Applied Sciences, Computing and Energy, 2025, 2(1), 21-38

Artificial Intelligence (AI) and Firm Survival of Deposit Money Banks

Temitope Akinwunmi
Received:17 December 2024/Accepted: 03 March 2025/Published: 11 March 2025

Abstract : *Artificial Intelligence (AI) has become a critical driver of firm survival in the banking industry, particularly for deposit money banks (DMBs) facing increasing challenges such as economic volatility, regulatory compliance, cybersecurity threats, and rising customer expectations. This study explores the role of AI in enhancing operational efficiency, risk management, fraud detection, customer experience, and financial resilience in the banking sector. AI-powered technologies, including machine learning, predictive analytics, robotic process automation (RPA), and natural language processing (NLP), are transforming how banks analyze financial risks, detect fraudulent transactions, automate operations, and provide personalized banking services. Research findings indicate that AI adoption has led to a 35% reduction in loan defaults, a 40% improvement in operational efficiency, and a 60% decline in financial fraud cases, highlighting its transformative potential in ensuring the survival and competitiveness of DMBs. Despite these advancements, AI adoption in the banking sector is hindered by high implementation costs, cybersecurity vulnerabilities, workforce resistance, and regulatory uncertainties. Many banks, particularly in developing economies like Nigeria, struggle with legacy banking systems, lack of AI governance frameworks, and concerns over algorithmic bias in lending decisions. Additionally, AI-driven financial innovations, such as blockchain integration, decentralized finance (DeFi), and AI-powered ESG compliance solutions, are reshaping the banking industry, yet require strategic policy alignment and investment to maximize their benefits. The study identifies gaps in existing literature, including the need for empirical research on AI's long-term impact on firm survival, its role in financial inclusion, and the ethical challenges of AI governance in banking. To bridge these gaps, future research should focus on developing AI implementation models suited to the challenges of emerging economies, exploring AI's potential in expanding financial access to underserved populations, and strengthening AI-driven sustainability and ESG compliance frameworks in banking. As AI continues to evolve, deposit money banks must embrace a balanced approach that integrates AI innovation with regulatory oversight, cybersecurity safeguards, and workforce upskilling to ensure long-term survival and competitiveness in the digital financial landscape.*

Keywords*: Artificial Intelligence (AI), Firm Survival, Deposit Money Banks (DMBs), Banking Innovation, Financial Risk Management, Fraud Detection.*

Temitope Akinwunmi
Department: MBA (Business Analytics),
College of Business. Wilmington University
United States of America
Email: akinwunmitemitope24@gmail.com
Orcid id: : 0009-0006-3342-3538

1.0 Introduction

Kunwar (2019) said the increasing digitization of the financial sector has positioned Artificial Intelligence (AI) as a transformative tool in enhancing the survival and competitiveness of deposit money banks (DMBs). As the global banking landscape evolves, firms face unprecedented challenges such as economic volatility, regulatory pressures, cybersecurity

threats, and rising customer expectations. AI-driven technologies, including machine learning, predictive analytics, robotic process automation (RPA), and natural language processing (NLP), are increasingly being integrated into banking operations to enhance efficiency, risk management, customer service, and fraud detection. Adako et al., (2024) said AI adoption in banking is projected to contribute $1 trillion in cost savings globally by 2030, underscoring its potential to optimize operational processes and ensure firm survival in an increasingly competitive environment.

The survival of deposit money banks (DMBs) depends on their ability to adapt to technological advancements, mitigate financial risks, and meet changing consumer preferences(Challoumis & Eriotis, 2024). With the rise of fintech companies and digital-only banks, traditional banks face intense competition, requiring innovative strategies to remain relevant. AI-powered solutions enable banks to analyze vast amounts of customer data, predict market trends, and tailor financial services to individual needs. Additionally, AI-driven fraud detection systems help reduce financial crimes, a critical factor in maintaining public trust and ensuring long-term firm sustainability. Ariyibi et al., (2024) revealed that banks utilizing AI for risk assessment and fraud prevention experienced a 50% reduction in fraudulent transactions, highlighting AI's critical role in ensuring financial stability and regulatory compliance.

Despite AI's potential, many banks in developing economies, including Nigeria, struggle with full-scale AI adoption due to technological limitations, regulatory uncertainties, and high implementation costs. According to Olawoye and Erediauwa (2023), only 40% of deposit money banks have integrated AI-driven risk management and fraud detection tools, leaving a significant portion of the sector vulnerable to financial threats. Additionally, legacy banking systems, cybersecurity risks, and workforce resistance to AI-driven automation pose further challenges to AI implementation. These barriers necessitate a strategic approach to AI adoption, ensuring that banks can effectively leverage AI to enhance operational resilience and long-term survival (Kar, Kar & Gupta, 2021).

Christensen (2021) opined the role of AI in deposit money banks' survival can be analyzed through key performance indicators such as operational efficiency, cost reduction, customer retention, financial risk mitigation, and regulatory compliance. AI-powered chatbots and virtual assistants are revolutionizing customer service by providing 24/7 banking assistance, reducing response times, and enhancing customer satisfaction. Similarly, predictive analytics models allow banks to anticipate loan defaults, optimize lending strategies, and improve investment decision-making, ultimately strengthening financial stability. Adewale, Umavezi and Olukoya (2022) report found that AI-enabled credit risk models reduced loan default rates by 35%, emphasizing AI's ability to enhance banks' profitability and sustainability.

Furthermore, AI is reshaping banking operations through robotic process automation (RPA), which minimizes human errors and speeds up transactional processes. AI-driven anti-money laundering (AML) systems and cybersecurity frameworks help banks comply with stringent financial regulations, ensuring that they avoid penalties and reputational damage. With the increasing threat of cyber fraud and financial crimes, AI's ability to detect anomalies in real time is becoming indispensable for firm survival. Research by Ajayi et al., (2024) revealed that AI-driven cybersecurity systems have reduced banking sector cyber threats by 60%, reinforcing the argument that AI adoption is crucial for financial security and regulatory adherence.

Despite these advancements, the human factor remains a critical consideration in AI integration. The fear of job displacement among banking employees, ethical concerns

about data privacy, and AI's decision-making transparency are significant challenges that must be addressed (Khogali & Mekid, 2023). AI-driven systems must be human-centric, ensuring that banking professionals work alongside AI rather than being replaced by it. Training and reskilling programs will be essential in helping the workforce adapt to AI-powered banking environments, fostering collaboration between AI and human intelligence. Gabsi (2024) posit that addressing these concerns will be pivotal in ensuring seamless AI adoption and maximizing its benefits in Nigeria's banking sector.

This conceptual paper explores the relationship between AI and firm survival in deposit money banks, analyzing the role of AI in operational efficiency, risk management, customer service, and financial security. By reviewing existing literature, theoretical frameworks, and empirical findings, this study will identify opportunities, challenges, and future directions for AI adoption in Nigeria's banking industry. Additionally, it will highlight research gaps and propose strategic recommendations for leveraging AI to enhance firm resilience, competitiveness, and long-term survival in the financial sector.

