



Enhancing User Experience in Private Bank Mobile Banking: Insights from Management Information System Analysis

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ABSTRACT

This research explores the impact of Management Information Systems (MIS) on user experience in private bank mobile banking, focusing specifically on the effectiveness of m-BCA. Utilizing a descriptive quantitative approach, the study aims to understand how mobile banking features, including accessibility, user interface, security, and functionality, influence user satisfaction. Data were collected through direct experimentation with the m-BCA application, complemented by analysis from secondary data sources and a survey of 30 users. Results indicate that 93.3% of users find m-BCA effective for routine banking needs, attributing high ratings to its convenience and functionality. However, while 80% of respondents appreciate the current security measures, 20% cite the absence of advanced security features such as fingerprint and facial recognition as a drawback. The study also reveals mixed feedback on the user interface; while the straightforward design aids usability, 10% of users express a desire for a more visually appealing interface. Despite these areas for improvement, m-BCA's comprehensive set of features is generally seen as effective, supporting users in performing essential transactions with ease and reliability. The findings suggest that enhancing interface aesthetics and integrating advanced security options could further boost user engagement and trust in mobile banking applications, underscoring MIS's role in meeting evolving customer expectations in digital banking.

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1. INTRODUCTION

The ongoing advancements in technology have fundamentally reshaped various sectors, with the financial industry experiencing significant shifts due to digital innovation [1], [2]. The rapid growth of mobile banking has changed how consumers interact with financial institutions, offering customers

unprecedented convenience and access to banking services, such as fund transfers, bill payments, and account inquiries, directly from their smartphones. In emerging markets like Indonesia, mobile banking adoption has accelerated, driven by customer demand for easier access to financial services and the flexibility to transact without the need to visit physical branches [3]. PT Bank Central Asia (BCA), one of Indonesia's leading private banks, has developed its mobile banking service, m-BCA, which is widely recognized for its functionality and ease of use among Indonesian consumers

Mobile banking services require robust Management Information Systems (MIS) to support secure, efficient, and user-friendly platforms that cater to the demands of modern consumers [4]. MIS is integral to managing the back-end processes, real-time data handling, and security protocols that ensure mobile banking applications can operate smoothly and meet high user expectations [5]. By providing a stable framework for managing information, MIS enables financial institutions to deliver mobile banking services that align with consumer expectations for reliability and usability [6]–[8]. In the case of m-BCA, MIS underpins the mobile platform's operations, supporting millions of transactions while also handling critical tasks like data encryption and user authentication.

Despite the advantages of mobile banking, issues such as user interface (UI) simplicity, accessibility, and security remain ongoing challenges [9]–[11]. Feedback from m-BCA users highlights specific areas where improvements are necessary, including the introduction of biometric authentication options like fingerprint and facial recognition, which 20% of users prefer for increased security. Furthermore, 10% of m-BCA users have expressed a desire for a more visually appealing design, suggesting that while the application provides a straightforward experience, enhancing its interface could make it more engaging. These user insights indicate that, although m-BCA effectively meets basic banking needs, there is still room for optimization to enhance the user experience, especially in terms of security and design.

Previous research in mobile banking emphasizes the importance of system quality, ease of use, and security in influencing user satisfaction. Studies [12]–[15] indicate that high-quality systems that focus on usability and secure transactions significantly impact customer retention and loyalty. These studies underscore that as mobile banking becomes increasingly prevalent, financial institutions must prioritize system enhancements that align with customer needs and evolving technology. The role of MIS in achieving this goal is critical, as it serves as the backbone of mobile banking applications, facilitating both functionality and security, essential components for fostering trust and sustained user engagement.

The theoretical foundation of this study draws on the Technology Acceptance Model (TAM) and User-Centered Design (UCD) principles, which posit that perceived usefulness, ease of use, and security play crucial roles in technology adoption. MIS supports these factors by providing a structured framework that enhances application efficiency, facilitates user-friendly navigation, and ensures data protection [16]. By aligning MIS design with these theoretical models, financial institutions can better address the expectations of digital banking users. For mobile banking applications like m-BCA, integrating these models can support the design of features that not only meet functional requirements but also provide a secure and seamless experience that builds customer loyalty.

However, practical challenges persist, particularly in emerging markets where infrastructure and technological adoption rates vary widely. Although m-BCA leads in user adoption in Indonesia, specific challenges, such as limited biometric security features and design simplicity, impact its ability to fully meet user expectations. Addressing these challenges involves a continuous evaluation of MIS to adapt to the changing needs of consumers who increasingly value security and ease of use in their digital interactions. In this context, the role of MIS extends beyond operational support, becoming an essential factor in optimizing the overall user experience and competitive positioning of mobile banking services.

