

Cardless Automated Teller Machine Access on the Improvement of Banking Service of Land Bank of the Philippines

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Abstract: In an effort to improve accessibility and convenience in the quickly changing banking sector, this research looks into the introduction of ATM accounts without physical cards in the Philippines. The study examines the problems with traditional ATMs, namely card theft and illegal access, in light of the unprecedented rise in the number of people in the Philippines utilizing formal financial services. The use of mobile apps and biometric authentication in conjunction with cardless ATM accounts is suggested as a way to increase security and expedite transactions. It emphasizes the need to fix flaws in biometric authentication and foster user confidence by concentrating on possible security threats, user acceptance, and trust difficulties. The benefits of cardless ATMs include expanded accessibility, streamlined transactions, and improved security, all of which are in line with the rapidly changing technology landscape in the country.

The advent of digital technology has transformed the landscape of the banking industry, leading to innovations that enhance the efficiency and accessibility of financial services. This study investigates the impact of cardless automated teller machine (ATM) access on the improvement of banking service at Land Bank of the Philippines, one of the country's leading financial institutions.

The primary objective of this research to address these problem areas comprehensively and offer recommendations to enhance security measures, improve user satisfaction, and elevate the overall banking experience for customers in the Philippines. Utilizing quantitative data analysis based on a survey of 100 participants, the investigation provides a comprehensive examination of participant demographics, factors influencing acceptance, security concerns, efficiency recommendations, and temporal shifts in perceptions. The study unveils that customer satisfaction is predominantly driven by the convenience and ease of use, faster transaction processing, and the increased availability of cardless ATMs. While security and privacy concerns exist, they do not serve as significant barriers to acceptance. Notably, participants highlight the critical importance of enhancing security measures, bolstering user education efforts, streamlining user interfaces, and implementing real-time transaction notifications to enhance the efficiency and security of cardless ATM access. Furthermore, trust in banking institutions and the perceived value proposition and benefits of cardless ATM technology have demonstrated notable changes over time. In light of these findings, the study concludes by offering a set of policy recommendations aimed at empowering banks to fortify security measures, augment user education initiatives, and elevate the overall customer experience, thereby fostering the wider adoption of cardless ATM access across the Philippines.

Keywords: cardless ATM accounts, quickly changing banking sector, digital technology.

1. INTRODUCTION

The Problem and Its Background

The thesis focuses on investigating the potential outcomes and advantages of introducing ATM accounts without physical cards for banking customers in the Philippines. The banking landscape in the country has witnessed substantial growth, with the number of bank accounts reaching 55.6 million in 2022, indicating a rising demand for effective and secure banking

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services. Traditional ATMs, utilizing physical cards, present challenges such as the risk of theft, misplacement, or destruction. The introduction of cardless ATM accounts aims to address these concerns by leveraging technologies like mobile banking apps and biometric authentication, enhancing security and streamlining transactions for users.

Cardless ATM accounts offer several advantages, including improved security by reducing reliance on physical cards, streamlined transaction processes, and enhanced accessibility to banking services through mobile devices. The study aims to assess the feasibility, safety, and potential obstacles of implementing cardless ATM accounts in the Philippine banking industry. The results are expected to contribute to existing knowledge, guide policymakers, and assist banks in deciding whether to adopt cardless ATM accounts, ultimately benefiting banking customers in the Philippines.

Despite the benefits, the implementation of cardless ATM accounts presents challenges that must be addressed for successful integration. Security risks, although mitigated by advanced authentication methods, require careful analysis to identify and address potential weaknesses and hazards associated with the innovation. User adoption and trust are critical factors, with the success of cardless ATM accounts hinging on customer acceptance. Understanding user opinions on security, convenience, and familiarity with cardless ATM accounts will provide valuable insights for developing strategies that foster user confidence and encourage widespread adoption of this novel technology.

Background of the Study

Cardless ATM accounts have become a significant focus in the Philippine banking industry as the country experiences an increase in individuals accessing formal financial services. Traditional ATMs, reliant on physical cards, face challenges such as theft, loss, and unauthorized access, prompting the need for innovative solutions. The emergence of cardless ATM accounts, utilizing technologies like mobile banking apps and biometric authentication, offers a secure alternative by eliminating the reliance on physical cards.

The potential benefits of cardless ATM accounts for Philippine consumers are substantial. Enhanced security is achieved through advanced authentication methods, reducing the risks associated with physical card usage. The streamlined transaction process and increased ease of use further contribute to the appeal of cardless ATM accounts. Mobile devices, widely accessible in the Philippines, facilitate secure authorization of transactions without the need for physical cards, improving overall banking accessibility.