2. 0 Theoretical Foundations of AI and Firm Survival

2.1 Definition and key concepts of AI in banking

Artificial Intelligence (AI) in banking refers to the application of machine learning, automation, and data-driven algorithms to enhance financial services, improve decision-making, and optimize operational processes (Nguyen, Sermpinis & Stasinakis, 2023). AI enables banks to analyze vast amounts of customer data, detect fraudulent activities, automate administrative tasks, and personalize financial services. According to Ashta and Herrmann (2021), AI is projected to reduce banking operational costs by 25–30% through automation and predictive analytics. AI in banking can be classified into narrow AI, which focuses on specific tasks such as credit scoring, fraud detection, and chatbots, and general AI, which aims to mimic human cognitive functions for complex financial decision-making. By leveraging AI-powered solutions, banks can improve efficiency, security, risk assessment, and customer engagement, making it an essential tool for firm survival and competitiveness.

Several studies indicated key AI concepts are transforming the banking industry, including machine learning (ML), natural language processing (NLP), robotic process automation (RPA), and predictive analytics (Villar & Khan, 2021; Kamuangu, 2024; Adewumi, Ewim, Sam-Bulya & Ajani, 2024). Machine learning algorithms help banks detect credit risks, predict customer behavior, and optimize lending decisions based on historical data. NLP-powered chatbots and virtual assistants enhance customer service by providing real-time support and automated banking assistance. RPA streamlines routine tasks, such as KYC (Know Your Customer) verification and compliance reporting, reducing human errors and increasing efficiency. Meanwhile, predictive analytics enables banks to forecast market trends, identify potential loan defaults, and detect fraudulent transactions (Addy, *et al.*, 2024). As AI continues to evolve, its integration into banking operations is expected to enhance financial stability, regulatory compliance, and long-term firm survival, particularly for deposit money banks in Nigeria.

2.2 Evolution of AI in the financial industry

The evolution of Artificial Intelligence (AI) in the financial industry can be traced back to the early adoption of rule-based algorithms in the 1950s and 1960s, when banks first started using automated systems for record-keeping and transaction processing. By the 1980s and 1990s, AI-driven expert systems were

introduced to assist in credit scoring, risk assessment, and fraud detection (Olawale et al., 2020). One of the earliest applications was the development of FICO credit scoring models, which used AI algorithms to evaluate loan applications and determine creditworthiness. However, due to limited computing power and data availability, AI adoption in banking remained relatively slow during this period. As digital banking emerged in the early 2000s, AI-powered anti-money laundering (AML) systems and fraud detection tools became more sophisticated, allowing banks to identify suspicious transactions in real time.

With the rise of big data, cloud computing, and deep learning in the 2010s, AI in the financial industry expanded exponentially, enabling more complex applications such as robo-advisors, AI-driven trading algorithms, chatbots, and biometric authentication systems. Verma (2023) said AI-powered predictive analytics allowed banks to forecast customer behavior, market trends, and financial risks with higher accuracy. Fintech startups and digital banks leveraged AI to automate customer onboarding, optimize lending models, and enhance cybersecurity measures. Today, AI continues to evolve, with advancements in blockchain-based AI, decentralized finance (DeFi), and quantum computing, which are expected to redefine financial transactions, risk management, and regulatory compliance (Hammad & Abu-Zaid, 2024). As AI-driven financial technology continues to advance, deposit money banks must adapt and integrate AI solutions to ensure long-term survival, competitiveness, and financial resilience.

2.3 Theories relevant to AI and firm survival

The Resource-Based View (RBV) theory, developed by Barney (1991), posits that a firm's competitive advantage is derived from its ability to acquire, develop, and utilize unique and valuable resources. In the context of banking, AI serves as a strategic resource that can enhance operational efficiency, improve decision-making, and strengthen customer relationships. Banks that leverage AI-driven fraud detection, credit risk assessment, and customer analytics gain a competitive edge over rivals that rely on traditional banking models. Challoumis (2024) reported, AI-powered automation in financial institutions can reduce operational costs by 25–30%, allowing banks to reinvest resources into innovation and market expansion. However, RBV also emphasizes that AI adoption alone is not enough—banks must develop organizational capabilities, skilled personnel, and strategic integration to fully harness AI's potential for firm survival.

The Dynamic Capabilities Theory (DCT), introduced by Teece, Pisano, and Shuen (1997), extends RBV by highlighting a firm's ability to adapt and transform in response to environmental changes. In the banking industry, where financial risks such as market volatility, cybersecurity threats, and regulatory shifts constantly evolve, AI enables firms to respond proactively. AI-driven predictive analytics, real-time fraud detection, and automated compliance systems help banks anticipate and mitigate risks before they escalate. For example, machine learning models can analyze vast financial datasets to detect early signs of loan defaults or credit crises, allowing banks to make data-driven decisions and adjust their lending strategies. Savchenko (2024) study found that banks implementing AI-powered risk management frameworks reduced financial losses by 40%, demonstrating AI's role in ensuring long-term financial resilience.

The Technology Acceptance Model (TAM), proposed by Davis (1989), explains how organizations and individuals adopt new technologies based on perceived usefulness (PU) and perceived ease of use (PEOU). In banking, AI adoption depends on whether employees and customers trust AI-driven systems and find them beneficial. For instance,

AI-powered chatbots and virtual assistants have revolutionized customer service, but customer acceptance is influenced by factors such as transparency, security, and ease of interaction. Similarly, bank employees may resist AI-driven automation due to fears of job displacement, making change management and AI literacy programs essential for successful adoption. According to a Caron (2019) report, banks that prioritized employee training and customer education on AI systems saw a 35% increase in AI adoption rates, underscoring the importance of user perception and trust in AI-driven banking innovations.

Finally, Schumpeter's Innovation Theory (1942) by Schumpeter (1883) highlights AI as a disruptive force driving financial innovation. Schumpeter argued that creative destruction—the process where new technologies replace outdated systems—fuels economic growth and industry transformation. In banking, AI-driven innovations such as robo-advisors, AI-powered lending platforms, blockchain-based financial services, and decentralized finance (DeFi) are reshaping traditional banking models. These advancements allow deposit money banks to offer faster, more efficient, and personalized financial services, helping them compete with fintech startups and digital-only banks. Research by Oyeniyi, Ugochukwu and Mhlongo (2024) found that banks integrating AI-driven innovations experienced a 45% increase in customer retention rates and a 30% boost in revenue growth, proving that AI is a key driver of financial sector evolution and firm survival.

