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THE INFLUENCE OF CONSUMER INTENTION TO ADOPT MOBILE BANKING APPLICATIONS: A REVIEW OF THEORETICAL FRAMEWORKS

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Abstract:

In today's digital landscape, mobile banking has become a core element of the financial sector, providing both convenience and greater accessibility for customers. Nevertheless, identifying the elements that truly drive user adoption and subsequent engagement remains a significant hurdle for banking institutions. This research sets out to investigate the nuanced aspects of how users adopt technology, focusing specifically on the context of Hangzhou City Commercial Bank. By exploring the lasting impact of factors such as perceived external control and an individual's computer playfulness, this study aims to deepen understanding regarding the intentions and actual behaviors demonstrated by those who use mobile banking services. Drawing upon the foundation of the Technology Acceptance Model 3 (TAM3), the research plan integrates perceived ease of use to act as a mediating variable, helping dissect the intricate connections between outside influences and a user's intention to behave in a certain way. The study employ a quantitative research framework, utilizing a structured questionnaire intended for distribution among customers of Hangzhou City Commercial Bank, with a target sample size of five hundred participants. Key steps in the methodology encompass a thorough literature review, the process of developing the survey instruments, gathering the necessary data, and conducting statistical analysis, primarily through structural equation modeling. Ultimately, this research endeavor intends to uncover the underlying motivators impacting user uptake, thereby offering valuable, actionable insights for the bank to refine and improve its mobile banking service offerings. The anticipated results stand to contribute meaningfully to both advancements in the theory behind technology acceptance models and practical recommendations for the financial sector aiming to boost user involvement and overall satisfaction. This document presents the foundational

reasons, theoretical background, planned methods, and expected contributions of the upcoming study, welcoming further discussion and critique to refine and solidify the design of this research initiative.

Keywords:

Mobile Banking; Behavioral Intention; Perceptions Of External Control; Computer Playfulness; Perceived Ease Of Use; TAM3

Introduction

The adoption of mobile banking services is influenced by various factors that significantly affect users' decisions. Mobile banking applications have significantly transformed personal finance management by providing users with convenient, efficient, and personalized services. These apps enable users to conduct transactions, check balances, and access financial information anytime, anywhere. The emphasis on personalization, ease of use, and security has made mobile banking a preferred choice among consumers, particularly those aged 18-60. The following sections elaborate on key aspects of mobile banking applications. Users highly value personalization features, which allow customization of the app interface to meet individual needs (Tika, Rifky Lana, Eva Yuniarti, Apriani, & Ahmad, 2024). Personalization enhances customer satisfaction and loyalty, leading to increased usage of mobile banking services (Nawaz, Motiwalla, & Deokar, 2018). Data security and privacy concerns are paramount, influencing user adoption and engagement with mobile banking (Zhang, Lu, & Kizildag, 2018). Trust in financial institutions plays a critical role in the acceptance of mobile banking technologies (Zhang et al. , 2018). The growth of retail digital financial users has slowed, with mobile banking emerging as the primary channel for financial transactions (Driga, 2015). ACI Worldwide and Aite Group found that 80% of smartphone users engage in mobile banking, indicating a strong correlation between smartphone adoption and mobile banking usage (Khan, 2014). While mobile banking apps are increasingly popular, some users remain hesitant due to security concerns and the potential for data breaches. Addressing these issues is crucial for further adoption and trust in mobile banking services.

Understanding these determinants is essential for financial institutions that aim to enhance their products and effectively meet user needs. Key factors affecting the adoption of mobile banking include perceived usefulness, perceived ease of use, security, and compatibility. Among them, the key factors affecting adoption are perceived usefulness and ease of use. Experts point out that if users find mobile banking beneficial and easy to operate, they are more likely to adopt mobile banking. Studies have shown that these factors have a positive impact on behavioral intentions for mobile banking (Cera & Khan; Jayamali & Gunaratna, 2024). In addition, security and trust are also important. Some experts point out that perceived security is crucial, and users prioritize privacy and trust in mobile banking services. A study found that perceived security significantly affects acceptance, overshadowing perceived risk (Islam, Hasan, Tawfiq, Bhuiyan, & Faisal-E-Alam, 2024). Finally, there is the impact of compatibility and innovation. The consistency of mobile banking services with users' lifestyles and existing technologies can increase adoption rates. Compatibility with user values and technological self-efficacy also play a vital role (Mefoute Badiang & Nkwei, 2024; Shaikh & Amin, 2024). While these factors promote the adoption of mobile banking, some users remain hesitant due to concerns about security and the complexity of the technology. Addressing these issues is critical for financial institutions to promote the acceptance and use of mobile banking services.