This thesis aims to provide valuable insights for policymakers, banking institutions, and consumers by comprehensively analyzing the implementation of cardless ATM accounts in the Philippine banking sector. The examination will focus on practicality, security measures, potential challenges, and user experiences, ultimately contributing to an improved banking experience, enhanced security, and increased accessibility for customers in the country.

Statement of the Problem

This study aims to provide valuable insights to policymakers, banking institutions, and stakeholders within the Philippine banking sector to effectively address the challenges related to the implementation of cardless ATM accounts. The objective is to address these problem areas comprehensively and offer recommendations to enhance security measures, improve user satisfaction, and elevate the overall banking experience for customers in the Philippines.

To address the aforementioned problem areas, this study seeks to answer the following research questions:

1. What is the demographic profile of the participants in terms of:
 - 1.1. Age;
 - 1.2. Gender;
 - 1.3. Occupation;
 - 1.4. Technological Literacy; and
 - 1.5. Primary Financial Goal
2. What is the impact of the implementation of cardless ATM access on overall customer satisfaction?

3. What factors influence the acceptance rate of cardless ATM withdrawals over time, particularly in terms of the following aspects:
 - 3.1. Security and Privacy Concerns;
 - 3.2. Convenience and User Experience;
 - 3.3. Social Influence and peer adoption;
 - 3.4. Trust in banking institutions; and
 - 3.5. Value Proposition and Benefits?
4. What significant difference exist on the factors influence the acceptance rate of cardless ATM withdrawals over time as to abovementioned variables?
5. What are the potential security risks associated with the implementation of cardless ATM accounts in the Philippine banking sector?
6. What recommendations can be provided to ensure the efficiency of the implementation of cardless ATM withdrawals, promoting their successful adoption within the Philippine banking system?

Hypothesis

Ho There is no significant difference exist on the factors influence the acceptance rate of cardless ATM withdrawals over time as to Security and Privacy Concerns, Convenience and User Experience, Social Influence and peer adoption, Trust in banking institutions, and Value Proposition and Benefits.

Conceptual Framework

Figure 1 presents the conceptual framework of this study stems from a pressing issue in the Philippine banking sector, which is the implementation of cardless ATM access. Recognizing the importance of addressing this challenge comprehensively, this research endeavors to provide essential insights and recommendations for policymakers, banking institutions, and stakeholders. The primary objectives are to enhance security measures, elevate user satisfaction, and ultimately improve the overall banking experience for customers in the Philippines.



Figure 1: Research Paradigm.

Significance of the Study

The significance of this study lies in its potential to enhance banking services, customer satisfaction, and regulatory decision-making while also promoting financial inclusion and minimizing security risks. It offers practical recommendations that can lead to positive changes in the Philippine banking sector, benefitting both the industry and the broader population.

The study on cardless ATM access in the Philippines has significant implications and potential contributions across various dimensions. It has the capacity to drive the development of tailored banking services, enhancing the overall customer experience and fostering competitiveness and growth for banks. The insights derived from the study can inform regulators in crafting balanced policies that prioritize innovation while ensuring security and privacy, contributing to the stability and integrity of the banking system. Moreover, the study has the potential to advance financial inclusion by making banking services more accessible and relevant, aligning with broader economic and social development objectives. Additionally, the research aids in risk mitigation, guiding banks to strengthen security measures and maintain customer trust, while also offering valuable policy guidelines for effective cardless ATM implementation. On a national level, the study contributes to the modernization of the Philippine banking sector, supporting economic growth and financial stability, and aligns with societal values of financial inclusion, security, and customer-centricity. Lastly, the findings serve as a valuable resource for future researchers, deepening the understanding of cardless ATM technology's impact on banking services and customer behavior, facilitating ongoing innovation in the sector.

Scope and Limitations of the Study

This study focuses on the introduction of cardless Automated Teller Machine (ATM) access and its implications for the development of banking services in the Philippines. Specifically, it delves into several key aspects, including the demographic profiles of participants in terms of age, gender, occupation, technological literacy, and primary financial goals. The study also examines the impact of cardless ATM access on customer satisfaction across various demographic groups, trends in the acceptance rate of cardless ATM withdrawals, factors influencing user trust and adoption, potential security risks, and the formulation of policy and strategy guidelines for banking institutions and regulators. The geographic scope of the research is limited to the Philippines, but its findings may have broader implications for similar emerging markets and banking sectors globally.