3.0 Firm Survival in the Banking Industry

Firm survival refers to a company's ability to sustain its operations, maintain profitability, and adapt to changes in the business environment over time (Adebisi & Bakare, 2019). In the banking sector, firm survival depends on the institution's capacity to manage financial risks, remain competitive, comply with regulations, and leverage technological advancements to enhance service delivery. Unlike other industries, deposit money banks (DMBs) face unique challenges such as credit risks, liquidity constraints, and evolving regulatory frameworks, making long-term survival dependent on effective risk management, operational efficiency, and financial innovation. According to Truby (2020) who reported, over 30% of financial institutions in emerging economies fail within their first 10 years due to poor liquidity management, weak regulatory compliance, and inability to adapt to technological changes. AI has emerged as a key tool in strengthening bank resilience, enabling firms to predict market trends, automate financial operations, and improve customer retention strategies.

The survival of deposit money banks is often measured through key financial and operational indicators, including profitability, liquidity, risk management, and innovation. Profitability is a critical indicator, as banks must generate sufficient income from loans, investments, and financial services to cover operational costs and remain competitive (Ozili & Ndah, 2024). AI-driven predictive analytics and automated credit scoring help banks assess loan risks more accurately, reducing non-performing loans (NPLs) and improving profit margins. Liquidity, or the bank's ability to meet short-term obligations, is another essential survival metric. Olowu, et al. (2024) opined AI-powered liquidity management systems allow banks to forecast cash flows and optimize asset allocation, ensuring financial stability even during economic downturns. Effective risk management is also crucial—AI-driven fraud detection and compliance tools help banks mitigate financial crimes and regulatory violations. Lastly, innovation plays a vital role in survival, as banks that embrace AI-driven financial services, digital banking, and blockchain technology are more likely to outperform traditional competitors in an increasingly digitalized financial ecosystem.

Despite the potential for AI-driven transformation, several challenges threaten the survival of deposit money banks, particularly in developing economies like Nigeria (Oyetunji, 2024). Economic instability—including inflation, currency fluctuations, and global financial crises—can reduce lending capacity and increase default rates, putting pressure on banks' profitability and liquidity. Additionally, regulatory pressures continue to evolve, with financial authorities imposing stricter compliance requirements, capital adequacy ratios, and anti-money laundering (AML) policies. AI can assist in navigating regulatory complexities by automating compliance monitoring and reporting, but the high cost of AI implementation remains a challenge for many banks.

Another significant threat to firm survival in banking is increasing competition from fintech startups, digital-only banks, and mobile money platforms. Mathew (2022) said Traditional deposit money banks must now compete with tech-driven financial services that offer faster, more accessible, and cost-effective banking solutions. AI-powered chatbots, robo-advisors, and automated lending platforms have revolutionized customer experience, forcing conventional banks to adapt or risk obsolescence. According to Jameaba (2020) survey, banks that failed to integrate AI and digital banking solutions experienced a 20–30% decline in market share due to customer migration to fintech competitors. To ensure survival, deposit money banks must embrace AI-driven financial innovation, enhance operational efficiency, and continuously evolve to meet the dynamic needs of the modern financial landscape

4. 0 AI Applications in Deposit Money Banks

4.1 AI-powered risk management and fraud detection

AI has revolutionized risk management in the banking sector by enabling financial institutions to identify, assess, and mitigate financial risks in real time (Aziz & Andriansyah, 2023) Traditional risk management models often rely on historical data and manual analysis, which can be slow and prone to errors. AI-powered predictive analytics and machine learning algorithms enhance risk assessment by analyzing large datasets, market trends, and customer behaviors to detect potential credit risks, loan defaults, and financial crises before they occur. For example, AI-driven credit scoring models assess a borrower's risk profile more accurately by incorporating non-traditional data sources such as transaction patterns, spending behavior, and online activity. Edunjobi and Odejide (2024) opined that banks using AI for risk management have reduced loan default rates by 35% and improved portfolio risk assessments, leading to more data-driven lending decisions and improved financial stability.

AI-powered fraud detection systems are also transforming how banks combat financial crimes, including identity theft, money laundering, and cyber fraud. AI algorithms analyze billions of transactions in real-time to detect anomalies and flag suspicious activities that human analysts might overlook (Gupta, 2024). AI-driven anti-money laundering (AML) systems use pattern recognition and behavioral analysis to identify unusual financial transactions, ensuring compliance with global financial regulations. Additionally, AI-powered biometric authentication systems, facial recognition, and anomaly detection tools enhance banking security by reducing fraud incidents and improving customer trust. Shan (2025) study found that AI-based fraud detection reduced banking sector financial losses by 60%, highlighting the critical role of AI in safeguarding deposit money banks against financial crime and ensuring regulatory compliance.

4.3 AI-driven customer service (chatbots, virtual assistants)

Inavolu (2024) said AI-driven chatbots and virtual assistants are transforming customer service in the banking sector by providing 24/7 automated support, personalized interactions, and seamless banking experiences. Traditional customer service models often suffer from long wait times, limited service hours, and human error, leading to customer dissatisfaction. AI-powered chatbots use natural language processing (NLP) and machine learning to understand customer queries, process transactions, and provide instant responses. For example, banks like JP Morgan, Wells Fargo, and Access Bank have deployed AI chatbots to assist customers with account inquiries, loan applications, fund transfers, and fraud alerts without the need for human intervention. Uddeniye Gedera and Herath (2024) shows, AI-powered customer service systems can resolve 80% of routine banking inquiries, reducing operational costs and allowing human agents to focus on more complex issues.

Beyond chatbots, AI-driven virtual assistants enhance customer engagement by offering personalized financial advice and proactive banking insights. Unlike basic chatbots, virtual assistants integrate with customer transaction histories, spending patterns, and investment portfolios to provide tailored recommendations on budgeting, credit management, and savings plans. AI-driven virtual assistants like Bank of America's Erica and Capital One's Eno leverage predictive analytics to anticipate customer needs and suggest appropriate financial products. Research by Siddiqui (2023) found that AI-enhanced customer service increased customer satisfaction rates by 40% and improved customer retention by 25%, demonstrating AI's role in fostering loyalty and trust in digital banking. As AI technology evolves, chatbots and virtual assistants will continue to shape the future of customer-centric banking, ensuring faster, smarter, and more efficient financial interactions.

4.2 AI in credit risk assessment and loan approvals

Faheem (2021) said AI is transforming credit risk assessment and loan approvals by enabling banks to evaluate borrower creditworthiness more accurately and efficiently. Traditional credit scoring models rely on fixed criteria such as credit history, income, and debt-to-income ratio, which may not always provide a complete picture of a borrower's financial behavior. AI-driven machine learning algorithms analyze vast amounts of structured and unstructured data, including spending patterns, transaction history, employment records, and even social media behavior, to assess credit risk more comprehensively. This allows banks to offer loans to a broader range of customers, including those with limited credit histories or non-traditional financial backgrounds. Yeboah (2020) study shows AI-powered credit risk models have reduced default rates by 35% while increasing loan approval efficiency by 50%, allowing banks to make faster, data-driven lending decisions.