The interplay between perceived of external control and computer playfulness significantly influences the adoption of mobile banking services. Perceived of external control reflects users' beliefs about how external factors affect their banking outcomes, while computer playfulness pertains to the enjoyment and engagement users derive from mobile banking. Understanding these constructs can enhance user acceptance and satisfaction. First, Perceived of external control Influence on Use Intentions, Research indicates that perceived financial control is a key driver of mobile banking use intentions, with significant differences noted between adopters and non-adopters (Saeed, 2013). Second, Factors that Factors Affecting Control, Elements such as ease of navigation and facilitating conditions are crucial, as they enhance users' sense of control over their banking activities (Saeed, 2013). In addition, Factors that Computer Playfulness on Engagement and Enjoyment, The enjoyment derived from mobile banking can lead to increased usage, as users who find the experience playful are more likely to engage with the service (Asif, Khan, Alhumoudi, & Wasiq, 2023). In addition, Factors that Impact on Adoption, Playfulness can mitigate perceived risks associated with mobile banking, fostering a more positive attitude towards its use (Aldammagh, Abdeljawad, & Obaid, 2021). While perceived of external control and computer playfulness are vital for enhancing mobile banking adoption, some users may still prioritize security and privacy concerns, which can overshadow these factors (Widyadhana, Handayani, & Larasati, 2022).

The relationship between perceived of external control, computer playfulness, and behavioral intention toward mobile banking adoption is multifaceted and influenced by various psychological and technological factors. Understanding these dynamics helps identify motivations and barriers to using mobile banking. The following are key aspects that elucidate this relationship. First, perceived of external control refers to users' beliefs about their ability to influence interactions with mobile banking applications. Perceived of external control influences higher perceived control, which increases user confidence and thus adoption intention (Celik & Ozkose, 2023). Core factors are factors such as facilitating conditions and performance expectations that contribute significantly to perceived control (Cera & Khan). Second, computer playfulness is the enjoyment and engagement that users experience when interacting with technology. Impact on adoption: Playfulness can enhance the user experience, making mobile banking more attractive and increasing the likelihood of adoption (Cera & Khan). Incorporating game-like elements into application can enhance playfulness, which can positively influence user intention (Cera & Khan). Finally, the key determinants of behavioral intentions are attitude, trust, and perceived risk are crucial in shaping users' intention to adopt mobile banking (Aldammagh et al. , 2021; Obaid, 2021). The social context of behavioral intentions, the role of social norms and peer behavior can significantly influence an individual's intention to adopt mobile banking (Ahmed, Kader, Rashid, & Nurunnabi, 2017). While the focus is on positive influences, it is important to consider that perceived risk and security concerns may prevent users from adopting mobile banking, highlighting the need for banks to effectively address these barriers.

The purpose of this study is to explore the current state of knowledge on the influence of perceived of external control and computer playfulness on behavioral intention in mobile banking adoption.

A Review Of Factors Influencing Mobile Banking Adoption And Model Discussion

Theoretical Frameworks

The Technology Acceptance Model (TAM) has evolved significantly, with TAM3 being the latest iteration that incorporates additional constructs to enhance understanding of technology acceptance. This model emphasizes the role of social influence, situational variables, and external factors in shaping attitudes and intentions towards technology adoption. The following sections detail the key aspects of TAM3 and its implications:

1. Perceived Usefulness (PU): Users' belief that technology enhances their performance. Studies show high PU scores correlate with positive acceptance, as seen in smart crop management systems where farmers rated PU at 94. 83% (Ampo et al. , 2024).
2. Perceived Ease of Use (PEU): The degree to which technology is perceived as user-friendly. In educational contexts, PEU significantly influences students' acceptance of smartphones, especially post-COVID-19 (Mejía-Mancilla & Mejía-Trejo, 2024).
3. Social Influence: TAM3 acknowledges that peer opinions and social norms impact technology acceptance, highlighting the importance of community in shaping attitudes (Davis & Granic, 2024).

While TAM3 provides a robust framework, its adaptability to rapidly changing technology landscapes poses challenges. The dynamic nature of user preferences and technological advancements may limit the model's generalizability across diverse contexts (Mejía-Mancilla & Mejía-Trejo, 2024). In contrast, some researchers argue that while TAM3 is comprehensive, it may overlook the emotional and psychological factors influencing technology acceptance, suggesting a need for further exploration of these dimensions in future studies (Davis & Granic, 2024).

