

Perceived Risk and Usage Behavior Of Ai-Based Banking Services: An International Perspective

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ABSTRACT

With the national digital transformation strategy and the rapid development of fintech, the application of AI in Vietnam's banking sector is an inevitable trend. However, a key concern is whether Vietnamese customers are ready to accept and use AI-based banking services, given the numerous online fraud cases and severe financial losses associated with digital banking. To provide experts, policymakers, and regulatory authorities with a comprehensive understanding of the factors influencing banking service adoption, this article examines the impact of perceived risk on the usage behavior of AI-based banking services from the perspective of the global scientific community. Due to differences in research contexts, subjects, and methodologies, findings are inconsistent: some studies suggest that perceived risk has no or only a minor impact, while others show conflicting results, indicating that perceived risk can influence user behavior both positively and negatively. Therefore, to effectively propose and implement practical policies that promote the development of AI-based banking services in Vietnam, it is essential to conduct studies that specifically assess the impact of perceived risk on Vietnamese customers' adoption behavior.

Keywords: *Perceived risk, Usage behavior, AI-based banking service, Impact*

1. INTRODUCTION

The financial industry is undergoing profound transformations in the 21st century, driven in part by rapid technological advancements. These innovations offer unprecedented opportunities to redesign banking operations (Batiz-Lazo et al., 2022), address complex challenges, streamline processes, and enhance customer experiences (Singh, 2025). Artificial intelligence (AI) plays a pivotal role in economic growth, particularly in the era of Industry 4.0 (Veglianti et al., 2021). As the backbone of the economy, the banking sector has significantly benefited from AI, which has improved service efficiency, functionality, and competitiveness (Hasan, Hoque, & Le, 2023). Key advantages include a deeper understanding of customer behavior (Ali et al., 2020), enhanced fraud detection and risk management (Shakya & Smys, 2021), and the ability to process vast amounts of data at greater speed, thereby boosting productivity (Gupta et al., 2019).

While AI adoption in banking offers numerous benefits, it also introduces perceived risks (Rakocevic, 2025). Perceived risk refers to the uncertainty users feel regarding their ability to achieve expected outcomes, including potential losses due to discrepancies between expectations and technological performance (Chen & Lai, 2023). With the rise in online transactions, security threats, such as identity fraud, account theft, and transaction vulnerabilities, are increasing (Rakocevic, 2025). A lack of understanding or concerns about AI may lead to suboptimal service usage decisions or outright rejection of new technology. Research has shown that perceived risk influences user intentions and behavior (Zhou et al., 2021). In particular, Asians, including Vietnamese, tend to perceive risks more strongly than those in other regions due to cultural, psychological, and social influences. Therefore, understanding the impact of perceived risk on users' decisions regarding AI-based banking services is essential for developing effective policies that foster the growth of the global banking industry in general and Vietnam's banking sector in particular.

This article focuses on examining the impact of perceived risk on the usage behavior of stakeholders in AI-based banking services from the perspective of global researchers. The findings aim to provide a foundational understanding for scientists, experts, policymakers, and Vietnamese regulatory agencies, offering a comprehensive overview of perceived risk's effects. Additionally, the article seeks to propose solutions and future directions to support the successful reform of the banking sector.

2. RESEARCH METHOD

To analyze, evaluate, and synthesize global research findings on the impact of perceived risk on the usage behavior of AI-based banking services, this article reviews 20 academic papers published between 2024 and 2025. These papers were selected from the top search results on Google Scholar using the keywords “perceived risk”, “AI” and “bank”. Data storage and processing were conducted with the support of Microsoft Excel.

3. RESULTS AND DISCUSSION

More than half of the articles related to the effect of perceived risk on the usage behavior of AI-based banking services were conducted in the context of Asia (55%). The remaining studies were from Africa (20%), Europe (15%), and America (10%). Among them, India is the Asian country that has received the most attention from the scientific community (20%), including studies by Singh, Kohli & Sharma (2025), Dehghani Ghahnavieh et al. (2024), Dewasiri et al. (2024), Roongta & Roongta (2024), and Taneja et al. (2024).