AI also improves the loan approval process by automating application reviews, reducing human bias, and enhancing fraud detection. AI-powered chatbots and digital underwriting systems can analyze a borrower's financial profile in real-time, enabling instant loan approvals or rejections based on risk assessment algorithms. Additionally, Omokhoa, Odionu, Azubuike and Sule (2024) said AI helps detect fraudulent loan applications by identifying inconsistencies in applicant data, ensuring greater accuracy and regulatory compliance. Many banks, including JPMorgan Chase, Wells Fargo, and Nigerian banks like GTBank and Zenith Bank, have integrated AI-driven automated loan underwriting systems, reducing loan processing times from weeks to minutes. Research by Sadok, Sakka and El Maknouzi (2022) found that AI-driven loan approval systems improved lending efficiency by 40% and helped banks increase credit access while minimizing financial risks, making AI a key

enabler of sustainable and profitable lending operations.

4.4 AI in cybersecurity and data protection

AI is playing a critical role in cybersecurity and data protection by helping banks detect, prevent, and respond to cyber threats in real time. With the increasing digitization of financial services, banks are more vulnerable to cyberattacks such as phishing, malware, identity theft, and financial fraud (Gulyas & Kiss, 2023). Traditional security systems often rely on static rule-based models, which struggle to keep up with evolving cyber threats. AI-powered threat detection systems use machine learning and behavioral analytics to identify anomalous activities, suspicious login attempts, and unauthorized transactions, flagging potential security breaches before they escalate. According to Hani and Amelia (2024), AI-driven security frameworks have reduced financial sector cyber threats by 60%, enabling banks to proactively defend against attacks and protect customer data.

AI also enhances data protection and regulatory compliance by automating encryption, fraud detection, and real-time monitoring. AI-driven biometric authentication systems, such as facial recognition, voice authentication, and fingerprint scanning, have strengthened banking security by ensuring only authorized users can access accounts and sensitive financial data. Additionally, AI-powered automated compliance tools help banks adhere to regulatory requirements, such as Anti-Money Laundering (AML) and General Data Protection Regulation (GDPR) policies, by monitoring transactions and detecting financial crimes. Majumder (2023) study found that banks using AI-driven cybersecurity solutions experienced a 45% reduction in fraud-related losses and a 30% improvement in regulatory compliance efficiency. As cyber threats continue to evolve, AI remains a key asset in safeguarding deposit money banks from financial crime, data breaches, and reputational risks, ensuring trust and security in digital banking operations.

4.5 AI-driven financial forecasting and decision-making

AI is playing a crucial role in cybersecurity and data protection by enabling banks to detect, prevent, and respond to cyber threats in real time. Traditional cybersecurity systems rely on rule-based threat detection, which can struggle to keep up with the rapidly evolving nature of cyberattacks. AI-powered machine learning algorithms and anomaly detection systems analyze vast amounts of transaction data, network activity, and user behavior to identify potential security breaches, malware, and fraud attempts before they cause harm (Olawale, *et al.,* 2020). For example, AI-driven intrusion detection systems (IDS) can recognize unusual login patterns, unauthorized access attempts, and suspicious transaction behaviors, allowing banks to take immediate action to mitigate risks. Nwafor, Ikudabo and Onyeje (2024) report found that AI-driven security solutions reduced cyberattack response times by 80%, significantly enhancing financial institutions' ability to protect customer data and maintain trust.

AI also strengthens data encryption, fraud prevention, and compliance with regulatory frameworks such as GDPR, NDPR, and PCI-DSS. Advanced AI models help banks implement adaptive authentication systems, such as biometric recognition (fingerprint, facial, and voice authentication) and behavioral analytics, to secure customer accounts and prevent identity theft. Additionally, AI-powered anti-money laundering (AML) systems use pattern recognition and risk scoring to detect financial crimes such as money laundering and terrorist financing, ensuring compliance with global banking regulations. Banks such as HSBC, Citibank, and First Bank of Nigeria have successfully integrated AI-driven cybersecurity tools to

protect sensitive financial data and minimize cyber risks. Hudson (2024) said, banks that deployed AI-enhanced cybersecurity frameworks experienced a 60% reduction in data breaches and improved their ability to prevent fraudulent transactions, making AI an essential tool for data security and financial stability.

5.0 AI and Firm Survival: Conceptual Linkages

5.1 AI's role in enhancing efficiency and cost reduction

AI is transforming banking operations by significantly enhancing efficiency and reducing costs through automation, predictive analytics, and process optimization (Javaid, 2024). Traditional banking processes, such as manual data entry, customer onboarding, and transaction verification, are often time-consuming and prone to human errors. AI-driven robotic process automation (RPA) eliminates these inefficiencies by handling repetitive tasks faster and with greater accuracy, reducing the need for human intervention. For example, AI-powered chatbots and virtual assistants handle routine customer queries, such as balance inquiries, loan applications, and transaction disputes, reducing the workload on customer service agents and allowing banks to allocate resources more effectively. Adewumi, *et al.,* (2024) banks implementing AI-driven automation have achieved 30–40% improvements in operational efficiency, leading to faster service delivery and improved customer experience.

AI also plays a crucial role in cost reduction by minimizing fraud-related losses, optimizing workforce allocation, and reducing administrative expenses. AI-powered fraud detection systems analyze billions of transactions in real time, flagging suspicious activities and preventing unauthorized transactions, which helps banks save billions in potential financial losses. Additionally, AI enhances risk assessment and credit decision-making, allowing banks to accurately evaluate loan applications and reduce default rates, ultimately lowering financial risks. Ally, Kulindwa and Mataba (2025) study found that AI-driven risk management solutions helped banks reduce non-performing loans (NPLs) by 35% and fraud-related losses by 60%. Furthermore, AI-powered predictive analytics and cost optimization models help banks reduce operational expenses by up to 25%, allowing them to reinvest savings into digital transformation and customer-centric innovations. By leveraging AI, banks can achieve sustainable cost efficiency, improved service quality, and long-term profitability, ensuring their survival in an increasingly competitive financial landscape.

5.2 AI in improving customer experience and retention

AI is revolutionizing customer experience and retention in banking by enabling personalized services, real-time assistance, and seamless digital interactions. Traditional banking models often struggle with long wait times, generic service offerings, and inefficient customer support, leading to dissatisfaction and customer churn. AI-driven chatbots and virtual assistants, powered by natural language processing (NLP), provide 24/7 customer support, instantly resolving inquiries related to account balances, loan applications, and fraud alerts without human intervention. These AI systems can handle millions of interactions simultaneously, reducing service delays and enhancing customer engagement. According to Kaledio and Doris (2024) said banks that integrated AI-powered chatbots experienced a 40% reduction in customer complaints and a 30% increase in service efficiency, leading to higher customer satisfaction levels.

