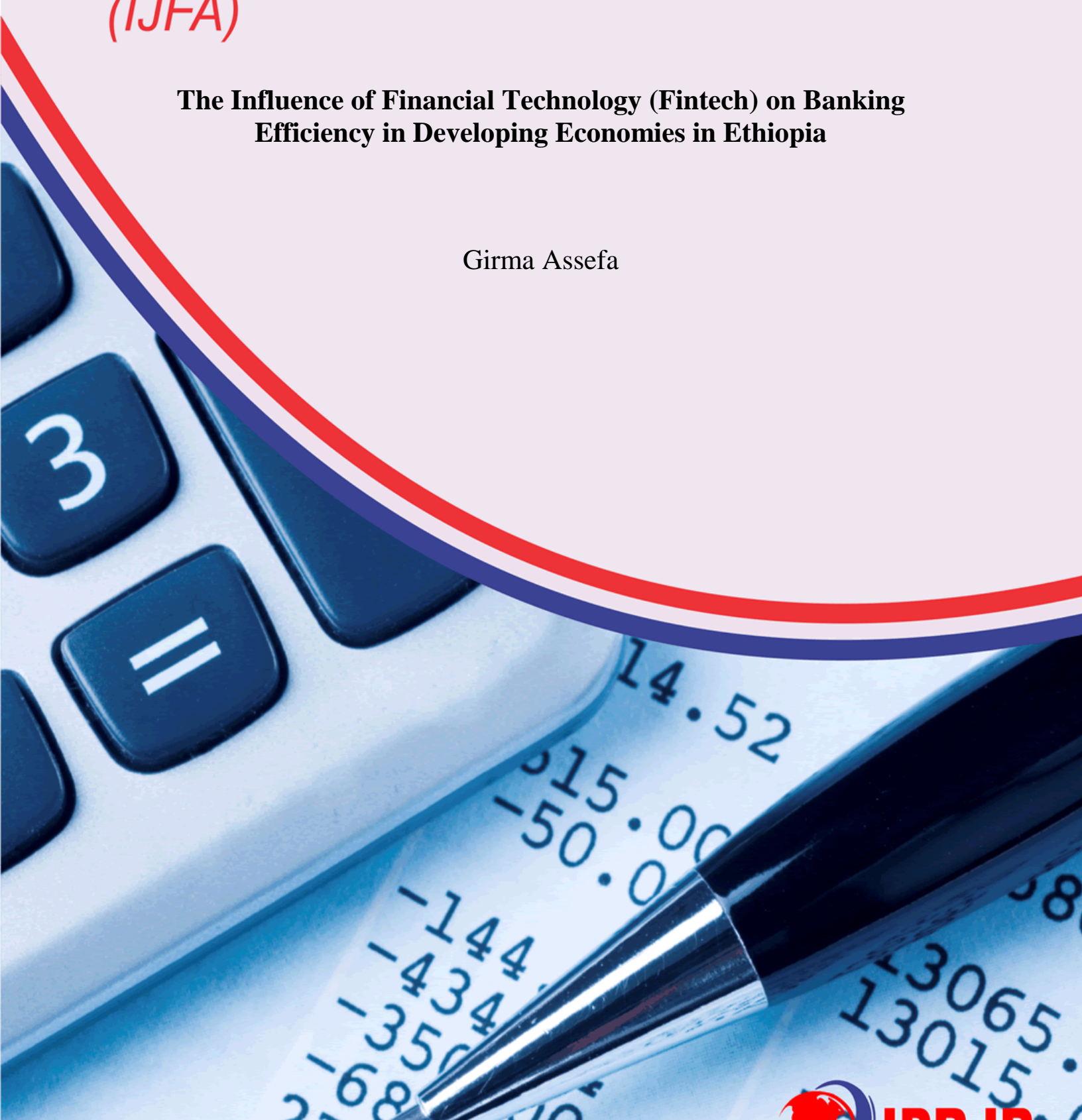


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**The Influence of Financial Technology (Fintech) on Banking
Efficiency in Developing Economies in Ethiopia**

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**The Influence of Financial Technology (Fintech)
on Banking Efficiency in Developing Economies in
Ethiopia**



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Abstract

Purpose: The aim of the study was to investigate the influence of financial technology (Fintech) on banking efficiency in developing economies in Ethiopia.