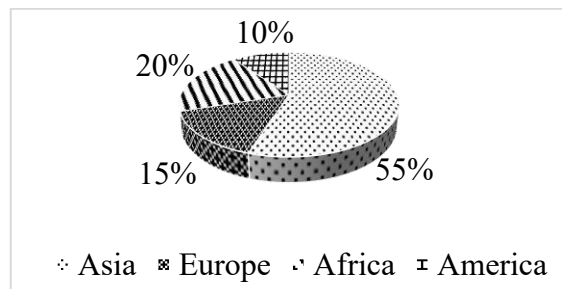


Figure 1. Geographic distribution of articles on the impact of perceived risk on AI-based banking service usage
Source: synthesized by the authors

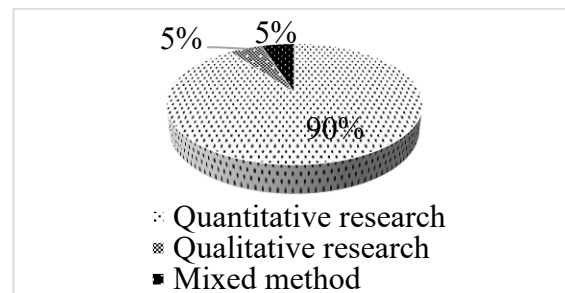


Figure 2: Research methods used in articles on the impact of perceived risk on AI-based banking service usage
Source: synthesized by the authors

Up to 90% of the studies were conducted using quantitative methods, employing techniques such as Cronbach's Alpha reliability analysis, exploratory factor analysis, correlation analysis, ANOVA, regression analysis, and hypothesis testing. Qualitative research methods were used to a very limited extent, with only one study (5%) applying this approach (Dewasiri et al., 2024). Additionally, one study (5%) combined both qualitative and quantitative methods (Park & Yoon, 2024). Questionnaires were the primary data collection tool, used in 95% of the studies, while only one study applied qualitative methods based on a scientific literature review (Dewasiri et al., 2024).

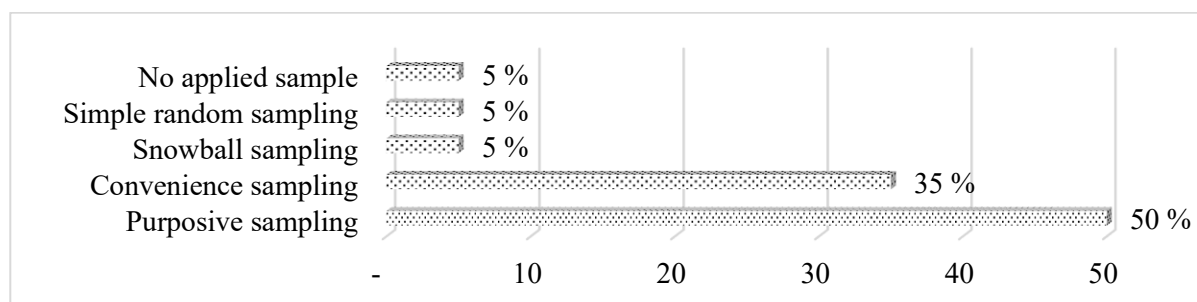


Figure 3. Sampling methods used in articles on the impact of perceived risk on AI-based banking service usage
Source: synthesized by the authors

Most researchers applied non-probability sampling methods (90%) to select research subjects, with purposive sampling being the most common (55.56%), followed by convenience sampling (38.89%). Notably, among the 20 selected articles, only Hailu & Esa (2025) applied the simple random sampling method (probability sampling), selecting 393 customers using AI-based banking services in Ethiopia, accounting for approximately 5%.