Beyond automation, AI enhances customer retention by delivering hyper-personalized banking experiences. AI-driven predictive analytics and machine learning models analyze customer transaction history, spending behavior, and financial goals to recommend tailored financial products and investment

opportunities. For example, AI can identify a customer's savings patterns and suggest customized loan or credit card offers, increasing the likelihood of product adoption. AI also improves fraud prevention and security, strengthening customer trust by proactively detecting and blocking suspicious activities. Trzos (2023) study found that banks using AI-driven customer engagement strategies saw a 25% increase in customer loyalty and a 20% improvement in cross-selling success rates. By leveraging AI to provide faster, smarter, and more personalized financial services, banks can significantly enhance customer satisfaction, build long-term relationships, and maintain a competitive edge in the digital banking era.

5.3 AI-driven innovation for competitive advantage

AI is reshaping the banking industry by driving innovation, automation, and data-driven decision-making, giving financial institutions a significant competitive advantage (Wu, Subramaniam, Li, & Gao, 2025). Traditional banking models rely on manual processes, standardized products, and reactive decision-making, which can limit efficiency and responsiveness to customer needs. AI-powered predictive analytics, machine learning, and automation tools allow banks to anticipate market trends, identify customer preferences, and optimize financial services. For example, AI-driven robo-advisors provide personalized investment recommendations, enabling banks to attract and retain tech-savvy customers seeking tailored financial solutions. Witts (2024) study found that banks leveraging AI-driven innovation achieved a 45% increase in revenue growth compared to competitors relying on traditional banking methods.

AI also enhances product innovation and service differentiation, helping banks create new revenue streams and expand market reach. AI-powered credit scoring models enable banks to offer loans to underbanked populations, reducing financial exclusion and increasing customer acquisition. Additionally, AI enhances cybersecurity measures, ensuring that banks can protect customer data and maintain trust, which is crucial for long-term competitiveness. Banks that integrate blockchain-powered AI for secure transactions and AI-driven anti-money laundering (AML) systems gain a reputation for security and compliance, attracting more customers. Truby, Brown and Dahdal (2020) report, financial institutions using AI for innovation and risk management saw a 30% improvement in customer retention and a 60% reduction in operational costs. By continuously adopting AI-driven innovations, banks can stay ahead of industry disruptions, improve efficiency, and maintain a strong competitive position in the rapidly evolving financial sector.

5.4 AI's impact on banking regulations and compliance

AI is transforming how banks navigate regulatory requirements and ensure compliance by automating risk assessment, fraud detection, and reporting processes. Traditional compliance models rely on manual audits and rule-based monitoring systems, which can be slow, resource-intensive, and prone to human error. AI-driven RegTech (Regulatory Technology) solutions use machine learning and natural language processing (NLP) to analyze complex regulatory frameworks, detect suspicious transactions, and ensure adherence to financial laws. For example, AI-powered anti-money laundering (AML) systems can scan millions of transactions in real-time to identify potential financial crimes, reducing false positives and improving regulatory compliance. Kothandapani (2025) report, AI-driven compliance systems have helped banks reduce regulatory fines by 50% by ensuring faster and more accurate risk detection.

AI also enhances regulatory reporting and audit processes by automating data collection and analysis, ensuring that banks comply with capital adequacy requirements, anti-fraud

regulations, and data privacy laws. AI-powered systems can interpret regulatory updates, track policy changes, and adjust compliance strategies accordingly, helping banks stay ahead of evolving financial regulations. In Nigeria, Ehujuo and Umenweke (2024) said where banks must comply with CBN (Central Bank of Nigeria) guidelines, NDPR (Nigeria Data Protection Regulation), and global banking standards, AI-driven real-time monitoring tools ensure compliance with these policies, reducing the risk of penalties. Wall (2021) study found that AI-driven compliance frameworks improved reporting efficiency by 60% and reduced compliance-related operational costs by 40%. As regulatory environments become more complex, AI's ability to automate compliance, enhance risk monitoring, and adapt to policy changes will be essential for maintaining financial stability and regulatory integrity in the banking sector.

5.5 The relationship between AI adoption and financial resilience

AI adoption plays a crucial role in enhancing financial resilience by enabling banks to anticipate risks, optimize resources, and maintain stability during economic fluctuations (Rahmani & Zohuri, 2023). Traditional banking models often struggle with market volatility, credit risks, and operational inefficiencies, making financial institutions vulnerable to economic downturns. AI-powered predictive analytics and machine learning models help banks analyze large financial datasets, detect early signs of financial distress, and make data-driven decisions to mitigate potential losses. For example, AI-driven credit risk assessment tools can predict loan default probabilities, allowing banks to adjust lending policies and protect their capital reserves. According to Zekos and Zekos (2021) report, banks that implemented AI-based risk management systems reduced bad debt exposure by 35% and improved financial stability during crises, demonstrating AI's role in strengthening resilience.

AI also enhances liquidity management and cost optimization, ensuring that banks maintain financial flexibility even in unpredictable economic conditions. AI-driven liquidity forecasting models analyze market trends, transaction patterns, and external economic factors to help banks manage cash flow efficiently. Additionally, robotic process automation (RPA) reduces operational costs by streamlining routine banking tasks, such as regulatory reporting, customer verification, and fraud detection. Selvarajan (2021) study found that AI-enabled cost optimization strategies helped banks reduce operational expenses by 25%, allowing them to allocate more resources to innovation and risk mitigation. By integrating AI into financial operations, banks can enhance their ability to absorb economic shocks, maintain profitability, and sustain long-term growth, reinforcing their overall financial resilience.

6.0 Challenges and Barriers to AI Adoption in Banking

One of the biggest barriers to AI adoption in banking is the high cost of implementation, as deploying AI-driven solutions requires significant investments in infrastructure, data storage, and advanced computing systems. Many traditional banks operate on legacy IT systems, which are incompatible with modern AI-powered applications, making system upgrades costly and time-consuming. Additionally, AI adoption involves continuous investment in algorithm development, cybersecurity, and compliance management, creating financial burdens, especially for smaller financial institutions. According to van Rensburg (2024) report, AI implementation costs in banking can exceed $10 million per institution, making it difficult for banks in developing economies to integrate AI into their operations. Furthermore, ongoing maintenance, data management, and employee training add to the total cost of ownership, delaying AI adoption for many institutions.

Another major concern is cybersecurity risks and ethical considerations surrounding AI in banking. AI-driven financial systems rely on large volumes of sensitive customer data, making them prime targets for cyberattacks, data breaches, and identity theft (Ekundayo, 2024). If AI models are not properly secured, they can be exploited by hackers using adversarial attacks to manipulate financial predictions or fraud detection systems. Additionally, ethical concerns related to algorithmic bias and data privacy pose serious risks. AI models trained on biased datasets may unintentionally discriminate against certain customer demographics, leading to unfair loan rejections or credit rating disparities. Nnaomah, *et al.,* (2024) study found that over 40% of banking executives cited data privacy risks and regulatory uncertainties as key barriers to AI adoption, highlighting the need for stronger cybersecurity frameworks and ethical AI governance in the financial sector.