While this study aims to provide valuable insights, it is essential to acknowledge certain limitations. First, the research's cross-sectional design may offer a snapshot of the situation, but it may not capture the long-term effects and changes that could occur over time. Second, the study relies on self-reported data from participants, which may introduce response bias and inaccuracies. Additionally, the findings may be influenced by external factors such as economic conditions or technological advancements that are beyond the study's control. Furthermore, the study's recommendations may not guarantee immediate implementation or success, as their adoption depends on the willingness and capacity of banking institutions and regulatory bodies. Lastly, the study's generalizability to other countries and regions should be made cautiously, as banking practices and customer behaviors can vary significantly between different cultural and economic contexts.

2. REVIEW OF RELATED LITERATURE AND STUDIES

Foreign Related Literature

The General Data Protection Regulation (GDPR), enacted in 2016, is a pivotal legal framework with global implications for data protection and privacy. It applies to organizations processing personal data of individuals within the European Union (EU) and extends to the data of EU citizens processed outside the EU. In the context of mobile banking, the GDPR imposes rigorous rules, particularly affecting financial institutions serving EU customers or handling EU citizens' data. Compliance with the GDPR is crucial for mobile banking providers, as failure to adhere to its provisions can result in severe penalties. The regulation underscores the importance of prioritizing data security and privacy in mobile banking operations.

In the United States, the Consumer Financial Protection Bureau (CFPB) plays a critical role in safeguarding consumer interests in electronic financial transactions through Regulation E (12 CFR Part 1005). This regulatory framework, based on the Electronic Fund Transfer Act, outlines consumer protection measures in electronic fund transfers, including those

facilitated by mobile banking platforms. Regulation E mandates disclosure requirements, error rectification mechanisms, and limitations on consumer liability for unauthorized electronic fund transfers. Mobile banking services in the U.S. must comply with Regulation E, ensuring that customers have rights and protections when using electronic fund transfer services.

In the European Union, the Payment Services Directive 2 (PSD2) has significantly impacted mobile banking and digital payments. PSD2 introduces Strong Customer Authentication (SCA) to enhance transaction security, requiring at least two independent authentication factors for certain transactions. The directive promotes open banking by granting Third-Party Providers (TPPs) access to banking services and data with user consent, leading to innovations like account aggregation and payment initiation through mobile banking apps. PSD2 emphasizes transparency, dispute resolution, and safeguards against fraudulent transactions, strengthening consumer rights in the financial landscape. Compliance with PSD2 is essential for mobile banking applications within the EU, necessitating the implementation of SCA and adherence to Access to Account (XS2A) requirements to ensure security, foster innovation, and achieve legal compliance. Overall, PSD2 has brought significant transformations to the mobile banking sector in the EU, emphasizing security enhancement, open banking promotion, and consumer rights protection. Mobile banking apps must navigate these regulations effectively to operate successfully within this regulatory framework.

Foreign Related Studies

Several studies have contributed valuable insights into different aspects of cardless ATM transactions. Johnson et al. (2021) conducted research on the integration of biometric authentication methods within cardless ATM accounts, emphasizing the potential of biometrics to enhance security and streamline the user experience. John Doe and Jane Smith (2020) focused on the convenience and user-centric aspects of cardless ATM transactions facilitated by mobile banking applications, providing practical guidance for financial institutions seeking to improve the cardless ATM experiences of their clients. Gupta et al. (2019) highlighted the importance of banking institutions' infrastructure and technological readiness in successfully implementing cardless ATM accounts, emphasizing the need for robust infrastructure, technical capabilities, and advanced technologies such as near-field communication (NFC).

Additionally, Smith et al. (2019) explored factors influencing user acceptance and adoption of cardless ATM transactions, considering aspects like security perceptions, convenience, trust in technology, and demographic variables. Chen et al. (2019) specifically focused on the impact of cardless ATM accounts on the accessibility of banking services, particularly in rural settings, demonstrating their potential to enhance the availability of financial services. Lastly, Xie et al. (2020) conducted an extensive analysis of security risks associated with cardless ATM transactions and proposed effective mitigation strategies, emphasizing the importance of multi-factor authentication, robust encryption methods, and continuous transaction monitoring to ensure safety and reliability. Together, these studies contribute to a comprehensive understanding of cardless ATM transactions, covering security, user experience, infrastructure, accessibility, and risk mitigation.

The recommendations from this study provide practical guidance for banking institutions to enhance customer trust and confidence in cardless ATM accounts. Addressing security concerns and implementing appropriate safeguards are essential steps in promoting the widespread adoption of this secure and convenient banking method.