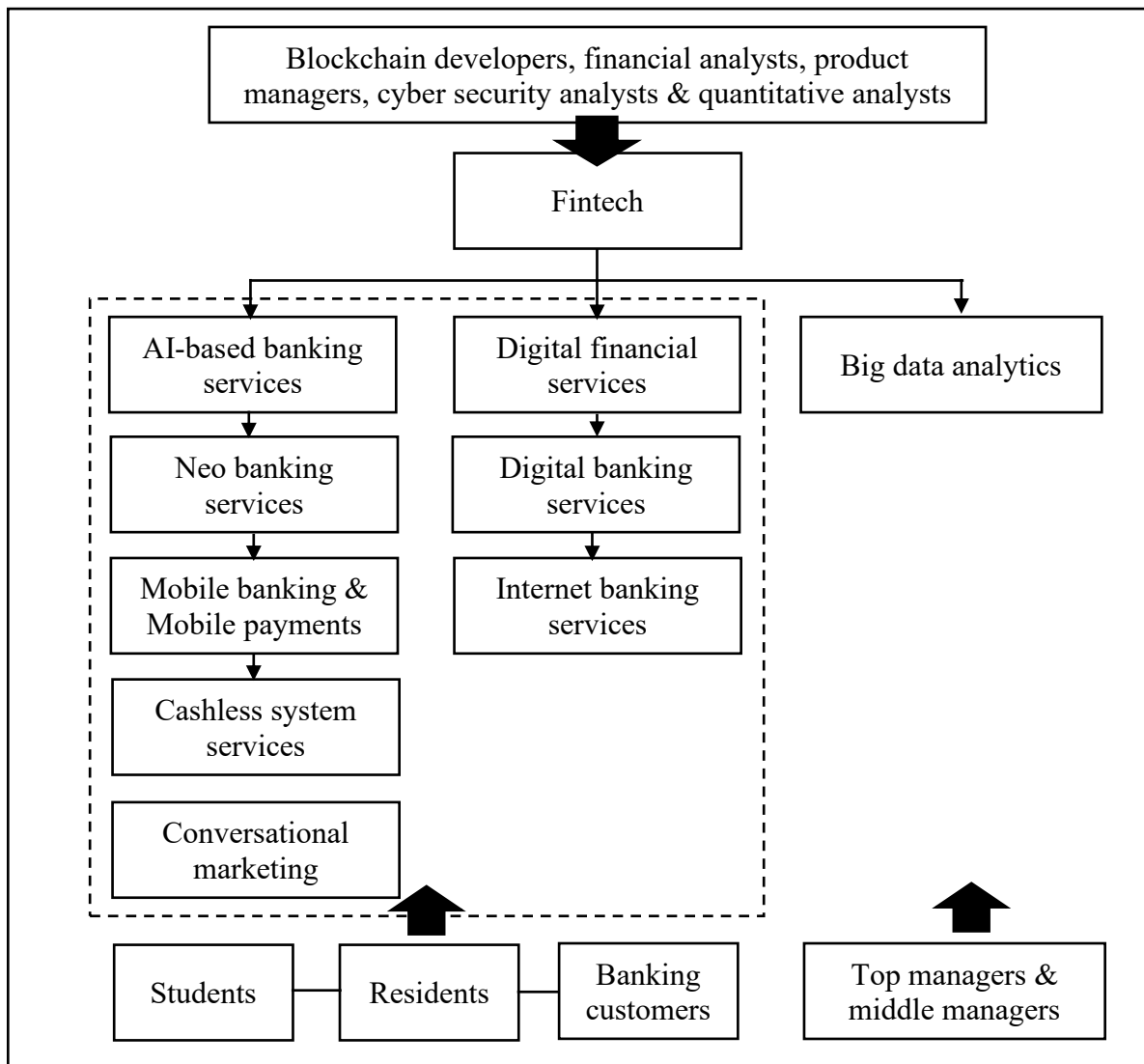


Figure 4. AI applications in banking and research subjects selected by scientists

Source: synthesized by the authors

Since 2015, fintech has entered its third phase (or fintech 3.0), marked by the application of AI and the development of smart finance. Consequently, some researchers have adopted a broad approach when examining perceived risk in relation to decisions to use fintech-based banking services or AI-based banking services. For example, studies have focused on customers in the Saharan region of Africa (Appiah & Agblewornu, 2025), graduates students in Korea and China (Park & Yoon, 2024), and residents living in various cities in Pakistan (Zhao & Khaliq, 2024). Additionally, Raza & Tursoy (2024) analyzed the behavior of individuals with basic fintech knowledge, as well as experts such as blockchain developers, financial analysts, product managers, cybersecurity analysts, and quantitative analysts, under the influence of perceived risk.

