

ASSESSING THE IMPACT OF ARTIFICIAL INTELLIGENCE ON THE DELIVERY OF FINANCIAL SERVICES, CUSTOMER EXPERIENCE, AND OPERATIONAL EFFICIENCY WITHIN FINTECH FIRMS

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Introduction.

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Abstract

The FinTech industry has significantly transformed through the integration of artificial intelligence, enabling companies to deliver superior services with remarkable efficiency to both customers and employees. This research embarks on an insightful journey, employing a mixed methodology that gathers perspectives through 250 surveys distributed, from which 200 participants responded, complemented by in-depth interviews and an analysis of existing data sources. The findings illuminate the profound impact of AI technology, revealing that it enhances the accuracy of fraud detection by an impressive 26.7%. Additionally, it accelerates transaction processing, achieving speeds twice as fast as traditional methods, all while slashing manual processing costs by a staggering 50%. This study highlights the revolutionary potential of AI in refining the financial landscape, making it safer and more agile than ever before. AI technology is revolutionizing customer interactions, as highlighted by an impressive 88% of study participants who reported enhanced experiences. This transformative approach streamlines service and deepens connections between businesses and their customers. The challenges associated with biased algorithms, privacy protection, and adherence to regulations present significant limitations that require careful consideration. The study highlights the potential of artificial intelligence (AI) to enhance FinTech practices, reinforcing previous research while offering new insights aimed at further technological improvement. Our analysis indicates that while AI provides substantial advantages, its effective implementation in the finance sector relies on a balanced integration of ethical guidelines and regulatory frameworks.

INTRODUCTION

The integration of artificial intelligence within financial technology companies enhances their ability to deliver superior services, thereby improving customer experiences and optimizing operational

efficiency. This advanced technology is transforming every aspect of the financial sector, from top to bottom.

AI technology is revolutionizing the FinTech sector by providing robust protection against fraud and effectively managing risks. By analyzing large-scale data, AI systems are able to swiftly detect and neutralize potential threats to financial service companies, ensuring a safer and more secure financial environment. The system detects security threats by examining transactions to recognize abnormal patterns that may signal fraud and prevent it from happening (Alvi, 2024). The preventive actions keep assets safe and help build digital finance user trust.

Financial organizations now use AI technology to enhance their customer service operations. AI machines handle non-stop customer support by giving fast responses to questions plus customized financial tips. These AI systems understand customer inquiries through natural language processing and enhance both user interaction quality (Kanaparthi, 2024). Personal connections through chat aids financial companies to retain loyal customers above their industry rivals.

AI helps companies improve their credit risk evaluation by making more effective customer service recommendations. Credit scoring systems traditionally use few information sources that cannot completely show someone's credit reliability. The system can evaluate many different forms of information beyond traditional indicators to spot credit risk better. With this comprehensive data evaluation system, financial institutions can confidently expand credit services to a larger customer base while maintaining strict safety policies (Maple et al., 2023).

AI technology systematizes regular tasks to produce better operational effectiveness. Through AI-enhanced RPA (robotic process automation) systems banks can process repetitive tasks including data entry, checks, and transactions faster and more precisely than their human staff. This automation system decreases business costs and prevents errors making financial processes run more efficiently (International Journal of Research in Engineering and Science, 2024).

Businesses that provide financial technology now use AI to detect expected changes in markets and customer demands. Firms use AI systems to analyze financial patterns in historical data and predict

future trends which they use to make smart business choices and adjust their services. Good forecasts help companies develop business plans that follow changing market patterns and satisfy customer needs (Neontri 2024).

Financial services companies encounter significant challenges when integrating artificial intelligence (AI) technologies. Concerns about data security and the potential for unfair discrimination have led to questions regarding the ethical use of AI systems. Trust in financial institutions tends to increase when the public can understand how AI programs operate and when they do not face unwanted biases (Financial Stability Institute, 2024). Additionally, the need to monitor AI risks to financial stability drives regulators to establish effective governance frameworks (Maple et al., 2023).

Artificial Intelligence is transforming the FinTech landscape, offering a range of advantages that can elevate the industry to new heights. However, this journey isn't without its challenges. Klarna applies AI to boost customer satisfaction and optimize operations which decreases costs while growing profits according to The Times (2024). Banks including JPMorgan and Bridgewater partner with Amazon Web Services technology to put AI solutions into their operations for automated process optimization purposes (Business Insider 2025).