The Technology Acceptance Model (TAM3) has been extensively utilized across various fields, demonstrating its effectiveness in predicting technology acceptance behaviors. Empirical studies affirm the model's core constructs, such as perceived usefulness and perceived ease of use, as significant predictors of technology adoption. However, criticisms highlight its complexity and a tendency to focus predominantly on individual-level factors, often neglecting broader contextual influences. The following sections elaborate on these aspects. TAM3 has shown strong predictive capabilities in diverse settings, including healthcare and marketing, where perceived usefulness and ease of use are critical for technology acceptance (Musa, Fatmawati, Nuryakin, & Suyanto, 2024; Tsirintani, 2024). Numerous studies validate TAM3's constructs, indicating its robustness in explaining user behavior across various technologies (Davis & Granic, 2024). The model's intricate nature can hinder its practical application, making it less accessible for some researchers and practitioners (Agustini, Gaffar, Dirgantari, & Furqon). Critics argue that TAM3 overemphasizes individual factors, overlooking the impact of social and organizational contexts on technology acceptance (Agustini et al. ; Tsirintani, 2024). The model has been criticized for not adequately addressing hierarchical influences within organizations, which can affect technology adoption (Davis & Granic, 2024). While TAM3 remains a foundational framework in technology acceptance research, its limitations prompt ongoing discussions about integrating broader contextual factors and simplifying its application for enhanced relevance in real-world scenarios.

The Technology Acceptance Model (TAM3) continues to be a pivotal framework for understanding technology acceptance behavior, influencing both research and practical applications. Its adaptability allows organizations, policymakers, and technology developers to glean insights into user acceptance, particularly as technology evolves. Future research directions for TAM3 emphasize the integration with other models, exploration of emerging technologies, and the use of longitudinal studies to track acceptance behavior over time. TAM3

can be effectively combined with the Theory of Planned Behavior (TPB) to enhance understanding of user intentions and behaviors (Jenifer & Sondari, 2023). This integration can provide a more comprehensive view of the factors influencing technology acceptance. The model's application has expanded to various sectors, including marketing and software engineering, demonstrating its versatility (Börstler, bin Ali, Petersen, & Engstrom, 2024; Musa et al. , 2024). Future studies should focus on how TAM3 can adapt to new technological landscapes, such as AI and IoT. Employing longitudinal studies can reveal how acceptance behaviors change over time, providing deeper insights into user engagement and technology lifecycle (Davis & Granic, 2024). This approach can help identify trends and shifts in user perceptions, enhancing the model's predictive capabilities. While TAM3 has proven effective, some researchers argue that its simplicity may overlook complex user behaviors and contextual factors, suggesting a need for more nuanced models that incorporate diverse influences on technology acceptance (Davis & Granic, 2024).

Usability Is No Longer The Focus Of Mobile Banking App Research

The Technology Acceptance Model (TAM) has been instrumental in understanding user behaviors towards mobile banking applications. However, as these applications mature, usability has transitioned from a competitive advantage to a fundamental expectation. Research indicates that users have adapted to established usability standards, leading to a shift in focus towards user experience and satisfaction as critical determinants of user intent. For instance, studies have shown that perceived usefulness and ease of use remain significant, but factors like customer satisfaction and trust are increasingly influential in shaping adoption intentions (Celik & Ozkose, 2023; Nihayah & Purnama, 2024; Zain & Christian, 2023). Additionally, the integration of subjective norms and perceived risk into the TAM framework has provided a more nuanced understanding of user behavior in mobile banking contexts (Celik & Ozkose, 2023). Conversely, while usability may be a baseline requirement, it is essential to recognize that technological advancements and user expectations continue to evolve, necessitating ongoing research to adapt the TAM framework to these changes.

Mobile banking applications are increasingly subject to regulatory requirements that ensure usability and accessibility for a diverse user base, including individuals with disabilities. These regulations create a baseline for usability, which minimizes barriers to user intent. However, the competitive landscape of mobile banking extends beyond mere compliance; it encompasses personalized services, innovative features, and robust security measures that enhance user experience. Regulatory frameworks like the Americans with Disabilities Act (ADA) and the European Accessibility Act (EAA) aim to enforce accessibility standards (bin Ahsan et al. , 2024). Studies reveal significant violations of Web Content Accessibility Guidelines (WCAG) in mobile banking apps, indicating a gap between legal requirements and practical implementation (Alayed, 2024; bin Ahsan et al. , 2024). Beyond basic usability, banks are focusing on personalized services and innovative features to attract users, as evidenced by the growing emphasis on user satisfaction and engagement (Adilla, Jazman, Ahsyar, & Hamzah, 2022). Security remains a critical concern, with banks investing in advanced technologies to protect user data while enhancing usability (Sanjyot, Vaishnavi, Abhijeet, Prof. Priyanka, & Prof. Hitesh Chaudhari, 2024). While regulatory requirements set a foundational level of usability, the ongoing challenge lies in balancing compliance with the need for innovation and user-centric design in a competitive market.