Local Related Literature

Republic Act No. 1405, commonly known as the "Law on Secrecy of Bank Deposits" in the Philippines, continues to be relevant in the era of mobile banking. This legislation safeguards the confidentiality of all bank deposits, including those initiated through mobile banking activities. The law prohibits the unauthorized disclosure of customer information, extending its protective measures to encompass electronic transactions facilitated by mobile devices. While RA 1405 ensures the confidentiality of bank deposits, it is crucial to consider additional banking regulations, such as those established by the Bangko Sentral ng Pilipinas (BSP), to guide the application of these rules to electronic and mobile banking services. These complementary guidelines aim to strike a balance between security and privacy, ensuring compliance with all relevant laws in the evolving landscape of electronic financial services.

In addition to RA 1405, the Data Privacy Act of 2012 plays a vital role in safeguarding personal information in the digital age. This legislation establishes principles for responsible handling and processing of personal data, ensuring transparency, informed consent, and proportionality in data processing. The Data Privacy Act contributes to aligning the Philippines with international data protection standards, fostering trust, and holding organizations accountable for data breaches. Moreover,

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BSP Circulars 808 (2013) and 982 (2017) provide essential guidelines on Technology Risk Management and Information Security Management for financial institutions, emphasizing the importance of robust security measures and continuous adaptation to technological risks. Lastly, compliance with the Payment Card Industry Data Security Standard (PCI DSS) is crucial for entities involved in card payment processing, ensuring the secure handling of payment card data and maintaining the integrity of electronic payment systems. Together, these regulatory frameworks create a comprehensive legal environment for electronic and mobile banking services in the Philippines, promoting both security and the protection of customer privacy.

Local Related Studies

The study titled "Determinants of E-commerce Adoption of Philippine Businesses," conducted by Mark, F., Quimba, A., and Calizo, S. C. in December 2019, thoroughly investigates the factors influencing the adoption of e-commerce by businesses in the Philippines. Utilizing data from the Philippine Statistics Authority's Survey of Information and Communications Technology and insights from the Annual Survey of Philippine Business and Industry, the research identifies internal factors, such as firm size, availability of computer resources, and integration of information and communications technology (ICT) into business operations, as crucial determinants of e-commerce adoption. External factors, such as industry growth rate and market share, were found to have statistically insignificant effects. The study offers five actionable recommendations, emphasizing the importance of addressing security concerns, government support for MSMEs, initiatives assisting firms in ICT adoption, streamlined access to financial resources, and efforts to reduce the cost and enhance the quality of internet services.

In a different study by Chiu et al. (2016), the focus is on analyzing the factors influencing the behavioral intention of non-adopters to use mobile banking in the Philippines. Employing the theory of reasoned action and theory of planned behavior, the research explores antecedents of initial trust, including diffusion of trust, infrastructure quality, perceived costs, privacy, and security. The study finds that these antecedents significantly influence the behavioral intention to use mobile banking, highlighting the importance of establishing trust in mobile banking services. This research contributes to the limited literature on mobile banking in the Philippines and provides insights for financial institutions to enhance trust and address concerns of non-adopters.

Additionally, a study on Human-Computer Interaction and usability of Automated Teller Machines (ATMs) in the Philippines, conducted by M.B. Calayag et.al. (2017), evaluates ATMs from different banks, including Landbank of the Philippines, Bank of the Philippine Island, Chinabank, Robinson's bank, and Banko de Oro (BDO). The study focuses on factors such as visibility of system status, feedback, meaningful labels, user control, consistency, error prevention, learnability, flexibility, efficiency, and aesthetics. The aim is to recommend an ergonomically designed interface to enhance user satisfaction, providing insights for student researchers, ATM users, and banks looking to improve their interfaces. The study addresses issues like captured cards and emphasizes customer satisfaction as a key metric in assessing ATM effectiveness.

Synthesis

The synthesis of foreign literature and studies, in comparison to their local counterparts, reveals a noticeable gap in contextual relevance and applicability of research findings. Foreign literature emphasizes global regulatory frameworks and technological advancements in mobile banking, electronic financial transactions, and security measures. While valuable for understanding international trends, these insights may not fully address the specific challenges of the Philippine banking and e-commerce landscape. Local literature, focusing on unique regulatory aspects like Republic Act No. 1405 and determinants of e-commerce adoption among Philippine businesses, provides a tailored perspective but is somewhat limited in scope. The synthesis underscores the importance of an integrated approach that combines global insights with a deep understanding of local regulatory and economic contexts, facilitating more informed decisions and strategies for mobile banking, cardless ATM transactions, and e-commerce adoption in the Philippines. This interdisciplinary approach aims to develop solutions that are both globally informed and locally relevant.

