must still be emphasized and/or integrated with existing mobile banking applications.

Correspondingly, financial institutions along with BSP and other relevant agencies should endeavor themselves to foster an ecosystem that will enable Filipinos to become comfortable with technological advancements in financial products and services. In effect, it's imperative to raise awareness on digital financial products and services as the vast majority of Filipinos remain unaware and uncomfortable of them. As such, a nation-wide awareness campaign on digital financial products and services entitled "Digital Financial Literacy for Every Juan" is recommended (please refer to Appendix B). The idea is to raise awareness by partnering with premier marketing groups in order to market the campaign through various channels and mediums. Moreover, policies and memorandums to post the campaign's logo on physical, digital, and electronic banking platforms should be signed by BSP. Hopefully, through this campaign, Filipinos will become aware and cognizant on how such services can impact their everyday lives, and also

improve their current situation. Moreover, this may start a generation of Filipinos that will and can leverage such products and services to support their short-term and long-term goals. Above all, this recommendation will support BSP's National Artificial Intelligence (AI) Strategy and National Strategy for Financial Inclusion. Likewise, it will also assist in achieving SDG 9 of the United Nations, which calls for fostering innovation, promoting inclusive and sustainable financial services, and constructing resilient infrastructure.

In spite of such strengths, the study also has limitations. The first limitation is that the study was limited only to the afore-mentioned factors. This is due to the fact that the original study used the exact same measures, implying that this study was adapted from the original research conducted by Payne et al. (2018). Let alone, the results from the original study are well-founded. Secondly, the study focused only on the respondents' adoption choices on mobile banking and excluded effects on personal financial stability, and financial performance of banks. Lastly, another limitation of the study was its generalizability. The study was only concerned with universal/commercial bank account holders in Lipa City, Batangas who use mobile banking applications. Hence, the results in this study may not be applicable to other settings.

Acknowledgments

First and foremost, the researcher would love to thank God for giving him the strength, knowledge, and wisdom to complete this research.

This endeavour would not have been possible without the unconditional love, endless support, and encouragement of the researcher's parents, Mr. Gaudencio Valentino M. Carandang and Mrs. Mildred A. Carandang.

To his sibling, Geric Miguel A. Carandang, for the unending support and motivation. He never lost faith in his capabilities.

To Marika Joy M. Raz for being his inspiration behind everything. She was always there for him, no matter how complicated the situation was while conducting this study.

To his class adviser, Dr. Sheila Maloles for her unwavering trust and support in everything. The researcher was able to complete his study with her direction and excellent advice.

To his thesis adviser, Dr. Edgar Allan G. Castro, for all the encouragement, support, guidance, wisdom, time, and patience. He truly is one of the best there is.

To his MBA 2001 classmates for the memories and support throughout this research.

To his panelists, Dr. Erickson Martinez, Mr. Alan Pagsuyuin, and Mr. Dhing Patulot, for allotting their time and providing valuable insights which helped the study progress.

To Dr. Lanie M. Santos, the graduate program chair, for giving her time and support throughout the research.

To Dean Nerissa O. Lucasia, MMT for her continued efforts on enabling graduate students to produce high quality research.

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