The impact of usability on user intent in mobile banking applications is nuanced, influenced by factors such as application maturity, regulatory requirements, and competitive dynamics. As mobile banking matures, users may prioritize trust and emotional responses over usability alone. To effectively capture user intent, it is essential to extend the Technology Acceptance Model (TAM) by integrating constructs like trust, emotional response, and regulatory compliance. This approach can provide a more holistic understanding of user behavior in mobile banking. Trust significantly affects user adoption, as users are more likely to engage with applications they perceive as secure (Yadav & Shanmugam, 2024). Emotional responses, such as satisfaction and enjoyment, also play a crucial role in user intent (Berto & Bursan, 2023). Compliance with regulations can enhance user confidence, thereby influencing their intent to use mobile banking services (AlSoufi & Ali, 2014). The competitive nature of the banking sector necessitates that banks innovate and improve user experience to retain customers (Hardi, Simorangkir, Hutagaol, Saputra, & Sunardi, 2023). While usability remains important, the interplay of these additional factors suggests that a broader perspective is necessary to understand user intent in mobile banking applications. This complexity highlights the need for ongoing research to adapt to evolving user expectations and market conditions.

Factors Influencing Mobile Banking Applications

Mobile banking adoption varies significantly among individuals, influenced by factors such as user-friendliness, service quality, and privacy concerns. Research indicates that while many banks offer mobile banking services, the actual usage is contingent upon customer satisfaction and perceived usefulness. Understanding these dynamics is crucial for enhancing adoption rates. User-Friendliness and Service Quality are important, A study found that mobile banking user-friendliness and service features significantly impact customer satisfaction, accounting for 58% of the influence on mobile banking services (Nasution & Harahap, 2024). Comparative analyses reveal differences in service quality across various bank types, affecting user satisfaction and adoption rates (Ekantoro & Danajaya, 2024). Privacy Concerns and Perceived Usefulness are important Privacy concerns and perceived invasiveness are critical barriers to adoption, particularly among millennials in emerging markets, where perceived usefulness mediates the intention to adopt mobile banking services (Mgiba & Shukla, 2024). In the UAE, smart banking services, including data analysis and security, positively influence customer intentions to use mobile banking, highlighting the importance of trust and information availability (Banat, Alotoum, & Hashem, 2024). Communication and Awareness are important Effective communication strategies are essential; interpersonal channels are more effective than traditional advertising in raising awareness about mobile banking services (Ruwini & Pushpika, 2024). Conversely, despite the potential benefits, some individuals remain hesitant to adopt mobile banking due to lingering trust issues and inadequate communication from banks, suggesting a need for improved engagement strategies.

Theoretical Framework Development

Previous iterations of the TAM model have primarily focused on Perceived Usefulness (PU) and Perceived Ease of Use (PEOU) as the main determinants of behavioral intention, without explicitly considering external perceived control and computer playfulness. This limitation hinders the comprehensiveness of the model and calls for its expansion to incorporate these aspects (Nohara, Takagi, Sugawara, Gondo, & Nihei, 2023; Valencia & Duque, 2023). The absence of explicit consideration for external perceived control and computer playfulness in TAM, TAM2, and TAM3 restricts the model's ability to fully capture the factors influencing behavioral intention. By neglecting these factors, the model fails to provide a comprehensive understanding of user acceptance and intention to use new technologies. Therefore, it is

necessary to expand the TAM model to include external perceived control and computer playfulness in order to enhance its explanatory power and provide a more comprehensive framework for studying user acceptance and intention to use new technologies (Elyased & Saad, 2023; Harnadi, Prasetya, & Widianoro, 2022) .

Despite the influential contributions of TAM, TAM2, and TAM3, a recurring research gap involves the limited coverage of external factors that shape users' perceptions and intentions (Bo-hyun, 2022; Putri, Affifatusholihah, & Lusianingrum, 2023). Traditional models concentrate on Perceived Usefulness (PU) and Perceived Ease of Use (PEOU); nevertheless, a more holistic understanding of technology acceptance calls for the incorporation of external factors that may affect users' attitudes and behavioral intentions (Kaur & Sharma, 2022; Lyu & Zhang, 2021). Updating the models to include external perceived control and computer playfulness offers a more comprehensive perspective on technology acceptance and provides a valuable foundation for further research in this domain (Rosiana, Hubeis, & Cahyadi, 2020).

The research gaps pertaining to external perceived control and computer playfulness entail deficiencies in the examination of specific dimensions of these constructs. Regarding external perceived control, the dimensions requiring further investigation include perceived communication, perceived control, and perceived feedback (Roy & Mukherjee, 2023). Similarly, computer playfulness is lacking sufficient scrutiny in its dimensions, notably service quality, perceived technology compatibility, and information richness (Brauer, Sendatzki, & Proyer, 2023).