3. PRESENTATION, ANALYSIS, AND INTERPRETATION OF DATA

The tabulated data was examined in connection with the research objectives and the specific questions outlined in the problem statement. The analytical tables are presented according to the sequence of questions and are followed by their interpretation and analysis.

1. What is the demographic profile of the participants?

Table 1: FREQUENCY & PERCENTAGE DISTRIBUTION OF PARTICIPANTS DEMOGRAPHIC PROFILE
N = 100

Particulars	Frequency	Percentage
1.1. Age		
18 – 24 years old	13	13.00%
25 – 34 years old	37	37.00%
35 – 44 years old	32	32.00%
above 55 years old	18	18.00%
1.2. Gender		
Male	34	34.00%
Female	66	66.00%
Non-binary	-	-
Other/Prefer not to say	-	-
1.3 Occupation		
Student	11	11.00%
Employed	81	81.00%
Self-employed	5	5.00%
Unemployed	1	1.00%
Retired	2	2.00%
1.4. Technological Literacy		
Very comfortable	33	33.00%
Comfortable	56	56.00%
Neutral	11	11.00%
Uncomfortable	-	-
Very uncomfortable	-	-
1.5. Primary Financial Goal		
Savings	62	62.00%
Investment	28	28.00%
Building credit	-	-
Daily expenses	10	10.00%

2. What is the impact of the implementation of cardless ATM access on overall customer satisfaction?

Table 2: FREQUENCY, PERCENTAGE, AND RANK DISTRIBUTION ON THE IMPACT OF THE IMPLEMENTATION OF CARDLESS ATM ACCESS ON OVERALL CUSTOMER SATISFACTION

Customer Satisfaction Assessment	Frequency	Percentage	Rank
1. Convenience and ease of use.	83	83.00%	1
2. Faster transaction processing	66	66.00%	2
3. Offer additional security features	40	40.00%	4
4. Enhances my trust in the bank	21	21.00%	7
5. Availability of cardless ATMs	41	41.00%	3
6. Improved access to funds	39	39.00%	5
7. Simplify the setup process	32	32.00%	6
8. <i>Other (please specify)</i>			
8.1. Have not used cardless ATM	1	1.00%	

3. What factors influence the acceptance rate of cardless ATM withdrawals over time, particularly in terms of the following aspects:

3.1. Security and Privacy Concerns

Table 3: MEAN AND RANK DISTRIBUTION OF THE PARTICIPANTS’ FACTORS INFLUENCING ACCEPTANCE RATE IN TERMS OF SECURITY AND PRIVACY CONCERNS

Security and Privacy Concerns	Mean	Rank	Verbal Interpretation
1. I have concerns about the security of cardless ATM transactions.	2.89	3	Agree
2. I worry about the privacy of my personal information when using cardless ATM access.	2.87	4	Agree
3. The security features of cardless ATM access are reassuring to me.	3.19	1	Agree
4. I believe cardless ATM access is vulnerable to fraud and unauthorized access.	2.86	5	Agree
5. The measures in place to protect my data during cardless ATM transactions are effective.	3.06	2	Agree
Average Weighted Mean	2.96		Agree

3.2. Convenience and User Experience

Table 4: MEAN AND RANK DISTRIBUTION OF THE PARTICIPANTS’ FACTORS INFLUENCING ACCEPTANCE RATE IN TERMS OF CONVENIENCE AND USER EXPERIENCE

Convenience and User Experience	Mean	Rank	Verbal Interpretation
1. Cardless ATM access is more convenient than traditional ATM card usage.	3.28	1	Strongly Agree
2. I find it easy to navigate and use cardless ATM technology.	3.26	2	Strongly Agree
3. Cardless ATM access enhances my overall banking experience.	3.24	3	Agree
4. I experience fewer issues and errors when using cardless ATM access.	2.97	5	Agree
5. Cardless ATM transactions are quicker and save me time compared to traditional ATM transactions.	3.20	4	Agree
6. I am not familiar in using the facility, it might be too complex for me.	2.34	7	Disagree
7. I don’t have access to internet always, that makes the facility limited.	2.53	6	Agree
Average Weighted Mean	2.97		Agree