In contrast to the first approach, many researchers considered the specific field of AI application in banking, in which some strong development trends of fintech such as neo banking services (Taneja et al., 2024), digital banking services (Rakocevic, Rakic & Rakocevic, 2025; Hailu & Esa, 2025) or cashless system services (Salomo et al., 2025). On the other hand, Dehghani Ghahnavieh et al. (2024) and Dewasiri et al. (2024) evaluated the impact of perceived risk on the decision to use conversational marketing tools provided by banks, including chatbots, messages, voice assistants and live chat. Meanwhile, instead of focusing on subjects outside the bank, Mwemezi & Mandari (2024) examined the impact of perceived risk on top and middle managers within banks before they decided to apply AI in big data analytics tasks.

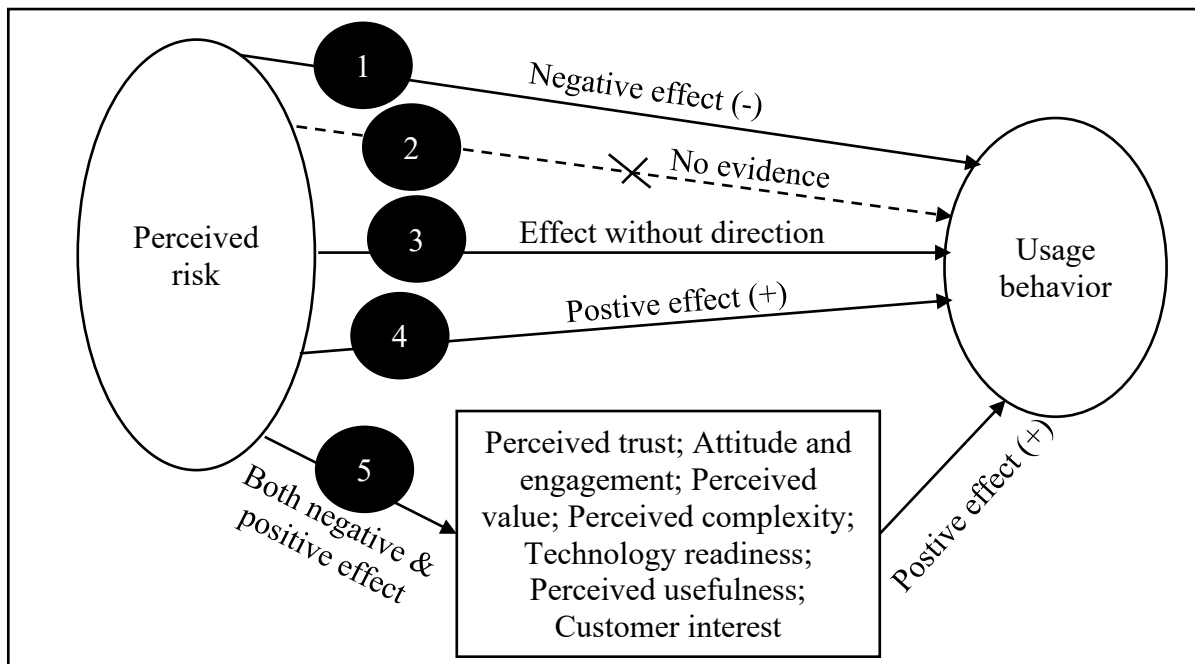


Figure 5. The proposed research models and results from scientists

Source: synthesized by the authors

It is evident that scientific findings on the impact of perceived risk on stakeholders' use of AI-based banking services are inconsistent. When examining the direct relationship between these two observed variables, Lim & Parrocho (2025), Ezeanya et al. (2025), and Salomo et al. (2025) found no evidence of a correlation based on the perceptions of customers aged 18 to 44 in the Philippines, residents in West Kalimantan, and undergraduate students in Nigeria. In contrast, Singh, Kohli & Sharma (2025) asserted that perceived risk influenced customer behavior in India, albeit insignificantly (approximately 13%). However, the authors did not specify the exact direction of this impact. Meanwhile, many researchers confirm that perceived risk negatively affects customers' decisions to use AI-based application services in Africa (Appiah & Agblewornu, 2025), Sweden (Abikari, 2024), Pakistan (Shahzadi & Abbas, 2025; Zhao & Khaliq, 2024), and the United States (Changchit et al., 2024). Notably, studies on banking service customers in Ethiopia, as well as leading experts such as blockchain developers, financial analysts, product managers, cybersecurity analysts, and quantitative analysts in Italy, revealed a positive relationship between these two observed variables (Hailu & Esa, 2025; Raza & Tursoy, 2024).