Insufficient attention has been given to the dimensions of perceived communication, perceived control, and perceived feedback in previous research on external perceived control (Chand, 2023). Limited research has been devoted to the constituent elements of computer playfulness, including service quality, perceived technology compatibility, and information richness (Shorbaji, 2023). These research gaps hinder a comprehensive understanding of the influence of external factors on technology acceptance and adoption, as well as the holistic portrayal of users' hedonic experiences and their impact on technology acceptance (Kammerlohr & Paradise, 2023). To bridge these gaps, further scholarly efforts are needed to explore the dimensions of external perceived control and computer playfulness, refining and expanding existing models to gain a more exhaustive appreciation of technology acceptance phenomena (Ajemba & Arene, 2022; Rupasinghe, Maldeniyage, & Perera, 2023).

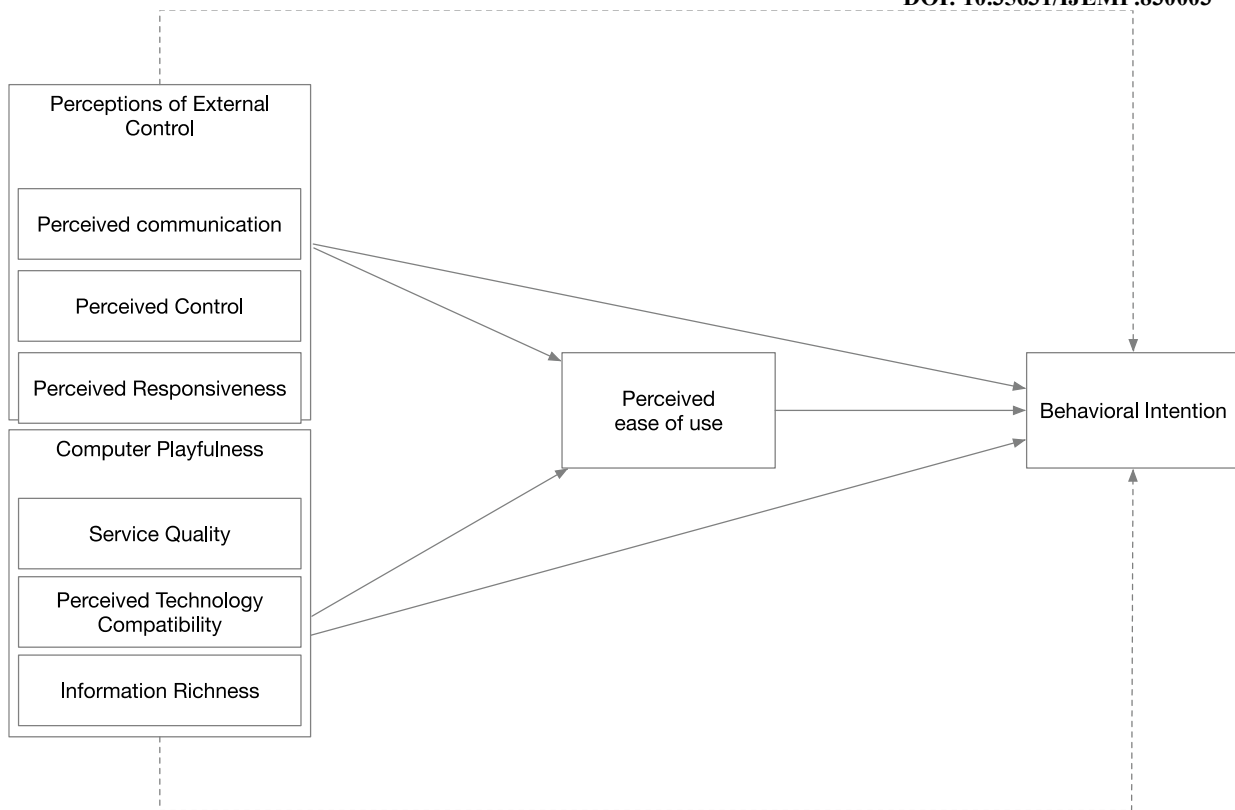


Figure 2. 1: Proposed Model

The Relationship Between Perceptions Of External Control And Behavioral Intentions

Perception of external control is a psychological concept that reflects an individual's belief in the influence of external factors on their behavior, contrasting with internal control perception, where individuals feel their actions dictate outcomes. This perception can significantly impact various domains, including employee performance and decision-making processes. Some researchers believe their behavior is influenced by external forces such as luck, fate, or other people's actions (Syahril, Yusnaena, Mulyati, & Rosa, 2023). Some researchers believe those with an internal locus of control feel their actions directly affect outcomes, leading to different motivational and performance levels (Syahril et al. , 2023). Some researchers believe that both internal and external locus of control perceptions significantly affect employee performance, suggesting that understanding these perceptions can enhance management strategies (Syahril et al. , 2023). Some researchers believe while not directly moderating internal control systems, highlight the importance of recognizing external influences in organizational processes (Dewi, Purwohedi, & Ulupu, 2024). While external control perception emphasizes the role of outside influences, it is essential to consider that individuals can also harness these perceptions to motivate themselves, potentially leading to proactive behaviors in challenging situations. This duality suggests a complex interplay between external and internal factors in shaping behavior and performance outcomes.