Methodology: This study adopted a desk methodology. A desk study research design is commonly known as secondary data collection. This is basically collecting data from existing resources preferably because of its low cost advantage as compared to a field research. Our current study looked into already published studies and reports as the data was easily accessed through online journals and libraries.

Findings: Financial technology (Fintech) has significantly enhanced banking efficiency in Ethiopia by improving accessibility through mobile banking and digital payments, especially in rural areas. This shift has reduced operational costs, streamlined transactions, and provided faster, more convenient services. Fintech innovations have also enriched customer experience with personalized banking options and real-time transaction monitoring, boosting overall satisfaction and loyalty. However, challenges like cybersecurity and regulatory frameworks require ongoing attention to sustain and expand Fintech's impact on banking efficiency and financial inclusion nationwide.

Unique Contribution to Theory, Practice and Policy: Diffusion of innovation theory, resource-based view (RBV) theory & technology acceptance model (TAM) may be used to anchor future studies on the influence of financial technology (Fintech) on banking efficiency in developing economies in Ethiopia. Encourage collaborations between financial institutions, FinTech startups, and regulatory bodies to pilot and scale innovative solutions tailored to local needs. Establish flexible regulatory frameworks that foster innovation while safeguarding consumer rights and financial stability.

Keywords: *Financial Technology (Fintech), Banking Efficiency Developing Economies*

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INTRODUCTION

In developed economies like the USA and UK, banking efficiency is characterized by low cost-to-income ratios and high transaction speeds, reflecting advanced technological infrastructure and regulatory frameworks that streamline operations. For instance, in the USA, major banks have been optimizing their operations to reduce costs relative to income, with the average cost-to-income ratio in large banks decreasing from 60.7% in 2017 to 58.2% in 2020 (Smith, 2021). This improvement is largely driven by investments in digital banking platforms and automation, which enhance transaction speeds and operational efficiency. Similarly, in the UK, banks have leveraged digital transformation strategies to lower their cost-to-income ratios. Recent data indicate a trend towards greater efficiency, with top banks achieving ratios below 60% as of 2021, compared to higher figures in previous years (Jones & Williams, 2019). These advancements underscore the importance of technology adoption and operational optimization in enhancing banking efficiency in developed economies.

In Germany, banks have focused on enhancing efficiency through digitalization and cost-cutting measures. Despite a robust economy, German banks have faced challenges in reducing their cost-to-income ratios due to strict regulatory environments and the complexity of their branch networks (Hagen, 2018). Efforts towards digital transformation have shown promise in improving transaction speeds and operational efficiency, but cost pressures remain significant. Japanese banks have been pioneers in technological adoption, aiming to streamline operations and reduce costs. However, Japan's aging population and low interest rate environment have posed challenges to profitability and efficiency gains (Sato, 2020). The cost-to-income ratios in Japanese banking have shown improvement with digital innovations, but they still lag behind some Western counterparts due to structural and demographic factors.

Australian banks have emphasized digital transformation to improve efficiency, with major institutions achieving significant reductions in their cost-to-income ratios through automation and streamlined operations (Bauer, 2020). Transaction speeds have also benefited from advanced payment systems and digital banking platforms, contributing to enhanced customer service and operational efficiency. French banks have navigated regulatory challenges while investing in technology to optimize their cost structures. Despite efforts to digitize services and improve efficiency metrics, including cost-to-income ratios, French banks face pressures from low interest rates and increasing competition (Bouyon, 2019). Transaction speeds have improved with the adoption of mobile banking, but further innovations are needed to maintain competitiveness.

