

Research Article

Evaluating the Impact of Artificial Intelligence on Customer Satisfaction and Acceptance in Banking: A Structural Equation Modeling Approach

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Abstract: Purpose: The study examines the influence of AI-based banking service quality on acceptance and satisfaction of retail customers; AI-based service quality includes responsiveness, reliability, ease of use, security, efficiency, and transparency. The study also examines customer satisfaction's mediating role and technology experience's moderating effect on the service quality. **Research Methodology:** A quantitative, cross-sectional design was applied, with purposive sampling ending up giving 421 valid responses from the users of AI-powered banking tools (i.e., chatbots, robo-advisors, fraud detection). A structured questionnaire adopting five-point Likert scales was used to capture the perceptions of service quality, satisfaction, acceptance, and technology experience. The analyses involved descriptive statistics and SEM through SmartPLS, comprising bootstrapped mediation and moderation tests. **Findings:** Perceived AI service quality significantly predicts customer satisfaction ($\beta = 0.424, p < 0.001$) and acceptance ($\beta = 0.272, p < 0.001$). Customer Satisfaction partially mediates the quality-acceptance link ($\beta = 0.098, p < 0.001$). Technology experience amplifies the impact of service quality on acceptance ($\beta = 0.098, p = 0.033$). The measurement model demonstrated high reliability (Cronbach's $\alpha > 0.90$) and excellent fit (SRMR < 0.04 ; NFI > 0.95). **Originality/Value:** Derived from the technology acceptance model (TAM) and the SERVQUAL framework, the study attempts through a focused SEM model to enrich theoretical identification about AI adoption in banking. The model not only bridges theoretical gaps but also provides actionable insights for practitioners to design expectation-confirming, experience-tailored AI solutions that promote sustained digital engagement.

Keywords: AI Adoption; Banks; Customer Acceptance; Customer Satisfaction; Service Quality; Technology Experience

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INTRODUCTION

Artificial intelligence (AI) has emerged as a revolutionary influence in the banking sector. Contemporary banks use AI in customer-facing positions, such as chatbots and virtual assistants that manage routine enquiries continuously, as well as in back-office operations such as fraud detection and risk evaluation (Noreen, et al., 2023). Customer-side front-line intelligent chatbots and virtual assistants handle mundane inquiries and troubleshooting 24/7, along with cutting down wait times, thus allowing human agents to deal with more complicated processes (Kondybayeva, et al., 2024). Behind the scenes, machine-learning algorithms work to catch and stop frauds by monitoring transactions in real time, while robo-advisors give investment recommendations tailored to the client's individual risk profiles (Stojanović, et al., 2021). Predictive analytics analyzes massive data sets in order to identify the ever-changing needs of customers—they might suggest the appropriate product or even signal in advance the creditworthiness of a customer (Alexander, 2024). Those AI applications promise to combine operational efficiency and cost savings with fast response times, ultimately leading to gratifying customer experiences (Ris, et al., 2020).