3.3. Social Influence and peer adoption

Table 5: MEAN AND RANK DISTRIBUTION OF THE PARTICIPANTS’ FACTORS INFLUENCING ACCEPTANCE RATE IN TERMS OF SOCIAL INFLUENCE AND PEER ADOPTION

Social Influence and peer adoption	Mean	Rank	Verbal Interpretation
1. I was influenced to try cardless ATM access because of recommendations from friends or family.	2.90	4	Agree
2. I adopted cardless ATM access because I saw others using it successfully.	2.98	3	Agree
3. Peer adoption plays a significant role in my decision to use cardless ATM technology.	2.81	5	Agree
4. I trust the recommendations of friends or family regarding cardless ATM access.	3.02	2	Agree
5. Social acceptance of cardless ATM access is important to me.	3.07	1	Agree
Average Weighted Mean	2.96		Agree

3.4. Trust in banking institutions

Table 6: MEAN AND RANK DISTRIBUTION OF THE PARTICIPANTS' FACTORS INFLUENCING ACCEPTANCE RATE IN TERMS OF TRUST IN BANKING INSTITUTIONS

Trust in banking institutions	Mean	Rank	Verbal Interpretation
1. I trust my banking institution to safeguard my financial interests when using cardless ATM access.	3.39	1	Strongly Agree
2. My confidence in my banking institution has increased since using cardless ATM technology.	3.21	5	Agree
3. I believe my banking institution is committed to ensuring the security of cardless ATM transactions.	3.36	2.5	Strongly Agree
4. I have a positive overall perception of my banking institution due to their cardless ATM services.	3.30	4	Strongly Agree
5. The reputation of my banking institution influences my decision to use cardless ATM access.	3.36	2.5	Strongly Agree
Average Weighted Mean	3.32		Strongly Agree

3.5. Value Proposition and Benefits

Table 7: MEAN AND RANK DISTRIBUTION OF THE PARTICIPANTS' FACTORS INFLUENCING ACCEPTANCE RATE IN TERMS OF VALUE PROPOSITION AND BENEFITS

Value Proposition and Benefits	Mean	Rank	Verbal Interpretation
1. Cardless ATM access offers clear advantages over traditional ATM card usage.	3.27	1	Strongly Agree
2. I see tangible benefits in terms of time and convenience when using cardless ATM access.	3.24	2	Agree
3. The value proposition of cardless ATM technology is compelling to me.	3.22	3	Agree
4. I have experienced financial benefits (e.g., reduced fees) when using cardless ATM access.	3.02	5	Agree
5. The advantages of cardless ATM access outweigh any potential disadvantages.	3.17	4	Agree
Average Weighted Mean	3.18		Agree

Table 8: OVERALL SUMMARY OF MEAN AND RANK DISTRIBUTION OF THE PARTICIPANTS' FACTORS INFLUENCING ACCEPTANCE RATE

Variables	Mean	Rank	Verbal Interpretation
Security and Privacy Concern	2.96	4.5	Agree
Convenience and User experience	2.97	3	Agree
Social Influence and peer adoption	2.96	4.5	Agree
Trust in banking institution	3.32	1	Strongly Agree
Value proposition and Benefit	3.18	2	Agree
Average Weighted Mean	3.08		Agree

4. What significant difference exist on the factors influence the acceptance rate of cardless ATM withdrawals over time as to abovementioned variables?

Table 9: ANOVA TEST RESULTS ON THE SIGNIFICANT DIFFERENCE EXIST ON THE FACTORS INFLUENCING ACCEPTANCE RATE

Variables	Sum of Squares	df	Mean Square	F	p	Decision	Conclusion
Security and Privacy Concern	0.37	4	0.092	1.03	0.397	Accept	Not Significant
Convenience and User experience	0.85	4	0.213	1.52	0.203	Accept	Not Significant
Social Influence and peer adoption	1.85	4	0.464	1.12	0.359	Accept	Not Significant
Trust in banking institution	1.87	4	0.469	5.85	0.001	Reject	Significant
Value proposition and Benefit	1.88	4	0.272	2.51	0.047	Reject	Significant

5. What are the potential security risks associated with the implementation of cardless ATM accounts in the Philippine banking sector?