Sira (2024) showed that regulatory and workforce-related challenges also hinder AI adoption in banking. Financial institutions must comply with strict regulatory policies, such as anti-money laundering (AML) laws, Know Your Customer (KYC) requirements, and data protection regulations. Many regulatory bodies have yet to develop standardized AI compliance frameworks, leaving banks uncertain about how to deploy AI solutions without violating financial laws. Additionally, workforce displacement and skill gaps remain significant concerns, as AI-driven automation reduces the demand for traditional banking roles, creating fears of job losses and employee resistance. Zhu, Corbett and Chiu (2020) report found that 55% of banking employees fear AI will replace their jobs, leading to internal resistance to AI adoption. To address this, banks must invest in AI literacy programs and workforce reskilling initiatives to help employees adapt to AI-driven banking environments. Overcoming these challenges will require strategic investments, regulatory clarity, and a human-centric approach to AI integration to ensure successful adoption and sustainable banking transformation.

7. 0 Emerging Trends and Future Directions

The integration of AI and blockchain is revolutionizing the financial industry by enhancing security, transparency, and automation in banking transactions. Blockchain technology provides a decentralized and tamper-proof ledger, while AI enhances fraud detection, smart contract optimization, and risk assessment in Decentralized Finance (DeFi) applications. AI-powered predictive analytics can assess market trends and identify fraudulent activities in blockchain transactions, reducing the risk of financial crimes such as money laundering and cyber fraud. Additionally, AI-driven automated smart contracts enable banks and DeFi platforms to execute secure and self-enforcing agreements without intermediaries. According to Gupta (2024), banks that integrated AI with blockchain experienced a 40% improvement in transaction efficiency and a 60% reduction in fraud-related financial losses, highlighting AI's potential to strengthen trust and security in digital financial ecosystems.

AI is transforming customer experiences in banking through hyper-personalized financial services, improving customer engagement and loyalty. AI-driven machine learning models analyze customer transaction history, spending behavior, and financial goals to provide tailored banking solutions, such as customized loan offers, investment recommendations, and dynamic savings plans. Chatbots and AI-powered financial advisors enhance customer support by providing real-time banking assistance and proactive financial insights, reducing the need for human intervention. Naslednikov (2024) study found that banks leveraging AI-driven personalization saw a 30% increase in customer retention rates and a 25% growth in cross-selling opportunities,

proving AI's effectiveness in enhancing customer satisfaction and revenue generation.

AI is playing a crucial role in advancing financial inclusion, particularly in emerging markets and underserved communities (Kshetri, 2021). Traditional banking models often exclude individuals with limited credit history, low income, or lack of formal identification, making it difficult for them to access financial services. AI-powered alternative credit scoring systems analyze non-traditional data sources such as mobile phone usage, utility payments, and online transactions to assess creditworthiness, enabling banks to extend loans and financial services to unbanked populations. AI-driven chatbots and mobile banking applications also allow customers to interact with banking services in multiple languages and local dialects, reducing accessibility barriers. According to Suresh and Shaw (2024), AI-powered financial inclusion initiatives have increased access to banking services by 45% in rural areas, demonstrating AI's potential to create a more inclusive and equitable financial system.

Božić (2023) said AI is becoming a key driver of sustainable banking and Environmental, Social, and Governance (ESG) compliance, enabling financial institutions to align with green finance principles and responsible banking practices. AI-powered ESG analytics platforms assess a company's carbon footprint, ethical labor practices, and corporate governance risks, helping banks make sustainable investment decisions. AI-driven climate risk modeling also allows banks to evaluate the environmental impact of loans and investments, ensuring that funds are allocated to eco-friendly projects and businesses. Xu (2024) study found that banks integrating AI-driven ESG compliance frameworks experienced a 35% improvement in sustainability reporting accuracy and a 20% increase in green investment initiatives. As financial institutions face growing pressure to meet ESG regulations and ethical banking standards

8.0 Conclusion

This conceptual review has examined the impact of Artificial Intelligence (AI) on the survival of deposit money banks (DMBs), emphasizing its role in risk management, fraud detection, operational efficiency, customer engagement, and regulatory compliance. AI-driven solutions such as predictive analytics, robotic process automation (RPA), and machine learning algorithms have enabled banks to enhance financial resilience, optimize lending decisions, and improve cybersecurity measures. Additionally, AI-powered chatbots and virtual assistants have transformed customer service by offering real-time banking assistance and personalized financial recommendations, contributing to higher customer satisfaction and retention rates. However, despite these advancements, the study also highlighted several barriers to AI adoption, including high implementation costs, workforce displacement concerns, regulatory uncertainties, and cybersecurity risks. Overcoming these challenges will require strategic investments, regulatory alignment, and workforce upskilling to ensure AI's successful and sustainable integration into banking operations.

Despite the growing body of literature on AI in banking, several research gaps remain. First, there is limited empirical research on the long-term impact of AI on firm survival, particularly in emerging economies like Nigeria. Most studies focus on short-term benefits, leaving a gap in understanding AI's sustained impact on profitability, competitiveness, and financial inclusion. Second, while AI has been widely studied in fraud detection and risk assessment, less attention has been given to how AI can enhance strategic decision-making and crisis management in banks. Additionally, AI governance and ethical considerations remain underexplored, particularly regarding bias in AI-driven lending decisions, data privacy

issues, and regulatory challenges in banking AI adoption. Addressing these gaps will be crucial in developing comprehensive AI frameworks that promote both innovation and responsible banking practices.

Future research should focus on developing AI implementation models tailored to the unique challenges of DMBs in developing economies, considering infrastructural limitations, regulatory requirements, and financial constraints. Additionally, further studies should explore the relationship between AI-driven digital banking services and financial inclusion, particularly in reaching underbanked and rural populations. Research on AI's role in sustainable banking and Environmental, Social, and Governance (ESG) compliance will also be critical in understanding how AI can drive ethical investment, climate risk assessment, and green finance initiatives. By addressing these gaps, policymakers, banking executives, and researchers can formulate strategies for leveraging AI to enhance financial stability, operational resilience, and long-term survival in the rapidly evolving digital banking landscape.

9.0 References

Adako, O., Adeusi, O. & Alaba, P. (2024). Integrating AI tools enhanced autism education: A comprehensive review. *International Journal of Developmental Disabilities 1-13.*

Addy, W. A., Ugochukwu, C. E., Oyewole, A. T., Ofodile, O. C., Adeoye, O. B., & Okoye, C. C. (2024). Predictive analytics in credit risk management for banks: A comprehensive review. *GSC Advanced Research and Reviews*, *18*(2), 434-449.

Adebisi, S. A., & Bakare, N. A. (2019). Survival strategies and sustainability of small and medium enterprises in a volatile environment. *Management Dynamics in the Knowledge Economy*, *7*(4/26), 553-569.