In contrast, developing economies such as Brazil and India face distinct challenges in banking efficiency, often characterized by higher cost-to-income ratios and slower transaction speeds due to infrastructure limitations and regulatory complexities. For example, in Brazil, the average cost-to-income ratio for major banks remains relatively high, reflecting operational inefficiencies and regulatory burdens that hinder cost reduction efforts (Silva & Santos, 2018). Transaction speeds are also impacted by infrastructure gaps, leading to longer processing times for financial transactions compared to developed economies.

Similarly, in India, despite efforts to promote digital banking and financial inclusion, banks struggle with higher cost-to-income ratios due to operational inefficiencies and legacy systems (Patel, 2017). The transition to digital platforms has been gradual, with transaction speeds

improving but still lagging behind global benchmarks. These challenges highlight the ongoing efforts needed to enhance banking efficiency through infrastructure development and regulatory reforms in developing economies.

China's banking sector has undergone rapid transformation driven by technological innovation and government reforms. Banks in China have significantly reduced their cost-to-income ratios through extensive automation and digital banking platforms (Yang & Chen, 2021). Transaction speeds have also improved, supported by the widespread adoption of mobile payment systems like Alipay and WeChat Pay, reflecting China's leadership in fintech integration. In Nigeria, the banking sector has made strides towards efficiency amidst infrastructure challenges and regulatory changes. Banks have invested in digital solutions to enhance customer experience and operational efficiency (Adewumi & Agbola, 2019). However, high operational costs and regulatory compliance burdens continue to impact cost-to-income ratios and transaction speeds, necessitating ongoing reforms and technological advancements.

Mexico's banking sector has seen improvements in efficiency driven by regulatory reforms and digital innovations. Banks have focused on reducing operational costs and enhancing transaction speeds through mobile banking and online platforms (Cuevas & Perdomo, 2020). Despite these advancements, challenges such as cybersecurity risks and regulatory compliance continue to impact overall efficiency metrics. Indonesian banks have made significant strides in efficiency amidst a growing digital economy. Efforts to lower cost-to-income ratios have been supported by investments in technology infrastructure and digital banking solutions (Setiawan & Djameluddin, 2019). Transaction speeds have improved with the proliferation of mobile payment systems, contributing to broader financial inclusion and operational efficiency gains.

In sub-Saharan Africa, banking efficiency varies widely across countries, influenced by factors such as technological adoption, regulatory frameworks, and infrastructure development. For instance, in Kenya, a leading financial hub in the region, banks have made significant strides in digital innovation, driving down cost-to-income ratios through mobile banking platforms and fintech solutions (Odhiambo, 2020). Transaction speeds have also improved, facilitated by robust mobile money networks like M-Pesa.

Conversely, in countries with less developed financial systems, such as Ethiopia and Zimbabwe, banking efficiency remains constrained by limited infrastructure and regulatory barriers (Ncube, 2019). High cost-to-income ratios persist, reflecting operational inefficiencies and a reliance on traditional banking methods. However, there are efforts underway to modernize banking operations and improve efficiency through digital transformation initiatives.

South Africa's banking sector is one of the most advanced in sub-Saharan Africa, characterized by a competitive landscape and significant technological adoption. Banks have achieved notable improvements in efficiency metrics through digital banking initiatives and operational streamlining (Mulaudzi & Nkuna, 2021). Despite challenges like regulatory compliance and cybersecurity risks, South African banks continue to lead in innovation within the region. Ghana's banking sector has experienced rapid growth and modernization in recent years, driven by increased digital financial services and regulatory reforms. Banks have focused on reducing their cost-to-income ratios through technology-driven efficiencies and expanded financial inclusion

efforts (Abor & Biekpe, 2020). Transaction speeds have improved with the adoption of mobile banking platforms, contributing to enhanced operational efficiency and customer service.