The perception of external control encompasses various components, including locus of control, perceived control, and external attribution. Understanding these elements is crucial as they significantly influence individual behavior, decision-making, and mental health outcomes. Locus of control refers to the degree to which individuals believe they can control events affecting them. Those with an internal locus believe they can influence outcomes through their

actions, while those with an external locus attribute outcomes to external factors like luck (Wadsworth, Wessman, Beard, & Bjorgvinsson, 2019). A strong internal locus is associated with proactive behaviors and resilience in the face of challenges (Ly, Wang, Bhanji, & Delgado, 2019). Perceived control is the belief in one's ability to influence their environment and outcomes (Wang, Yang, & Delgado, 2021). Higher perceived control is linked to better mental health, reducing anxiety and depression symptoms (Wadsworth et al. , 2019). It operates through reward-based processes, where opportunities for choice and success enhance feelings of control (Ly et al. , 2019). External attribution involves attributing outcomes to factors outside one's control, such as fate or luck (Wadsworth et al. , 2019). High levels of external attribution can lead to feelings of helplessness and decreased motivation, impacting mental health negatively (Wang et al. , 2021). Conversely, while perceived control and internal locus are generally associated with positive outcomes, excessive reliance on external attribution can hinder personal agency and lead to adverse psychological effects. Understanding these dynamics is essential for developing effective interventions in clinical settings.

The relationship between perceptions of external control and behavioral intentions is significant, as individuals who perceive of external control are less likely to engage in proactive behaviors. This perception leads to a belief that their actions are dictated by external factors, diminishing their motivation to pursue goals. The following sections elaborate on this relationship. perceptions of external control significantly influences intentions, as shown in studies where higher perceptions of external control correlates with increased purchase intentions (Amanda & Marsasi). perceptions of external control mediates the relationship between personal characteristics and entrepreneurial intentions, indicating that individuals with a strong sense of control are more likely to act on their intentions (Idrees, Hassan, Syed, Ahmad, & Khan, 2022). Individuals with a high external locus of control are more influenced by interactive health messages, which enhance their risk perception and intention to engage in health-promoting behaviors (Nah, Oh, & Atkinson, 2023). This suggests that when individuals feel less in control, they may respond more positively to external cues, potentially leading to behavioral change. The desire for a controlled future is linked to emotional responses; lower perceived control can lead to negative emotions and reduced readiness to act (Repin & Dolganov, 2022). This emotional discomfort can further inhibit proactive behavior, reinforcing the cycle of inaction. Conversely, some studies suggest that external control can sometimes motivate individuals to seek support or resources, potentially leading to positive behavioral changes. This highlights the complexity of the relationship between perceptions of external control and behavior.

The relationship between external control perception and behavioral intentions in banking services has been extensively studied, revealing significant insights. External control perception influences users' intentions to adopt mobile banking, online banking, and mobile payment services. This overview delve into the findings from various studies that highlight this relationship. Al-Marroof et al. (2020) identified that external control perception significantly predicts behavioral intentions to use mobile banking applications, emphasizing the role of security perception and bank reputation in user adoption(Sudirman & Kurnianingrum, 2024). Belanche et al. (2020) similarly found that external control perception is a crucial predictor for online banking services, suggesting that users' confidence in the system's security influences their intentions (Lindawati, Handoko, & Hendra, 2023). Wang et al. (2020) confirmed that external control perception also significantly affects intentions to use mobile payment services, indicating a consistent trend across different banking platforms (Celik & Ozkose, 2023). While these studies underscore the importance of external control

perception, it is essential to consider that other factors, such as perceived usefulness and social influence, also play critical roles in shaping behavioral intentions in banking contexts (Becirovic, Zahirovic, Kozarevic, & Okicic, 2023; Chen, Jia, & Wu, 2023).

Overall, the findings of previous studies suggest that external control perception is a significant predictor of behavioral intentions. Individuals with an external control perception are less likely to engage in behaviors that they perceive as being controlled by external factors.

The Relationship Between Computer Playfulness And Behavioral Intentions

Computer playfulness is a multifaceted concept that emphasizes the enjoyment and exploratory nature of interactions with computers. Individuals exhibiting high levels of computer playfulness engage in activities that prioritize creativity and exploration over mere functionality. This tendency is crucial for enhancing user experience and fostering innovative interactions with technology. Below are key aspects of computer playfulness derived from the literature. Experts believe proactive behavior is effective, Individuals actively seek out new experiences and interactions with technology, reflecting a desire for engagement and exploration (Masek, 2024). Experts believe it promotes emotional reinforcement, Positive emotions associated with playful interactions enhance user satisfaction and encourage continued engagement (Masek, 2024). Users approach tasks with a mindset that values discovery and creativity, often leading to innovative outcomes in human-AI interactions (Liapis et al. , 2023). Experts believe that User Experience comes from participation, Designing interfaces that promote playfulness can significantly improve user satisfaction and engagement, as users are more likely to explore and enjoy their interactions (Liapis et al. , 2023). Creating environments that stimulate sensory engagement can encourage playful interactions among adults, reintroducing playfulness into daily life (Storm, 2023). While the focus on computer playfulness highlights its benefits, it is essential to recognize that not all users may prioritize playfulness in their interactions. Some may prefer straightforward, functional engagements with technology, which can lead to a divergence in user experience expectations.