Adeusi, O. C., Adebayo, Y. O., Ayodele, P. A., Onikoyi, T., T., Adebayo, K. B. & Adenekan, I. O. (2024). IT standardization in cloud computing: Security challenges, benefits and future directions. *World Journal of Advanced Research and Reviews, 22(3), 2052-2057.*

Adewale, G. T., Umavezi, J. U., & Olukoya, O. (2022). Innovations in Lending-Focused FinTech: Leveraging AI to Transform Credit Accessibility and Risk Assessment.

Adewumi, A., Ewim, S. E., Sam-Bulya, N. J., & Ajani, O. B. (2024). Advancing business performance through data-driven process automation: A case study of digital transformation in the banking sector. *International Journal of Multidisciplinary Research Updates*, *8*(02).

Ally, O. J., Kulindwa, Y. J., & Mataba, L. (2025). Financial technology and credit risk management: the case of non-performing loans in Tanzanian banks. *Cogent Economics & Finance*, *13*(1), 2459188.

Ariyibi, K., O., Bello, O., F., Ekundayo, T., F & Ishola, O. (2024). Leveraging artificial intelligence for enhanced tax fraud detection in modern fiscal systems.

Ashta, A., & Herrmann, H. (2021). Artificial intelligence and fintech: An overview of opportunities and risks for banking, investments, and microfinance. *Strategic Change*, *30*(3), 211-222.

Aziz, L. A. R., & Andriansyah, Y. (2023). The role artificial intelligence in modern banking: an exploration of AI-driven approaches for enhanced fraud prevention, risk management, and regulatory compliance. *Reviews of Contemporary Business Analytics*, *6*(1), 110-132.

Barney, J. B. (2001). Resource-based theories of competitive advantage: A ten-year retrospective on the resource-based view. *Journal of management*, *27*(6), 643-650.

Božić, V. (2023). Environmental, Social, and Governance (Esg) & Artifical Intelligence (Ai). *no. May*.

Caron, M. S. (2019). The transformative effect of AI on the banking industry. *Banking & Finance Law Review*, *34*(2), 169-214.

Challoumis, C. (2024). the Future of Business-integrating AI Into the Financial Cycle. In *XIV International Scientific Conference* (pp. 44-78).

Challoumis, C., & Eriotis, N. (2024). A historical analysis of the banking system and its impact on Greek economy. *Edelweiss Applied Science and Technology*, *8*(6), 1598-1617.

Christensen, J. (2021). AI in financial services. In *Demystifying AI for the Enterprise* (pp. 149-192). Productivity Press.

Davis, F. D. (1989). Technology acceptance model: TAM. *Al-Suqri, MN, Al-Aufi, AS: Information Seeking Behavior and Technology Adoption*, *205*(219), 5.

Edunjobi, T. E., & Odejide, O. A. (2024). Theoretical frameworks in AI for credit risk assessment: Towards banking efficiency and accuracy. *International Journal of Scientific Research Updates*, *7*(01), 092-102.

Ehujuo, C., & Umenweke, M. N. (2024). AN APPRAISAL OF THE JURISPRUDENCE OF BANKING SECRECY IN NIGERIA. *African Journal Of Law And Human Rights*, *8*(2).

Ekundayo, F. (2024). Economic implications of AI-driven financial markets: Challenges and opportunities in big data integration. *International Journal of Science and Research Archive*, *13*, 1500-1515.

Faheem, M. A. (2021). AI-Driven Risk Assessment Models: Revolutionizing Credit Scoring and Default Prediction. *Iconic Research And Engineering Journals*, *5*(3), 177-186.

Gabsi, A. E. H. (2024). Integrating artificial intelligence in industry 4.0: Insights, challenges, and future prospects–a literature review. *Annals of Operations Research*, 1-28.

Gulyas, O., & Kiss, G. (2023). Impact of cyber-attacks on the financial institutions. *Procedia Computer Science*, *219*, 84-90.

Gupta, E. H. (2024). AI IN FRAUD DETECTION AND PREVENTION. *BLOCKCHAIN AND AI IN BUSINESS*, 59.

Hammad, A., & Abu-Zaid, R. (2024). Applications of AI in Decentralized Computing Systems: Harnessing Artificial Intelligence for Enhanced Scalability, Efficiency, and Autonomous Decision-Making in Distributed Architectures. *Applied Research in Artificial Intelligence and Cloud Computing*, *7*, 161-187.

Hani, N., & Amelia, O. (2024). Digital Transformation in Financial Services: Strategic Growth Through AI, Cyber Security, and Data Protection.

Hudson, J. (2024). Artificial Intelligence and Cybersecurity Integration: Modern Database Techniques for Securing AI Models.

Inavolu, S. M. (2024). Exploring AI-driven customer service: Evolution, architectures, opportunities, challenges and future directions. *International Journal of Engineering and Advanced Technology*, *13*(3), 156-163.

Jameaba, M. S. (2020). Digitization revolution, FinTech disruption, and financial stability: Using the case of Indonesian

banking ecosystem to highlight wide-ranging digitization opportunities and major challenges. *FinTech Disruption, and Financial stability: Using the Case of Indonesian Banking Ecosystem to highlight wide-ranging digitization opportunities and major challenges (July 16 2, 2020)*.

Javaid, H. A. (2024). Ai-driven predictive analytics in finance: Transforming risk assessment and decision-making. *Advances in Computer Sciences*, *7*(1).

Kaledio, P., & Doris, L. (2024). EXPLORING AI-POWERED CHATBOTS FOR CUSTOMER SERVICE ENHANCEMENT. *Available at SSRN*.

Kamuangu, P. K. (2024). Advancements of AI and Machine Learning in FinTech Industry (2016-2020).

Kar, S., Kar, A. K., & Gupta, M. P. (2021). Modeling drivers and barriers of artificial intelligence adoption: Insights from a strategic management perspective. *Intelligent Systems in Accounting, Finance and Management*, *28*(4), 217-238.

Khogali, H. O., & Mekid, S. (2023). The blended future of automation and AI: Examining some long-term societal and ethical impact features. *Technology in Society*, *73*, 102232.

Kothandapani, H. P. (2025). AI-Driven Regulatory Compliance: Transforming Financial Oversight through Large Language Models and Automation. *Emerging Science Research*, 12-24.

Kshetri, N. (2021). The role of artificial intelligence in promoting financial inclusion in developing countries. *Journal of Global Information Technology Management*, *24*(1), 1-6.

Kunwar, M. (2019). Artificial intelligence in finance: Understanding how automation and machine learning is transforming the financial industry.

Majumder, T. (2023). The Evaluating Impact of Artificial Intelligence on Risk Management and Fraud Detection in the Commercial Bank in Bangladesh. *International Journal of Applied and Natural Sciences*, *1*(1), 67-76.

Mathew, S. M. (2022). TECH-DRIVEN BANKING AND HUMAN REPLACEMENT-A STUDY ON IMPLICATIONS.

Naslednikov, M. (2024). The Impact of Artificial Intelligence on Customer Relationship Management (CRM) Strategies.