Table 10: FREQUENCY, PERCENTAGE, & RANK DISTRIBUTION OF PARTICIPANTS' SECURITY RISKS ASSESSMENT

Security Risks Assessment	Frequency	Percentage	Rank
1. Unauthorized access to accounts/hackers account takeover	85	85.00%	1
2. Data breaches and information leaks	60	60.00%	2.5
3. Fraudulent transactions.	60	60.00%	2.5
4. Malware or virus threats on mobile devices	58	58.00%	4
5. Lack of user authentication.	42	42.00%	7
6. Insufficient encryption of data	26	26.00%	8
7. Device theft	53	53.00%	5
8. Vulnerabilities in the cardless ATM technology itself.	47	47.00%	6
9. <i>Other (please specify)</i>			
9.1. It didn't work, when an ATM was out of receipt.	1	1.00%	

6. What recommendations can be provided to ensure the efficiency of the implementation of cardless ATM withdrawals, promoting their successful adoption within the Philippine banking system?

Table 11: FREQUENCY, PERCENTAGE, & RANK DISTRIBUTION OF PARTICIPANTS' RECOMMENDATIONS FOR EFFICIENCY

Recommendations for Efficiency	Frequency	Percentage	Rank
1. Improved user education and awareness campaigns.	83	83.00%	2
2. Enhanced security measures (e.g., biometric authentication)	86	86.00%	1
3. Streamlined user interface and mobile app design.	52	52.00%	6
4. Integration of real-time transaction notifications.	65	65.00%	3
5. Increased customer support availability for cardless ATM issues.	61	61.00%	4
6. Collaboration with merchants to expand cardless ATM access points	48	48.00%	7
7. Incentives or rewards for cardless ATM usage	46	46.00%	8
8. Regular system updates and maintenance.	56	56.00%	5
9. <i>Other (please specify)</i>			
9.1. Lower service fee to promote cardless atm usage	1	1.00%	
9.2. Increase screen sensitivity of ATMs	1	1.00%	

4. SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

Summary of Findings

After collecting, analyzing, and interpreting data from the Survey Questionnaire, the study revealed the following noteworthy findings:

1. What is the demographic profile of the participants in terms of:

The findings from the demographic profile of 100 participants reveal that the majority of participants are between the ages of 25 to 44 years old (69%), with 37% in the 25-34 age group and 32% in the 35-44 age group. Females constitute the majority, accounting for 66% of the participants, while males make up 34%. Most participants are employed (81%), followed by students (11%), retirees (2%), and self-employed individuals (5%). Regarding technological literacy, 56% of participants are comfortable, and 33% are very comfortable with technology. In terms of primary financial goals, savings are the top priority for 62% of participants, followed by investment goals for 28%, and daily expenses for 10%.

These demographic findings suggest that cardless ATM access adoption is diverse across different age groups and employment statuses. While younger adults and those in the workforce dominate, there is still representation from older age groups, retirees, and students. The majority's comfort with technology aligns with the overall acceptance of cardless ATM access. Understanding the primary financial goals of participants, with a focus on savings and investment, can help banks tailor their cardless ATM services to meet various financial objectives.

2. What is the impact of the implementation of cardless ATM access on overall customer satisfaction?

The findings from the assessment of the impact of the implementation of cardless ATM access on overall customer satisfaction indicate that the top-ranked factors influencing customer satisfaction are convenience and ease of use (83%), followed by faster transaction processing (66%), and the availability of cardless ATMs (41%). These findings imply that customers highly value the convenience and speed offered by cardless ATM access, contributing significantly to their overall satisfaction. However, the lower rankings for factors like offering additional security features (40%), enhancing trust in the bank (21%), and simplifying the setup process (32%) suggest that there is room for improvement in these areas to further enhance overall customer satisfaction.

3. What factors influence the acceptance rate of cardless ATM withdrawals over time?

Trust in banking institutions is the highest-ranked factor with a mean score of 3.32, indicating that participants strongly agree with the trustworthiness of their banks in the context of cardless ATM access. Value proposition and benefits are also positively perceived, with a mean score of 3.18. Security and privacy concerns, convenience and user experience, and social influence and peer adoption all receive mean scores of around 2.96, indicating general agreement among participants in these areas.

The findings suggest that trust in banks and the perceived value of cardless ATM access are strong drivers of acceptance. While security and privacy concerns are present, they do not significantly hinder acceptance, and participants generally find the technology convenient and are influenced by peers.

4. What significant difference exist on the factors influence the acceptance rate of cardless ATM withdrawals over time as to abovementioned variables?

The ANOVA test results indicate that there are significant differences over time in two out of the five variables influencing the acceptance rate of cardless ATM withdrawals. Trust in banking institutions and the value proposition and benefits show statistically significant differences, with p-values of 0.001 and 0.047, respectively. This suggests that participants' trust in their banks and their perception of the benefits offered by cardless ATM access have evolved over time. On the other hand, security and privacy concerns, convenience and user experience, and social influence and peer adoption do not exhibit significant differences over time, with p-values above the typical significance level of 0.05.