Computer playfulness encompasses several components, including curiosity, imagination, and a playful attitude, which significantly influence behavioral intentions towards technology. Curiosity drives individuals to explore and learn about technology, while imagination fosters creative thinking and the envisioning of new possibilities. A playful attitude encourages experimentation and a lighthearted approach to computer interactions, enhancing engagement and enjoyment in activities such as online shopping and banking. Curiosity is linked to the anticipation of novel information, which motivates exploration and learning about technology (Becker & Cabeza, 2024). In older adults, curiosity and playfulness with smart home devices have been shown to improve digital skills and wellbeing (Strengers et al. , 2022). Imagination allows users to creatively engage with technology, leading to innovative uses and applications (Afonso & Roque, 2015). Children's narratives captured through technology illustrate how imagination can enhance their interaction with digital tools (Canning, Payler, Horsley, & Gomez, 2017). A playful attitude promotes risk-taking and experimentation, making users more likely to engage in various computer-based activities (Strengers et al. , 2022). Conversely, while computer playfulness fosters positive engagement with technology, it may also lead to distractions or over-reliance on digital devices, raising concerns about balance in technology use.

The relationship between computer playfulness and behavioral intentions has been explored in various studies, revealing significant predictors for the adoption of digital services. Notably, computer playfulness has been identified as a crucial factor influencing users' intentions to engage with mobile banking, payment services, and online shopping. This synthesis highlights key findings from recent research. Key Findings on Computer Playfulness, Huang et al. (2020) established that computer playfulness significantly predicts behavioral intentions to use mobile banking applications, emphasizing the role of user engagement in financial technology adoption (Becirovic et al. , 2023). Wang et al. (2020) corroborated this by demonstrating that playful interactions enhance users' intentions to utilize mobile payment services, suggesting that enjoyable experiences can drive technology acceptance (Iskandar, Hartoyo, & Hermadi, 2020). Al-Maroofof et al. (2020) found similar results in the context of online shopping, where computer playfulness positively influenced users' intentions to shop online, indicating a broader applicability of this construct across digital platforms (Bustami, 2022). Conversely, while computer playfulness is a significant predictor, other factors such as perceived usefulness and perceived risk also play critical roles in shaping behavioral intentions, suggesting a multifaceted approach to understanding user engagement in digital environments (Dhingra & Gupta, 2020; Gano-an & Pan, 2024).

Overall, the findings of previous studies suggest that computer playfulness is a significant predictor of behavioral intentions. Individuals with high computer playfulness are more likely to engage in computer-based activities and try new things.

The Relationship Between Perceived Ease Of Use And Behavioral Intentions

Perceived ease of use (PEOU) is a critical factor in the Technology Acceptance Model (TAM), influencing user adoption of mobile banking applications. This concept reflects how easy users find a technology to operate, which significantly impacts their behavioral intentions. The following sections elaborate on the role of PEOU in mobile banking adoption. PEOU directly affects perceived usefulness, which in turn influences user intentions to adopt mobile banking applications (Siagian, Tarigan, Basana, & Basuki, 2022; Song, 2015). Studies show that higher PEOU correlates with increased user satisfaction and acceptance of mobile financial management applications (Priantinah, Aisyah, & Nurim, 2019). PEOU also indirectly affects behavioral intentions through trust, highlighting the importance of user-friendly interfaces in fostering consumer confidence (Munoz-Leiva, Climent-Climent, & Liébana-Cabanillas, 2017; Zhang et al. , 2018). PEOU enhances perceived usefulness, which is crucial for user adoption (Song, 2015). The integration of social influence with PEOU further strengthens its impact on user intentions, suggesting that user perceptions are shaped by their social environment (Song, 2015). While PEOU is vital, some studies indicate that factors like perceived security and trust may overshadow ease of use in influencing user adoption, suggesting a complex interplay of factors in technology acceptance (Munoz-Leiva et al. , 2017; Zhang et al. , 2018).