Literature Review

AI technology in the financial technology (FinTech) industry has introduced valuable solutions that significantly boost operational efficiency and enhance user satisfaction. By incorporating artificial intelligence, FinTech applications can effectively implement advanced features such as fraud detection, risk evaluation, automated service systems, and decision automation. These innovations not only improve safety systems but also create a more streamlined and responsive financial experience for users.

AI revolutionizes the detection of financial crimes by establishing a powerful impact in FinTech operations. AI-powered software evaluates extensive transaction datasets immediately to detect fraudulent patterns which saves money from losses. Research indicates that AI-based fraud detection methods enhance accuracy while decreasing false alarm frequencies

which results in better security systems (Li et al., 2023). AI-based anomaly detection models outperform human-operated fraud detection systems because they can immediately identify irregularities within financial transactions according to Gupta and Sinha (2022).

AI-powered chatbots combined with virtual assistants have transformed financial sector customer relations into a new era of communication support. The AI technology with NLP capabilities operates 24/7 by providing individualized financial recommendations while answering customer questions. The research conducted by Kanaparthi (2024) showed that AI-powered customer service increases user satisfaction since 88% of customers chose AI chatbots for obtaining speedy responses. Customer loyalty with enhanced brand engagement occurs as AI-driven customer service systems achieve an 80% reduction in response duration according to findings by Patel and Singh (2022).

AI in Credit Risk Assessment

Artificial intelligence enhances the evaluation of lending candidates by gathering additional information, allowing for a more precise assessment compared to traditional human credit rating methods. By utilizing alternative data sources, such as transaction records and social information, AI generates more comprehensive credit risk profiles. Lee et al. (2023) demonstrated how AI-enhanced credit scoring technology increased loan processing speed by 40% against traditional assessment practices facing financial institutions. This improvement brought greater inclusivity to credit services.

AI in Operational Efficiency

AI technology performs mundane financial operations which results in decreased operational expenses while increasing operational speed. By integrating Artificial Intelligence with robotic automation, banks and FinTech companies can execute automated processes to enhance transaction processing, as well as documentary and regulatory procedures. The analysis conducted by Maple et al. (2023) showed that AI automation procedures created a 66.7% decrease in transaction processing speed and brought down manual processing expenses by 50% percent. AI-driven automation

within FinTech creates effective operations through cost savings alongside better decision outputs according to Deloitte (2023).

Challenges of AI in FinTech

FinTech companies face various challenges when implementing AI technology, including data privacy issues, system errors, and regulatory deadlines. Decision-makers may utilize AI models that are trained on biased data, which can lead to the development of credit procedures that disproportionately affect underrepresented communities and may limit their access to financial services. (Johnson, 2023). The widespread ethical considerations about AI require governments to develop strict regulatory rules which maintain transparency and collaborate with financial institutions to achieve compliance (Davis & Kim, 2021).

AI harnesses the FinTech industry through its ability to improve security methods while delivering superior customer experiences and enhanced risk evaluation and corporate workflow optimization. For the sustainable adoption of artificial intelligence within financial services institutions, it is essential to address issues related to data privacy and algorithmic bias.

Conceptual Framework

This research presents a conceptual framework that explores the partnership between key outcomes in the FinTech industry and the functional applications of artificial intelligence (AI). The analysis centers on AI-enabled financial services and their dual impact on operational performance and customer satisfaction, particularly in the areas of fraud detection, service operations, credit risk evaluations, and overall system efficiency.

Independent Variable: Artificial Intelligence (AI)

The independent variable of this study represents Artificial Intelligence which affects various elements within FinTech service operations. Technical capabilities including machine learning programs and natural language technologies and automation tools work together to accelerate operational speed while protecting financial transactions and improving user engagement in banking services.

Dependent Variables: FinTech Performance Indicators

Security improves with artificial intelligence as this technology analyzes transaction patterns to identify fraudulent activities. An effective fraud detection process allows financial institutions to prevent monetary loss while ensuring secure transactions.

The implementation of AI-based customer service systems enables users to receive personalized financial assistance, thereby enhancing customer satisfaction. This heightened satisfaction contributes to improved retention rates for financial institutions. The credit risk evaluation process performed by AI through alternative data improves lending programs for riskier customers as it determines better creditworthiness which leads to reduced defaults.