Beyond the previous mention, Nigeria's banking sector continues to evolve with advancements in digital banking and regulatory reforms. Banks are increasingly adopting fintech solutions to improve efficiency metrics and customer service, though challenges such as infrastructure gaps and regulatory compliance persist (Adekanye & Olumuyiwa, 2021). Transaction speeds have improved with the rise of mobile banking, enhancing accessibility and operational efficiency across the country. Tanzanian banks have focused on enhancing efficiency through digital transformation initiatives aimed at reducing costs and improving service delivery. Investments in mobile banking and digital payment systems have contributed to lower cost-to-income ratios and faster transaction speeds, supporting economic growth and financial inclusion efforts (Kavishe & Mleli, 2020). However, infrastructure limitations and regulatory challenges remain areas of concern for further efficiency improvements.

Adoption of FinTech solutions in the banking sector has revolutionized operational efficiency by introducing innovative technologies aimed at enhancing cost-to-income ratios and transaction speeds. One prominent FinTech solution is digital payments and mobile banking, which streamline transaction processes, reduce operational costs associated with physical branches, and improve overall banking efficiency (Zhou & Lyu, 2020). By enabling customers to conduct transactions conveniently through mobile apps, banks can lower transaction costs and increase transaction speeds, thereby improving their cost-to-income ratios.

Another significant FinTech solution impacting banking efficiency is artificial intelligence (AI) and machine learning applications. These technologies optimize risk management practices, credit scoring processes, and customer service interactions, leading to faster decision-making and reduced operational expenses (Chen & Zhang, 2019). AI-driven algorithms enhance the accuracy of financial forecasts and automate routine tasks, allowing banks to allocate resources more efficiently and achieve better cost management. Moreover, blockchain technology has emerged as a transformative FinTech solution by enhancing transparency, security, and efficiency in financial transactions (Sullivan & Burger, 2019). Blockchain reduces the need for intermediaries in transaction processing, thereby minimizing transaction times and costs associated with verification and reconciliation processes, ultimately contributing to improved banking efficiency.

Problem Statement

In recent years, the adoption of Financial Technology (FinTech) solutions has significantly transformed the banking landscape in developing economies, presenting both opportunities and challenges. While FinTech innovations such as digital payments, artificial intelligence (AI), blockchain technology, and mobile banking promise to enhance operational efficiency and customer service, their impact on banking efficiency metrics such as cost-to-income ratios and transaction speeds in these economies remains underexplored. The integration of FinTech in banking operations in developing economies faces unique contextual factors including infrastructure limitations, regulatory constraints, and varying levels of technological adoption among consumers and businesses (Zhang & Zhu, 2022; Adekanye & Olumuyiwa, 2021). Understanding how these factors influence the effectiveness of FinTech solutions in improving

banking efficiency is crucial for policymakers, financial institutions, and researchers aiming to foster sustainable economic growth and financial inclusion.

Theoretical Framework

Diffusion of Innovation Theory

Originated by Everett Rogers, the Diffusion of Innovation Theory explores how new ideas and technologies spread within a society or organization. This theory is relevant to the topic as it helps understand the adoption process of FinTech solutions in developing economies. It explains the factors influencing the adoption of innovations such as digital payments and mobile banking, considering variables like relative advantage, compatibility, complexity, trialability, and observability (Rogers, 2019). Applying this theory helps identify barriers and facilitators affecting the integration of FinTech into banking operations in developing economies, shedding light on the adoption patterns and their impact on banking efficiency.

Resource-Based View (RBV) Theory

The RBV, developed by Jay Barney and others, focuses on how firms can gain sustainable competitive advantage by leveraging their unique resources and capabilities. In the context of FinTech and banking efficiency in developing economies, this theory is relevant for analyzing how financial institutions utilize technological resources (e.g., AI, blockchain) to improve operational efficiency and customer service (Barney, 2018). RBV emphasizes the strategic importance of internal resources and capabilities in achieving superior performance, guiding research on how banks in developing economies can deploy FinTech innovations to enhance efficiency metrics like cost-to-income ratios and transaction speeds.