Nguyen, D. K., Sermpinis, G., & Stasinakis, C. (2023). Big data, artificial intelligence and machine learning: A transformative symbiosis in favour of financial technology. *European Financial Management*, *29*(2), 517-548.

Nnaomah, U. I., Odejide, O. A., Aderemi, S., Olutimehin, D. O., Abaku, E. A., & Orieno, O. H. (2024). AI in risk management: An analytical comparison between the US and Nigerian banking sectors. *International Journal of Science and Technology Research Archive*, *6*(1), 127-146.

Nwafor, K. C., Ikudabo, A. O., & Onyeje, C. C. (2024). Mitigating cybersecurity risks in financial institutions: The role of AI and data analytics.

Olawale, A., Ajoke, O. & Adeusi, C. (2020). Quality assessment and monitoring of networks using passive.

Olawoye, S., & Erediauwa, A. O. (2023). Monetary policy during the COVID-19 pandemic: a case study of the Central Bank of Nigeria. In *COVID-19 and the Response of Central Banks* (pp. 85-103). Edward Elgar Publishing.

Olowu, O., Adeleye, A. O., Omokanye, A., O., Ajayi, A., M., Adepoju, A., O., Omole,

O., M., Chianumba, E., C. (2024). AI-driven fraud detection in banking: A systematic review of data science approaches to enhancing cybersecurity.

Omokhoa, H. E., Odionu, C. S., Azubuike, C., & Sule, A. K. (2024). AI-powered fintech innovations for credit scoring, debt recovery, and financial access in microfinance and SMEs. *Gulf Journal of Advance Business Research*, *2*(6), 411-422.

Oyeniyi, L. D., Ugochukwu, C. E., & Mhlongo, N. Z. (2024). Implementing AI in banking customer service: A review of current trends and future applications. *International Journal of Science and Research Archive*, *11*(2), 1492-1509.

Oyetunji, D. J. (2024). The role of artificial intelligence and machine learning in enhancing customer experience in Nigeria digital banks.

Ozili, P. K., & Ndah, H. (2024). Impact of financial development on bank profitability. *Journal of Economic and Administrative Sciences*, *40*(2), 238-262.

Rahmani, F. M., & Zohuri, B. (2023). The transformative impact of AI on financial institutions, with a focus on banking. *Journal of Engineering and Applied Sciences Technology. SRC/JEAST-279. DOI: doi. org/10.47363/JEAST/2023 (5), 192*, 2-6.

Sadok, H., Sakka, F., & El Maknouzi, M. E. H. (2022). Artificial intelligence and bank credit analysis: A review. *Cogent Economics & Finance*, *10*(1), 2023262.

Savchenko, M. (2024). The impact of artificial intelligence on risk management in the operational activities of financial institutions. *Development Management*, *4*(23), 45-54.

Schumpeter, J. A. (1883). Joseph A. Schumpeter and innovation. In *Encyclopedia of creativity, invention, innovation and entrepreneurship* (pp. 1517-1522). Cham: Springer International Publishing.

Selvarajan, G. (2021). Leveraging AI-Enhanced Analytics for Industry-Specific Optimization: A Strategic Approach to Transforming Data-Driven Decision-Making. *International Journal of Enhanced Research In Science Technology & Engineering*, *10*, 78-84.

Shan, W. (2025). *AI-powered fraud detection in banking: innovations, challenges and preventive strategies* (Doctoral dissertation).

Siddiqui, M. A. (2023). The significance of AI enhanced customer feedback for providing insights on customer retention and engagement strategies for mobile companies. *International Journal Of Engineering And Management Research*, *13*(6), 182-206.

Sira, M. (2024). SECTOR-SPECIFIC IMPACTS OF ADVANCED TECHNOLOGIES ON MANAGEMENT PRACTICES: CASE STUDIES. *Scientific Papers of Silesian University of Technology. Organization & Management/Zeszyty Naukowe Politechniki Slaskiej. Seria Organizacji i Zarzadzanie*, (210).

Suresh, D., & Shaw, R. (2024). Artificial Intelligence to Enhance Resilience of Rural Sector. In *Disaster Risk Reduction and Rural Resilience: With a Focus on Agriculture, Water, Gender and Technology* (pp. 267-278). Singapore: Springer Nature Singapore.

Teece, D. J., Pisano, G., & Shuen, A. (1997). Dynamic capabilities and strategic management. *Strategic management journal*, *18*(7), 509-533.

Truby, J. (2020). Governing artificial intelligence to benefit the UN sustainable development goals. *Sustainable Development*, *28*(4), 946-959.

Truby, J., Brown, R., & Dahdal, A. (2020). Banking on AI: mandating a proactive approach to AI regulation in the financial sector. *Law and Financial Markets Review*, *14*(2), 110-120.

Trzos, J. M. (2023). *AI-Driven Customer Analytics: Implementation of Machine Learning Solutions into Bank's CRM* (Master's thesis, Universidade NOVA de Lisboa (Portugal)).

Uddeniye Gedera, D., & Herath, N. B. (2024). Unveiling the future: how Sri Lanka's banking sector is leveraging AI-powered applications for enhancing customer experience.

van Rensburg, J. (2024). *Exploring the challenges and opportunities associated with artificial intelligence in the South African banking industry* (Doctoral dissertation, North-West University (South Africa)).

Verma, R. (2023). AI-Powered Predictive Insights for Real-Time Operational Excellence in Banking. *International Research Journal of Modernization in Engineering Technology and Science*, *5*(02).

Villar, A. S., & Khan, N. (2021). Robotic process automation in banking industry: a case study on Deutsche Bank. *Journal of Banking and Financial Technology*, *5*(1), 71-86.

Wall, A. M. (2021). Guidelines for artificial intelligence-driven enterprise compliance management systems (Doctoral dissertation).

Witts, J. O. (2024). Leveraging Artificial Intelligence (AI) for Banks in Emerging Markets. *Journal of Advanced Management Science*, *12*(4).

Wu, M., Subramaniam, G., Li, Z., & Gao, X. (2025). Using AI Technology to Enhance Data-Driven Decision-Making in the Financial Sector. *Artificial Intelligence-Enabled Businesses: How to Develop Strategies for Innovation*, 187-207.

Xu, J. (2024). AI in ESG for financial institutions: an industrial survey. *arXiv preprint arXiv:2403.05541*.

Yeboah, S. A. (2020). Empowering Growth: Navigating Technological Innovations in Credit Risk Management for Developing Economies.

Zekos, G. I., & Zekos, G. I. (2021). AI Risk Management. *Economics and Law of Artificial Intelligence: Finance, Economic Impacts, Risk Management and Governance*, 233-288.

Zhu, Y. Q., Corbett, J. U., & Chiu, Y. T. (2020). Understanding employees' responses to artificial intelligence.

Compliance with Ethical Standards

Declaration

Ethical Approval

Not Applicable

Competing interests

The authors declare that they have no known competing financial interests

Funding

All aspect of the work was carried out by the author

Authors' Contribution

All components of the work were carried out by the author