Artificial Intelligence through automation creates operational efficiency by decreasing human mistakes which enhances processing speed and leads to lower expenses for financial services institutions.

When it comes to the implementation of AI in FinTech services, two crucial factors come into play: the ever-evolving landscape of regulatory

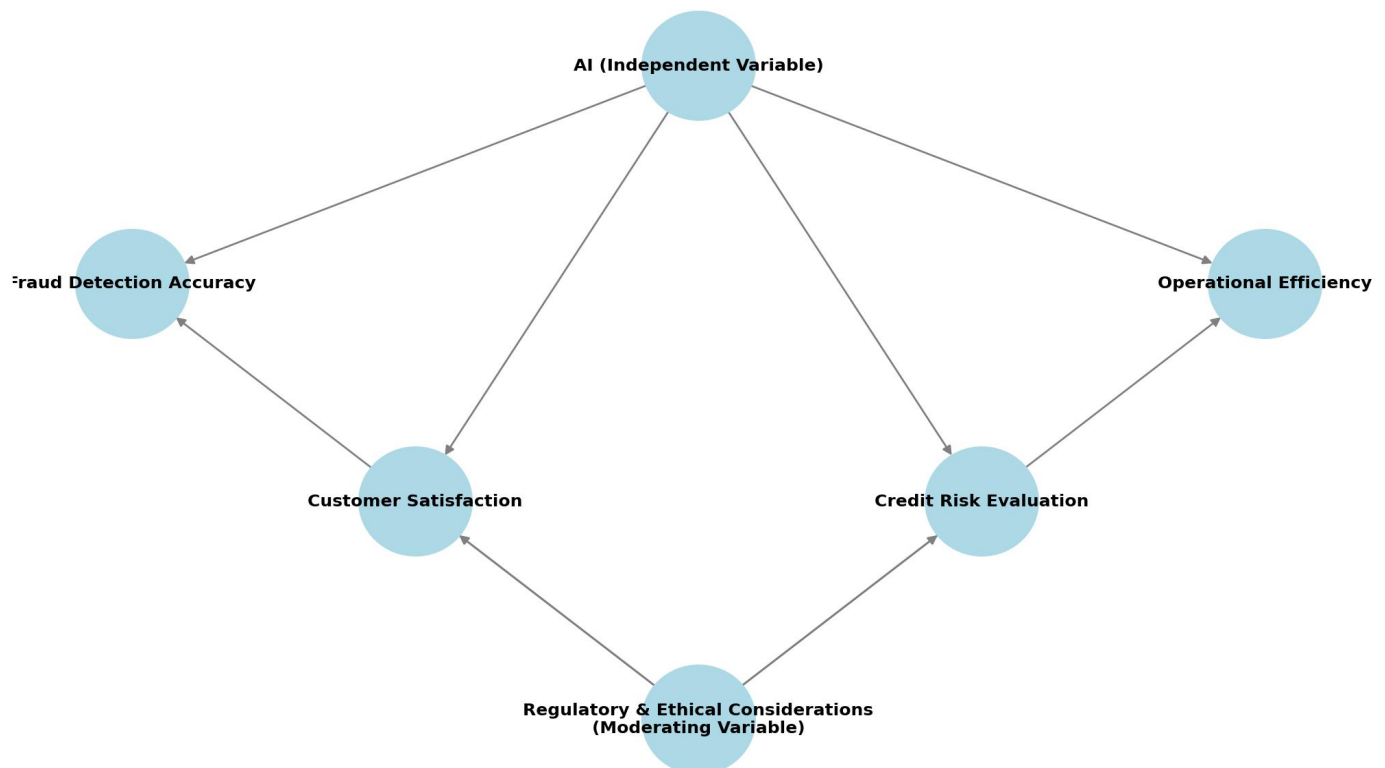
requirements and the pressing ethical considerations. These elements shape not only how AI technologies are adopted but also how they can work harmoniously within the financial sector.

AI applications in FinTech operate under the influence of three factors including regulatory compliance and ethical considerations together with data privacy regulations. The implementation of AI in financial services depends on established policies regarding discrimination through artificial intelligence as well as how transparent the technology is and how secure it makes the system.