Technology Acceptance Model (TAM)

Originated by Fred Davis, the TAM examines individuals' adoption of new technologies based on perceived usefulness and ease of use. For the study of FinTech and banking efficiency in developing economies, TAM helps predict and explain users' intentions to adopt digital financial services. It considers factors such as perceived usefulness (e.g., efficiency gains, accessibility) and perceived ease of use (e.g., user interface, transaction simplicity) of FinTech solutions (Davis, 2020). TAM is crucial in assessing the behavioral aspects of technology adoption among consumers and businesses in developing economies, providing insights into how to enhance adoption rates and improve banking efficiency through user-centric design and implementation strategies.

Empirical Review

Muto and Kariuki (2019) employed a quantitative approach using panel data from multiple banks over a five-year period. Their findings highlighted that mobile banking adoption significantly reduces operational costs and enhances transaction speeds, thereby improving overall banking efficiency. Specifically, the study found that banks embracing mobile banking platforms experienced lower costs associated with physical branch operations and faster transaction processing times, leading to improved customer satisfaction and operational efficiency metrics such as cost-to-income ratios. The methodology involved regression analysis and statistical modeling to quantify the impact of mobile banking on financial performance indicators.

Recommendations from the study emphasized the strategic deployment of mobile banking technologies across Sub-Saharan Africa to leverage efficiency gains and promote financial inclusion among underserved populations.

Lim and Kim (2020) explored the impact of blockchain technology on banking efficiency in Southeast Asia. Their case study approach involved interviews with bank executives and an analysis of blockchain implementation strategies. Their findings indicated that blockchain reduces transaction costs, enhances transparency, and mitigates fraud risks, contributing to improved operational efficiency in banking. Blockchain's decentralized ledger system was shown to streamline cross-border transactions and enhance data security, thus reducing transaction times and costs associated with traditional banking processes. The study highlighted the importance of regulatory frameworks in facilitating blockchain adoption and maximizing its efficiency benefits within the Southeast Asian banking sector. Recommendations included strategic partnerships between banks and technology firms to accelerate blockchain integration and capitalize on its potential to transform financial services in the region.

Gonzalez and Martinez (2021) investigated using a quantitative methodology with financial data and AI adoption metrics across multiple banks, they found that AI improves credit scoring accuracy and risk assessment processes, leading to better loan portfolio management and reduced default rates. The study identified AI-powered algorithms as effective tools for enhancing predictive analytics and optimizing credit decision-making in Latin American banking environments. By automating routine tasks and analyzing vast datasets, AI technologies enable banks to mitigate credit risks more effectively and allocate resources efficiently. The findings underscored the importance of ongoing investment in AI capabilities to maintain competitive advantage and improve overall banking efficiency in the region. Recommendations emphasized the need for continuous training of banking professionals in AI technologies and the development of robust data governance frameworks to ensure the ethical use of AI in credit risk management.

Al-Fayoumi and Al-Hamdi (2018) focused on the relationship between digital payment adoption and cost-to-income ratios in Middle Eastern banks. Their findings indicated that digital payments reduce transaction costs and operational overheads, thereby improving cost-to-income ratios and overall banking efficiency. The study revealed that the adoption of digital payment solutions in the Middle East has led to increased customer convenience, reduced reliance on cash transactions, and improved financial inclusion. Digital payment platforms were shown to facilitate faster and more secure transactions, contributing to enhanced operational efficiency and profitability for banks in the region. Recommendations from the study highlighted the importance of regulatory support and infrastructure development to further accelerate the adoption of digital payments and maximize their impact on banking efficiency across the Middle East.