Given these challenges, this study aims to assess the effectiveness of MIS in enhancing mobile banking user satisfaction, with a particular focus on the functionality, usability, and security aspects of m-BCA. By examining user feedback and analyzing the application's performance, this research seeks to identify opportunities for MIS optimization within m-BCA. The study employs a descriptive quantitative approach, collecting data from surveys and secondary sources to provide insights into how well MIS supports the application in meeting user needs and preferences. By identifying specific areas for improvement, the study offers recommendations to strengthen m-BCA's MIS framework, contributing to the broader discourse on digital banking innovation and customer satisfaction.

Through this research, we aim to contribute to the field of digital banking by exploring the ways in which an optimized MIS framework can support a superior user experience. The findings highlight the importance of aligning MIS components with user needs, particularly in a highly competitive market where digital services are rapidly evolving. By examining the relationship between MIS functionality and user satisfaction, this study provides practical insights that can inform the design and improvement of future mobile banking applications.

2. RESEARCH METHOD

This study adopts a descriptive quantitative approach to examine the role and effectiveness of the Management Information System (MIS) within the m-BCA mobile banking application. The descriptive quantitative methodology was chosen due to its capacity for providing an in-depth and structured analysis of the application's functional attributes, particularly in a highly dynamic context like mobile banking. Descriptive studies are effective in summarizing user interactions with systems, helping to highlight patterns and specific areas where performance may vary across different user demographics. This approach is particularly beneficial for investigating how MIS contributes to user satisfaction by assessing key variables such as accessibility, user interface design, and data security. By focusing on these aspects, the study aims to provide actionable insights for optimizing the user experience in digital banking platforms. Through systematic data collection and analysis, descriptive quantitative research allows for an objective evaluation of the performance of MIS in meeting user expectations. Thus, this research method is well-suited to offer a comprehensive view of m-BCA's efficacy in providing a user-centered mobile banking experience.

The data collection process utilized a blend of primary and secondary sources, allowing for a multifaceted understanding of user experiences with the m-BCA application. Primary data was collected through direct interactions with m-BCA, supplemented by surveys targeting a sample of active users. These surveys focused on gathering quantitative feedback on users' perceptions of the application's usability, security features, and general functionality. By employing primary data, the study captures firsthand insights from actual users, which are crucial for an authentic evaluation of the MIS in real-world settings. Furthermore, direct user engagement through surveys ensures that feedback reflects the application's current performance rather than outdated or generalized perceptions. To enhance data reliability, participants were selected through a simple random sampling method, ensuring a balanced representation across various demographic categories. This method contributes to minimizing sampling bias and maximizing the generalizability of the findings, providing a robust foundation for analyzing user responses.

The primary sample consisted of 30 users, carefully chosen to represent a diverse user base with varying levels of familiarity with mobile banking. This selection included employees, students, and educators, aiming to reflect a range of user backgrounds and digital proficiency levels. Such diversity within the sample helps to capture a broad spectrum of user experiences, allowing the study to identify potential disparities in satisfaction and usability based on demographic differences. For example, students might prioritize ease of access and intuitive design, whereas employees might focus more on security and efficiency due to frequent transactions. By analyzing these varying perspectives, the study is positioned to uncover insights into how different user segments interact with and perceive the m-BCA application. Additionally, by accounting for demographic diversity, the study can offer tailored recommendations for enhancing MIS functionalities that resonate with specific user needs. Ultimately, this approach strengthens the validity of the findings and their relevance across a broad user demographic.

Secondary data collection involved gathering insights from established and reputable sources, including industry publications and reports from Indonesia's Financial Services Authority (OJK). Reports from OJK provided valuable context on mobile banking trends, regulatory standards, and security benchmarks that are integral to understanding the industry framework within which m-BCA operates. Another significant secondary source was the Top Brand Award, which recognizes market leaders in various sectors, including mobile banking. This award's insights contributed to situating m-BCA's position in the broader market landscape, offering a benchmark for comparing user satisfaction levels. Secondary data provided a macro-level view of industry standards, which, when combined with primary data, facilitated a comprehensive analysis of m-BCA's strengths and areas for improvement. By integrating secondary data, the study benefits from established benchmarks, making the findings more contextualized and relevant to ongoing discussions within the mobile banking sector. These sources also reinforce the findings' validity, supporting conclusions with data from credible and authoritative industry bodies.