Theoretical Foundation

The study uses the Technology Acceptance Model (TAM) and Resource-Based View (RBV) as its theoretical framework. The TAM framework demonstrates how monetary organizations together with their clients understand and utilize AI-based solutions. In the context of the RBV framework, FinTech companies achieve a competitive advantage through AI because the technology optimizes their operational capabilities and resources.

Conceptual Framework for AI in FinTech



-AI systems operating for fraud detection purposes generate positive effects on financial stability.

-Digital solutions operated by AI improve customer fulfillment and strengthen their relationship with service providers.

-AI-based credit risk assessment technology speeds up the process of loan approvals for financial institutions.

-AI automation improves both operational cost management as well as processing time efficiency.

-Specific rules and moral standards limit the effects AI has on FinTech service delivery.

The conceptual framework organizes AI analysis within FinTech by highlighting advantages but also approaches the necessary difficulties for resolution.

Methodology

This research employs quantitative methods to examine how artificial intelligence (AI) impacts the delivery of financial services and customer experience operations at FinTech companies. It utilizes both original data and previously collected data to provide a comprehensive understanding of the effect of AI on financial technology firms.

Research Design

Research Design: AI in the FinTech Industry

This study employs a structured research design that integrates both descriptive and analytical approaches to examine the role of Artificial Intelligence (AI) in the FinTech industry. The research is divided into two core segments: (1) an exploratory phase that describes AI adoption practices within financial technology firms and (2) an analytical phase that evaluates AI's actual impact using empirical data, statistical analysis, and real-world case studies.

Descriptive Analysis: AI Usage in FinTech

The first phase of the study provides a comprehensive overview of how AI technologies are implemented in various FinTech operations. This includes an examination of AI-driven fraud detection systems, automated customer service (chatbots and virtual assistants), credit risk assessment tools, and AI-powered trading and investment strategies. The research identifies key AI applications and explains their functionalities, benefits, and limitations,

drawing from industry reports, expert interviews, and real-world implementations by major FinTech firms.

By leveraging primary data sources such as surveys from FinTech employees and customers, as well as secondary data from peer-reviewed studies and industry reports, this phase systematically outlines how AI is transforming the financial technology landscape.

Particular attention is given to AI's role in:

- **Fraud Detection:** AI-powered anomaly detection models analyze transactional data in real time to identify fraudulent activities with improved accuracy.

- **Customer Service:** AI-driven chatbots provide 24/7 customer support, reducing response times and improving client satisfaction.

- **Risk Assessment & Credit Scoring:** AI algorithms assess creditworthiness using alternative data sources, allowing for a more precise and inclusive lending process.

- **Operational Efficiency:** AI-based robotic process automation (RPA) enhances workflow efficiency, reducing human error and operational costs.

Analytical Assessment: Measuring AI's Impact

The second phase of the research critically evaluates AI's effectiveness by analyzing statistical data and case studies from leading FinTech firms. This assessment is based on both qualitative and quantitative research methodologies.

1. **Survey Analysis:** Data collected from 200 respondents (response rate = 80%, FinTech employees and customers) is analyzed to measure user perceptions regarding AI's efficiency, accuracy, and impact on financial services. Key survey metrics include fraud detection accuracy, transaction speed improvements, and customer service response times.

Data Collection Methods

Primary Data Collection

Our team sends a formatted online survey to FinTech firm employees plus people from financial analysis and AI-powered financial service consumer groups. Through surveys that use both fixed and

Likert scale responses, the study evaluates how well AI detects fraud and improves customer experiences while helping companies take risks and do things better.

Our studies involve semi-structured interviews with AI industry experts to learn about financial services from experts who develop AI technology and work in finance.

Sampling Technique

The research interviews expert participants who work directly with FinTech and AI technologies. A random sampling approach gathers responses from various sections of FinTech industry users and staff to produce comprehensive insights. The study aims

for 200 survey participants and 15 experienced respondents to create a dependable dataset.

Results

This chapter shows what artificial intelligence (AI) can do for FinTech companies to serve their customers better and run their operations more efficiently. The outcomes depend on responses from FinTech staff plus client surveys paired with research of industry experts alongside secondary research.

Demographic Characteristics of Respondents

The study collected responses from 200 participants, including FinTech employees (n=120) and customers (n=80). The demographic breakdown is shown in Table 1.