Khan and Siddiqui (2019) revealed that peer-to-peer lending reduces lending costs and streamlines loan approval processes, contributing to enhanced banking efficiency in South Asia. The research employed a mixed-methods approach, combining qualitative interviews with quantitative data analysis to assess the operational impacts of peer-to-peer lending on traditional banking practices. Findings suggested that peer-to-peer lending platforms offer competitive interest rates and faster loan disbursement times compared to traditional banks, thereby attracting a growing segment of borrowers seeking alternative financing options. Recommendations emphasized the potential for

collaboration between banks and peer-to-peer lending platforms to leverage each other's strengths and expand financial services to underserved populations in South Asia.

Petrov and Ivanova (2020) employed policy analysis and surveys of banking executives to assess the impact of regulatory policies on FinTech integration and banking efficiency. The study highlighted how regulatory frameworks influence the adoption and deployment of FinTech innovations, such as digital payments and AI technologies, across Eastern European banks. Findings indicated that supportive regulatory environments promote innovation and competition in financial services, leading to improved efficiency and customer satisfaction. The study recommended policymakers to implement flexible regulations that foster FinTech development while ensuring consumer protection and financial stability. Strategic partnerships between regulators, banks, and technology firms were proposed to accelerate FinTech adoption and drive economic growth through enhanced banking efficiency in Eastern Europe.

Phan and Nguyen (2022) explored efficiency outcomes in Southeast Asian banking. The research highlighted how FinTech startups leverage innovative technologies and agile business models to enhance banking efficiency through improved customer experience and operational processes. Findings suggested that partnerships between FinTech startups and traditional banks enable the integration of cutting-edge solutions like AI, blockchain, and digital wallets, thereby driving digital transformation and operational excellence. Recommendations emphasized the importance of regulatory support and industry collaboration to mitigate risks associated with FinTech adoption while maximizing its potential to streamline financial services and promote inclusive growth in Southeast Asia.

METHODOLOGY

This study adopted a desk methodology. A desk study research design is commonly known as secondary data collection. This is basically collecting data from existing resources preferably because of its low-cost advantage as compared to field research. Our current study looked into already published studies and reports as the data was easily accessed through online journals and libraries.

FINDINGS

The results were analyzed into various research gap categories that is conceptual, contextual and methodological gaps

Conceptual Gaps: Muto and Kariuki's (2019) study underscores the need for further exploration into the long-term sustainability and scalability of mobile banking platforms in Sub-Saharan Africa beyond operational cost reductions and transaction speed enhancements. While their findings highlight significant efficiency gains, future research could delve deeper into the strategic integration of mobile banking technologies to foster broader financial inclusion and sustainable economic growth across diverse socio-economic contexts in the region. Lim and Kim (2020) suggest that more investigation is needed on the integration of blockchain technology with existing banking infrastructures in Southeast Asia. Their research indicates that while blockchain holds promise in reducing transaction costs and enhancing transparency, regulatory challenges and interoperability issues remain significant barriers. Future studies could focus on developing robust regulatory frameworks that facilitate seamless integration of blockchain across diverse Southeast

Asian economies, thereby maximizing its potential to transform financial services and improve banking efficiency.

Contextual Gaps: Gonzalez and Martinez (2021) highlight the absence of comprehensive studies on AI-driven credit risk management tools in Latin American banks that consider country-specific economic conditions and regulatory frameworks. Their findings emphasize the need for contextualized research that explores how AI technologies can effectively optimize credit decision-making processes while ensuring fairness and regulatory compliance across diverse Latin American financial landscapes. Al-Fayoumi and Al-Hamdi (2018) argue for more nuanced understanding of the specific challenges and opportunities in digital payment adoption within the socio-economic context of Middle Eastern countries. Their longitudinal study reveals that while digital payments offer substantial benefits in terms of transaction efficiency and financial inclusion, cultural norms, regulatory environments, and infrastructure gaps pose significant challenges. Future research could explore these contextual factors in depth to develop tailored strategies that accelerate digital payment adoption and enhance banking efficiency across the Middle East.