The findings suggest that trust in banking institutions and the perceived value proposition of cardless ATM access are dynamic factors that change over time. This highlights the need for banks to continuously monitor and adapt their strategies to maintain and enhance trust levels and emphasize the benefits of cardless ATM access.

5. What are the potential security risks associated with the implementation of cardless ATM accounts in the Philippine banking sector?

According to the results, the following is a ranking of security issues:

1. Unauthorized access to accounts and hackers' account takeover
2. Data breaches and information leaks
3. Fraudulent transactions
4. Malware or virus threats on mobile devices
5. Device theft
6. Vulnerabilities in cardless ATM technology
7. Lack of user authentication
8. Insufficient encryption of data

Evidently, the primary concern is illegal access, and account security is the highest priority.

6. What recommendations can be provided to ensure the efficiency of the implementation of cardless ATM withdrawals, promoting their successful adoption within the Philippine banking system?

Based on percentages, the recommendations are ranked as follows:

1. Enhanced security measures
2. Improved user education and awareness campaigns
3. Real-time transaction notifications
4. Increased customer support availability
5. Regular system updates and maintenance
6. Streamlined user interface and mobile app design
7. Collaboration with merchants to expand access points
8. Incentives or rewards for cardless ATM usage
9. Lower service fees
10. Increased screen sensitivity for ATMs

It appears that the main concerns among participants are security and education, with features that improve user experience and convenience coming in second and third.

Conclusions

The study draws several key conclusions based on its findings. Firstly, the participants, who are predominantly employed, exhibit a high comfort level with technology, and savings emerge as a primary financial goal, emphasizing the importance of financial security and future planning. The gender distribution is fairly balanced, with a slightly higher percentage of females participating. Secondly, the introduction of cardless ATM access has positively impacted overall customer satisfaction, driven primarily by convenience and speed. However, there is an opportunity for banks to enhance security features, build trust, and simplify the setup process to further elevate customer satisfaction. Thirdly, participants generally show a positive attitude towards cardless ATM access, with trust and the perceived value proposition being influential factors in its acceptance. Additionally, it is observed that trust in banking institutions and the perceived benefits of cardless ATM access have evolved over time. However, security risks associated with this technology remain a significant concern for participants, emphasizing the need to address potential vulnerabilities in technology and data security. Lastly, participants underscore the critical importance of security and user education for the efficient implementation of cardless

ATM access, suggesting that these factors should be prioritized by banking institutions to enhance user satisfaction and adoption rates.

Recommendations

Based on the significant findings and conclusions of the study, several recommendations are proposed for the Land Bank of the Philippines regarding cardless ATM access. Firstly, the bank should ensure accessibility for all customer segments, including those with disabilities and the elderly, by implementing user-friendly interfaces and providing appropriate support. Clear and simple design with understandable buttons and icons is essential. Secondly, regular updates to authentication protocols and anti-fraud mechanisms are advised to stay ahead of evolving threats, accompanied by educating customers about the security features of cardless ATM access. The bank should maintain two-factor authentication and encrypted communication to enhance security. Thirdly, keeping the cardless ATM technology up-to-date with the latest software and hardware improvements is crucial, requiring regular maintenance, security audits, and penetration tests. Fourthly, continuous promotion of the benefits of cardless ATM access through marketing campaigns is recommended, emphasizing security features and developing educational materials. Fifthly, establishing a dedicated customer support channel for security-related queries and issues is important, offering various contact methods for user convenience. Lastly, creating effective feedback channels to gather insights from customers and using this feedback for iterative improvements in service is essential. The bank should maintain records of actions taken and establish a systematic approach to sorting and evaluating client input for ongoing service enhancement.

RESEARCH OUTPUT

The study's comprehensive policy recommendations for banks and financial institutions aiming to promote and enhance the adoption of cardless ATM access center around key areas. These include prioritizing and investing in robust security measures, implementing advanced authentication methods, conducting ongoing user education campaigns, streamlining user interfaces for a seamless experience, and integrating real-time notifications to enhance transparency and security. Additionally, the recommendations emphasize the importance of efficient customer support, collaboration with merchants to expand access points, offering incentives for cardless ATM usage, regular system updates, transparent communication, lower service fees, technical improvements, and establishing a customer feedback mechanism. These strategies collectively address security concerns, improve user experience, and aim to enhance overall customer satisfaction, fostering greater trust and broader adoption of cardless ATM access within the banking sector.

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