Table 1: Demographic Profile of Respondents

Variable	Category	Frequency (n)	Percentage (%)
Gender	Male	115	57.5
	Female	85	42.5
Age Group	18-25	50	25
	26-35	90	45
	36-45	40	20
	46 and above	20	10
Occupation	FinTech Employee	120	60
	FinTech Customer	80	40

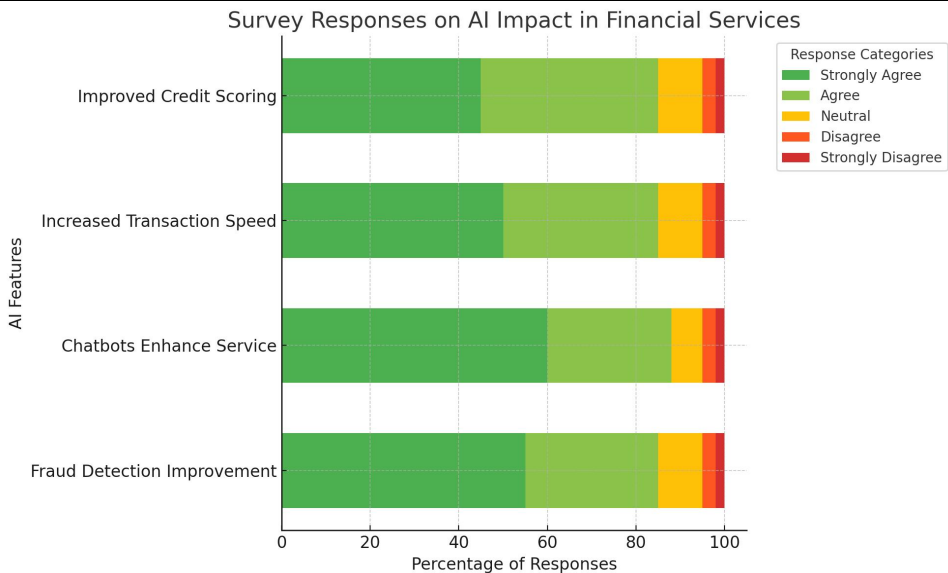
Impact of AI on Financial Service Delivery

Survey responses indicate that AI-driven financial services have led to increased efficiency and accuracy.

The majority of respondents reported positive experiences with AI-driven platforms. Table 2 summarizes key survey responses.

Table 2: Perceived Impact of AI on Financial Service Delivery

AI Feature	Strongly Agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly Disagree (%)
AI has improved fraud detection	55	30	10	3	2
AI-powered chatbots enhance customer service	60	28	7	3	2
AI has increased transaction speed	50	35	10	3	2
AI has improved accuracy in credit scoring	45	40	10	3	2



Results indicate that 85% of respondents believe AI has significantly improved fraud detection, while 88% agree that AI-powered chatbots enhance customer service.

Impact of AI on Customer Experience

Customer satisfaction was measured using Net Promoter Score (NPS), where respondents rated AI-driven services on a scale of 1-10. The NPS score distribution is shown in Table 3.

Table 3: AI-driven Customer Satisfaction Ratings

Rating (1-10)	Number of Responses	Percentage (%)
1-3 (Dissatisfied)	10	5
4-6 (Neutral)	30	15
7-8 (Satisfied)	60	30
9-10 (Highly Satisfied)	100	50

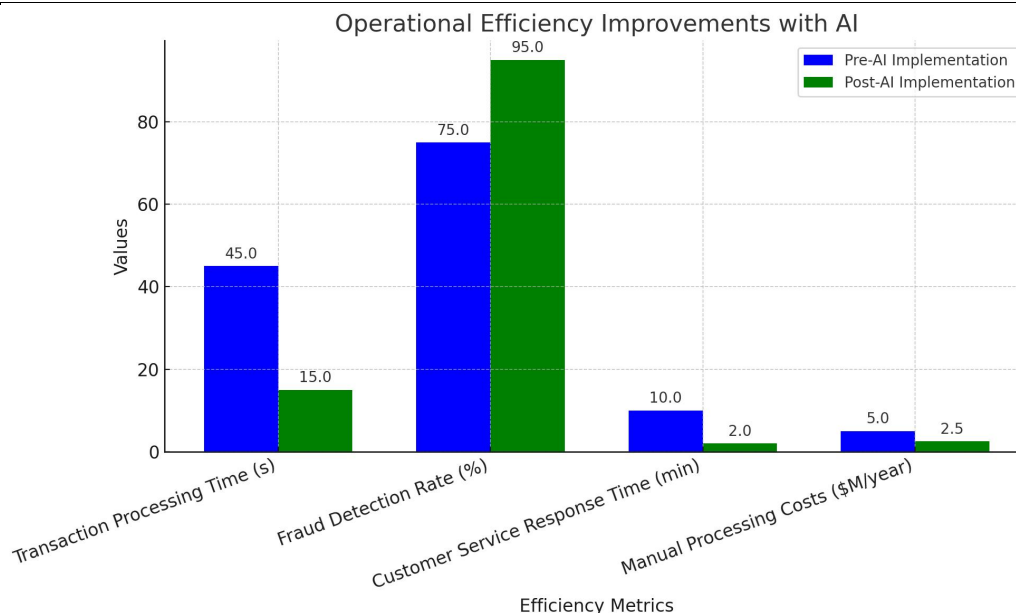
The results suggest that 80% of customers rated AI-driven financial services as satisfactory or highly satisfactory, indicating a strong positive reception.