Perceived ease of use (PEOU) is a multifaceted construct that significantly influences user behavior and technology acceptance. It encompasses several components, including perceived usefulness, perceived complexity, and perceived enjoyment. Understanding these components is crucial for enhancing user engagement and satisfaction with technology. The extent to which users believe that a system enhances their performance or provides desired outcomes (Junejo, Buriro, Ramish, & Salahuddin, 2024). Studies indicate that perceived usefulness is a stronger predictor of behavioral intention than perceived ease of use itself (Junejo et al. , 2024; Paramita & Hidayat, 2023). This refers to how complicated or difficult users perceive a system to be (Natasha, Fahrudi, & Darmawan). A lower perceived complexity often correlates with higher

acceptance and usage rates of technology, as users are more likely to engage with systems they find straightforward (Syahri & Setyawati, 2023). The degree of pleasure derived from using a system (Aulia & Marsasi, 2024). Enjoyment can enhance user engagement, leading to increased usage and positive attitudes towards technology (Aulia & Marsasi, 2024). While perceived ease of use is critical, some studies suggest that perceived usefulness may have a more substantial impact on behavioral intentions, indicating a complex interplay between these constructs in technology acceptance models (Junejo et al. , 2024; Paramita & Hidayat, 2023).

The role of perceived ease of use (PEOU) as a mediator in the relationship between perceived external control and behavioral intentions has been extensively studied across various contexts. Findings consistently indicate that PEOU significantly influences users' intentions to adopt technologies, such as mobile banking and online shopping platforms. Below are key insights from the relevant studies. Al-Maroofof et al. (2020) demonstrated that PEOU mediates the relationship between perceived external control and behavioral intentions to use mobile banking applications, emphasizing the importance of user-friendly interfaces. Wang et al. (2020) found similar results, where PEOU significantly mediated the relationship between perceived external control and intentions to use online shopping platforms, highlighting the necessity for intuitive design. Huang et al. (2020) reinforced these findings, indicating that PEOU is a crucial mediator in the adoption of mobile payment services, suggesting that ease of use directly impacts user engagement. Studies suggest that enhancing PEOU alongside perceived usefulness and trust can lead to stronger behavioral intentions in various applications, including banking and educational systems (Tumenbayar, Amarzaya, & Navchaa, 2019; Widiar, Yuniarinto, & Yulianti, 2023). The quality of the application significantly affects perceived ease of use, which in turn influences user intentions to engage with the technology (Tumenbayar et al. , 2019). While the studies highlight the positive impact of PEOU on behavioral intentions, it is essential to consider that other factors, such as trust and perceived usefulness, also play critical roles in technology adoption. This multifaceted approach suggests that focusing solely on ease of use may overlook other significant determinants of user behavior.

Overall, the findings of previous studies suggest that perceived ease of use is a significant mediator of the relationship between perceived external control and behavioral intentions. This suggests that individuals who perceive a system or technology as easy to use are more likely to form positive behavioral intentions towards it.

Future Research Directions

The Literature Review Highlights The Need For Future Research On Mobile Banking Adoption

The literature review has identified several gaps in the existing research on mobile banking adoption. These gaps highlight the need for future research to explore the factors that influence mobile banking adoption, the impact of different contexts on adoption, and the role of different populations in adopting mobile banking. Future research should aim to address these gaps and provide a more comprehensive understanding of mobile banking adoption.

Commercial Banks Can Increase Adoption By Designing User-Friendly Mobile Banking Applications And Improving The User Experience

Commercial banks can play a crucial role in increasing mobile banking adoption by designing user-friendly mobile banking applications. This can be achieved by creating applications that are intuitive, easy to use, and provide a seamless user experience. Additionally, improving the user experience of mobile banking applications can also contribute to increased adoption. This can be achieved by providing features that are relevant to the users' needs, offering personalized services, and ensuring that the application is secure and reliable.

Offering Mobile Banking Applications That Differentiate Themselves From Other Banks Can Provide A Competitive Advantage

In a crowded market, commercial banks can differentiate themselves from other banks by offering mobile banking applications that provide unique features and services. This can be achieved by providing innovative solutions, offering exclusive services, and creating a unique user experience. By differentiating themselves, commercial banks can attract new customers, retain existing ones, and gain a competitive advantage in the market.

Conclusion

This literature review has examined the current state of research on mobile banking adoption, identifying key factors that contribute to the adoption of mobile banking services. The review has found that perceived external control, computer playfulness, and perceived ease of use are significant factors that influence mobile banking adoption. The findings of this study have implications for commercial banks, which can use this information to design mobile banking applications that meet the needs of their customers.

The implications of this study for commercial banks and mobile banking adoption are significant. Commercial banks should design mobile banking applications that are easy to use, provide a sense of control and playfulness, and offer a range of features and services. Additionally, commercial banks can gain a competitive advantage by offering mobile banking applications that meet the needs of their customers. Future research should examine the impact of other factors, such as perceived risk and trust, on mobile banking adoption, as well as the impact of different contexts and populations on mobile banking adoption.

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