Data analysis focused on quantifying user responses to various aspects of the application, particularly in terms of accessibility, interface design, and security. Accessibility, a key aspect of user satisfaction, was evaluated by examining ease of navigation, login processes, and the availability of core banking functionalities within m-BCA. Interface design, another focal point, was assessed based on user feedback about visual appeal, layout intuitiveness, and overall aesthetic engagement. Security, an essential factor for any banking application, was analyzed by examining user perceptions of data protection measures, such as encryption and biometric authentication options. By isolating these dimensions, the study offers a detailed perspective on each factor's contribution to the overall user experience. This approach enables a granular evaluation, allowing for specific recommendations that address distinct aspects of MIS that may enhance user satisfaction. The multidimensional analysis provides a nuanced understanding of how MIS facilitates or inhibits user satisfaction within m-BCA, ultimately contributing to the broader discussion on digital banking improvements.

Each aspect of user feedback was quantified to assess the application's effectiveness in meeting customer expectations. For instance, in evaluating accessibility, users were asked to rate their ease of access to essential banking features like fund transfers, account balance checks, and bill payments. The ratings were then averaged to identify general trends and pinpoint areas requiring improvement. Similarly, interface design was quantified by analyzing user preferences related to visual layout, color schemes, and intuitive navigation paths. Security perceptions were quantified by assessing responses to questions regarding the reliability of login mechanisms and data protection protocols. By converting qualitative feedback into quantitative data, the study achieves a level of objectivity that enhances the reliability of the findings. This quantification allows for clear comparisons, providing insights into which aspects of the MIS are most successful in meeting user needs and where enhancements could yield the greatest impact.

The study's geographical focus in West Jakarta provides additional contextual relevance, capturing the regional perspective on mobile banking usage within Indonesia. West Jakarta is a bustling commercial and educational hub, with a population representing a mix of professional, academic, and student demographics. This setting offers a valuable cross-section of mobile banking users, contributing to a rich dataset for analyzing m-BCA's performance. The findings from this region could reflect broader trends applicable to similar urban areas, enhancing the study's applicability within Indonesia. The local focus also facilitates targeted recommendations for m-BCA, ensuring that proposed MIS enhancements are relevant to the specific demands of urban users. Conducting the study in this context also underscores the practical implications for m-BCA, providing actionable insights for addressing user needs within comparable demographic and socioeconomic profiles.

Overall, this study's methodology, combining primary and secondary data with descriptive quantitative analysis, aims to comprehensively evaluate the MIS components that support m-BCA's mobile banking functionality. By systematically assessing user feedback alongside industry benchmarks, the study provides actionable insights for improving MIS in mobile banking, with implications for enhancing user satisfaction and digital banking engagement.

3. RESULTS AND DISCUSSION

The rapid advancement of technology, particularly in computer and telecommunications systems, has significantly influenced the banking industry, facilitating the growth of banking information technology systems (TSI). TSI in banking serves a crucial role in processing financial data and enabling electronic services through computers, telecommunications, and other electronic means. The system's application aims to improve efficiency in task execution and enhance service delivery to the public, driving banks to increasingly integrate advanced technology within their operations. Through digital transformation, banks can streamline management processes, resulting in easier and faster transaction capabilities for customers. As competition intensifies in the banking sector, technological adaptation has become paramount, evidenced by banks continuously enhancing their systems to align with both business and customer needs. For example, the Financial Services Authority (OJK) has recorded a substantial increase in mobile and internet banking usage, surging by 300% in recent years, partly due to the COVID-19 pandemic and accelerated digital service development. However, this shift has also led to the closure of banks unable to keep pace with technological demands, underscoring the critical nature of robust digital adaptation in banking.



Figure 1. BCA Mobile Home display
Source: BCA Mobile Application 2022

The study collected insights from mobile banking application data, which were subsequently analyzed to draw meaningful conclusions on the effectiveness of the information systems in use. The m-BCA

application's main interface (Figure 1) presents a range of essential services, including m-BCA (mobile banking), KlikBCA (internet banking), Info BCA (general information services), new account setup, access code changes, and Flazz for NFC-enabled Android devices. Each of these features provides distinct functionalities, with m-BCA allowing direct banking transactions via mobile without requiring SIM card changes, ensuring convenience and usability. KlikBCA and Info BCA offer extended digital services, with KlikBCA supporting internet banking capabilities through web browsers, while Info BCA delivers general information about BCA services. Additionally, m-BCA's new account feature simplifies account creation, and the Flazz service offers NFC support for checking balances and transaction histories on compatible devices. Collectively, these services reflect BCA's commitment to offering comprehensive digital banking solutions.



Figure 2. Features on m-BCA

Source: BCA Mobile Application 2022

The main functionalities within m-BCA further support essential banking needs, as shown in Figure 2, which illustrates key service features such as m-Info, m-Transfer, m-Payment, m-Commerce, m-Admin, BCA Keyboard, Lifestyle services, and QRIS for QR code transactions. Among these, m-Transfer is one of the most frequently used features, enabling users to perform transfers within BCA, across banks, and via virtual accounts. Meanwhile, m-Info provides access to account balances, transaction histories, and credit card information, allowing users to retrieve essential data quickly. The Lifestyle feature extends the app's usability to various non-banking needs, such as booking flights, purchasing event tickets, and buying shopping vouchers, illustrating m-BCA's goal to integrate diverse functionalities for a more versatile user experience.