From another perspective, researchers have examined the impact of perceived risk through its mediating effect rather than a direct correlation, yielding diverse results. According to Dehghani Ghahnavieh et al. (2024), perceived risk influenced customer usage behavior in Iran through a positive correlation with attitude and customer engagement with the brand. However, Park & Yoon (2024) found that perceived risk negatively affects perceived value and adoption attitude among graduate students in Korea and China, as well as customer trust (Taneja et al., 2024), thereby indirectly positively influencing usage behavior.

On the other hand, Mwemezi & Mandari (2024) confirmed the positive impact of perceived risk on the relationship between perceived complexity and technology readiness in the decision to use AI for big data analytics among top and middle managers in Tanzania. Similarly, Rafina et al. (2024) found a comparable effect on customer interest in Indonesia.

In summary, the emergence of Fintech 3.0, characterized by pervasive AI integration and the rise of smart-finance solutions, has prompted a rich but fragmented body of research into how perceived risk shapes stakeholders' adoption of AI-based banking services. Empirical investigations across diverse regions (from Saharan Africa and Pakistan to Sweden, Korea, China, and the United States) and populations (retail customers, graduate students, resident communities, and banking executives) have yielded contradictory evidence: some studies report no direct link between perceived risk and usage intentions, others demonstrate a modest negative influence, and a few even identify positive correlations among expert users. Moreover, when examined indirectly via mediators such as attitude, perceived value, trust, complexity, or technology readiness, perceived risk can either dampen or enhance adoption behaviors depending on the context. These inconsistencies underscore that the effect of perceived risk in the AI-driven Fintech landscape is neither uniform nor universal; rather, it is contingent upon the specific service type (e.g., neo-banking, chatbots, big-

data analytics), the user segment (e.g., students versus managers), and the interplay of cognitive and emotional intermediaries. Future research should therefore move beyond simple risk, use models and adopt more nuanced frameworks that account for cultural, institutional, and technological moderators, as well as the dynamic ways in which AI itself can mitigate or exacerbate users' risk perceptions.

4. CONCLUSION

Perceived risk rooted in fears of security breaches, privacy violations, legal ambiguity, and potential financial loss remains a powerful barrier to the uptake of AI-powered banking, particularly in Vietnam where strong family and community bonds amplify caution and older generations harbor deep reservations about data-driven technologies. To chart a clear path forward, this study addresses two critical questions: Does perceived risk exert a positive, negative, or negligible influence on Vietnamese customers' willingness to adopt AI-based banking services? and If an effect exists, how substantial is its impact? Illuminating these dynamics will furnish banks, regulators, technology partners, and the media with the evidence they need to tailor policies and product designs that directly tackle the specific risk concerns of Vietnamese users.

Building on our findings, we recommend a multi-pronged strategy to mitigate perceived risk and catalyze long-term engagement. First, deploy explainable-AI frameworks and transparent risk-scoring visuals that demystify algorithmic decisions, and pair these with industry-leading security measures end-to-end encryption, multi-factor authentication, and opt-out data controls, to foster user confidence. Second, streamline onboarding through interactive tutorials, tooltips, and "flipped" demos that let customers explore AI features in a risk-free environment. Third, invest in targeted education initiatives, webinars, in-branch workshops, and short "Smart Finance with AI" courses co-hosted with universities or professional associations to build digital literacy across age groups. Fourth, pilot new services with segmented user groups (students, small enterprises, executives), incentivize participation with fee waivers or early-access perks, and iterate rapidly based on feedback. Finally, tailor marketing messages to each demographic, highlighting budget-planning tools for young adults, real-time analytics for managers, or secure payment options for everyday customers while forging partnerships with reputable fintech startups, academic institutions, and regulatory sandboxes. By weaving together transparency, education, rapid experimentation, and strategic collaboration, Vietnamese banks can directly address risk perceptions, enhance trust, and accelerate the responsible adoption of AI in financial services.

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