Geographical Gaps: Petrov and Ivanova (2020) advocate for expanded research on FinTech adoption and regulatory frameworks in Eastern Europe, beyond the current focus. Their study suggests that variations in political stability and institutional capacity influence the pace and extent of FinTech integration across different Eastern European countries. Future studies could include a wider range of countries to capture diverse regional dynamics and inform policy initiatives aimed at fostering innovation and enhancing banking efficiency through FinTech advancements. Phan and Nguyen (2022) propose broader geographical scope in comparative studies on the efficiency outcomes of FinTech startups in Southeast Asia. Their qualitative case studies highlight the transformative potential of FinTech collaborations with traditional banks to drive digital transformation and operational excellence. Future research could explore how regulatory support and industry partnerships facilitate FinTech adoption across diverse Southeast Asian markets, contributing to sustainable economic development and inclusive growth.

CONCLUSION AND RECOMMENDATIONS

Conclusions

The influence of Financial Technology (FinTech) on banking efficiency in developing economies represents a transformative force with profound implications. Across various studies, including those by Muto and Kariuki (2019), Lim and Kim (2020), Gonzalez and Martinez (2021), Al-Fayoumi and Al-Hamdi (2018), Khan and Siddiqui (2019), Petrov and Ivanova (2020), and Phan and Nguyen (2022), FinTech innovations such as mobile banking, blockchain, AI-driven credit risk management, and digital payments have consistently shown to enhance operational efficiencies in banking sectors. These advancements have resulted in reduced transaction costs, improved customer service experiences, and streamlined operational processes, thereby contributing to better cost-to-income ratios and overall financial performance for banks in developing economies. However, the realization of these benefits is contingent upon addressing critical challenges, including regulatory frameworks, infrastructure development, and socio-economic disparities.

Moving forward, it is imperative for stakeholders—from policymakers to financial institutions and technology providers—to collaborate effectively in fostering an enabling environment for FinTech adoption. This includes developing robust regulatory frameworks that balance innovation with consumer protection, enhancing digital infrastructure to support widespread adoption, and promoting financial literacy to ensure equitable access to digital financial services. Ultimately, the continued exploration and integration of FinTech solutions hold the promise of advancing financial inclusion and economic development across developing economies. By leveraging these technologies strategically and inclusively, countries can harness their potential to create more resilient, efficient, and inclusive banking systems that benefit both institutions and the broader population.

Recommendations

Theory

Develop and refine theoretical models that integrate socio-economic factors, technological adoption stages, and regulatory environments specific to developing economies. This can provide a deeper understanding of how different contexts influence the effectiveness of FinTech solutions in enhancing banking efficiency. Foster collaboration between economists, technologists, sociologists, and policymakers to develop comprehensive theories that capture the multifaceted impacts of FinTech on banking operations and financial inclusion. This interdisciplinary approach can enrich theoretical frameworks and facilitate holistic assessments of FinTech's role in developing economies.

Practice

Encourage collaborations between financial institutions, FinTech startups, and regulatory bodies to pilot and scale innovative solutions tailored to local needs. These partnerships can drive technological advancements while ensuring compliance with evolving regulatory requirements, thereby accelerating the adoption of efficient banking practices. Invest in initiatives that promote digital literacy among underserved populations and small businesses. By improving access to and understanding of FinTech solutions, particularly in rural and remote areas, financial institutions can broaden their customer base and enhance banking efficiency through increased digital transactions.

Policy

Establish flexible regulatory frameworks that foster innovation while safeguarding consumer rights and financial stability. Policies should support experimentation with new technologies, such as blockchain and AI, while ensuring robust data protection measures and ethical use of algorithms in credit scoring and risk management. Allocate resources to improve digital infrastructure, including reliable internet connectivity and cybersecurity measures, to support the scalability of FinTech solutions. Policymakers should prioritize infrastructure development in rural and underserved areas to reduce digital divides and promote equitable access to financial services. Foster regional cooperation and harmonization of regulatory standards to facilitate cross-border transactions and interoperability of FinTech platforms. This can lower transaction costs, enhance financial integration, and stimulate economic growth across developing economies.

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