Table 1. BCA Mobile's effectiveness percentage data (Source: Primary Data, year 2022)

Information	Percentage		
	Don't agree	Disagree	Agree
m-BCA easily accessible anywhere?		6.7%	93.3%
m-BCA has served as needed?		6.7%	93.3%
The m-BCA display has access speed in finding the required information and providing complete information?	3.3%	10%	86.7%
m-BCA provides a good security guarantee?		20%	80%

To assess the effectiveness of m-BCA, the study focused on three core functions of mobile banking: convenience, practicality, and ease of use. Data were gathered and analyzed from survey responses, with effectiveness measured in terms of the application's accessibility, ability to meet user needs, and ease of performing routine transactions. Results indicated that m-BCA was generally favored for its comprehensive and modern features, which eliminate the need for branch visits. However, certain limitations were identified, such as the restricted transaction history in the mutation feature, which displays only the last seven days of account activity. This limitation requires users seeking longer histories to visit branch offices, which reduces convenience and increases time spent. Furthermore, while the simple user interface (UI) design is accessible,

some users expressed a desire for more visually appealing aesthetics to enhance the experience, suggesting that BCA prioritizes functional design.

Survey data on m-BCA's accessibility revealed that 93.3% of respondents found the application effective for everyday banking activities (Table 1). However, 6.7% of users reported difficulties, citing factors such as network interruptions, server downtimes, and limited accessibility for certain user groups. Additional feedback indicated that customer service response times could be improved, particularly in addressing user issues. Moreover, certain m-BCA features were found to have limited accessibility for a broad demographic range, with some users noting that the mutation feature's restriction to seven-day histories is inadequate for their needs.

The user interface simplicity in m-BCA presents both strengths and limitations, with 86.7% of respondents valuing its efficient design, while 10% expressed a need for more attractive visual elements (Table 1). A small percentage (3.3%) also desired an enhanced UI for a more engaging user experience, though the minimalistic layout was praised for its ease of navigation and operational stability. Security emerged as an essential factor, with 80% of users rating m-BCA's security positively, but 20% preferred the addition of biometric authentication features like fingerprint and face recognition. This feedback highlights the challenge of balancing simplicity with additional security and aesthetic improvements to create a more comprehensive user experience.

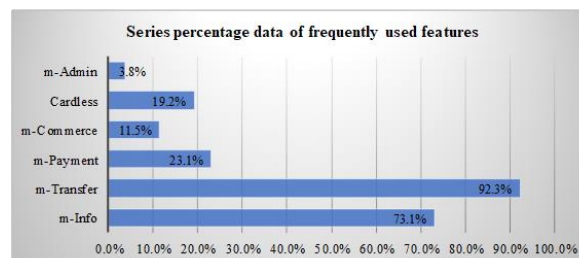


Figure 3. Percentage data of frequently used features.

Source: Primary data, year 2022

Usage data revealed that the most frequently accessed features were m-Transfer (92.3%) and m-Info (73.1%) (Figure 3), reflecting user preferences for transaction services and balance inquiries. Conversely, less commonly used features included m-Admin (3.8%), m-Commerce (11.5%), Cardless (19.2%), and m-Payment (23.1%), indicating potential areas for increasing awareness or enhancing these services. The heavy use of m-Transfer suggests that users prioritize efficient transfer functionalities, while the limited engagement with m-Commerce and other less frequently accessed features may reflect areas where user education or feature adjustments could improve overall usage and satisfaction.

4. CONCLUSION

This study underscores the critical role of Management Information Systems (MIS) in enhancing mobile banking experiences, particularly in the m-BCA application. The results reveal high user satisfaction, with 93.3% of respondents indicating that m-BCA is effective for routine banking activities, highlighting the convenience and accessibility it provides by reducing reliance on branch visits. Key features such as m-Transfer and m-Info are frequently used, with 92.3% and 73.1% of users, respectively, favoring these functionalities for their ease in handling transactions and accessing account information. However, the study also identifies areas for improvement, as 20% of users expressed a need for advanced security features like fingerprint and facial recognition, which are now standard expectations for secure digital interactions. Moreover, while 86.7% of users appreciated the straightforward user interface, 10% voiced a preference for a more visually appealing design to enhance engagement. These findings suggest that while m-BCA's MIS framework is generally robust, integrating advanced biometric security options and a refreshed UI design could further improve user satisfaction and trust. Overall, the study emphasizes the need for responsive MIS enhancements to meet evolving user expectations in the competitive landscape of digital banking.

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