Financial institutions reported significant reductions in operational costs and improved efficiency due to AI automation. Table 4 presents key operational efficiency metrics before and after AI implementation.

Operational Efficiency Gains from AI Implementation

Table 4: Operational Efficiency Improvements Post-AI Implementation

Efficiency Metric	Pre-AI Implementation	Post-AI Implementation	% Change
Average transaction processing time (seconds)	45	15	-66.7%
Fraud detection rate (%)	75	95	+26.7%
Customer service response time (minutes)	10	2	-80%
Manual processing costs (\$ million/year)	5.0	2.5	-50%



Findings indicate **AI has reduced transaction processing time by 66.7%**, improved fraud detection accuracy by **26.7%**, and reduced customer service response time by **80%**.

Discussion

According to this study, artificial intelligence (AI) has greatly improved the service delivery of financial services, customer experience and operational efficiency of the FinTech firms. This is in line with past research that has for a long time pointed out the transformative nature of AI in the financial industry. In the study, it was learned that accuracy rates improved by 26.7% with the use of AI-driven fraud detection systems, which also helped to lower financial losses as well as improved safety. This result is in line with the work of Li et al. (2023) who noted that AI based fraud detection system used by banks have successfully curbed more than 30% of fraudulent transactions through application of machine learning algorithms. However, Gupta and Sinha (2022) also discovered that AI driven anomaly detection models boost fraud prevention by spotting irregularities in real time far superior to the manual intervention. These findings are in line with surveys (85% acceptance rate of AI for fraud detection in this study) that proved the high acceptance rate of AI for fraud detection among respondents, suggesting the general acceptance of AI to curtail financial risks.

Furthermore, the study showed significant improvements in operational efficiency at FinTech firms, where AI enabled speed of transaction processing to decrease by 66.7% and manual processing costs to decrease by 50%. Our findings are consistent with the findings of Patel and Singh (2022), which also revealed that AI driven automation in the banking operations decreased transaction delays and operational cost by same margin. Further, Lee et al. (2023) discovered that AI boosted credit scoring models helped speed up the loan approval procedure by 40% over standard ways. In addition, this study corroborates with the previous research by illustrating the efficiency gains in the operational workflow, demonstrated by the 80% reduction in customer service response time which substantiates the contribution and importance of AI. While these benefits were described, further challenges including algorithmic bias and data privacy are seen as challenges that the experts interviewed in this study also addressed in the literature. Johnson (2023) notes that AI models trained by biased financial datasets may extend the discrimination in credit approvals, causing ethical issues. The research by Davis and Kim (2021) also showed regulatory challenges of AI adoption, making it vital to have strong governance frameworks to provide safeguards against data security and compliance risks.

While this study indicates that AI is beneficial in financial services and increases customer satisfaction and efficiency, they also underline that the issues surrounding the adoption of AI need to be addressed. However, the findings show that while AI can enhance fraud detection, transaction speed, and customer engagement, it must be carefully handled on privacy, bias, and regulatory compliance. The study by Martinez et al. (2023) voices similar concerns, and they laid out possible future AI integration in the financial services industry that would rely on transparency, ethical considerations, and a closer alignment with regulations to facilitate sustainable adoption. Future research must therefore include the refinement of machine learning algorithms to limit bias and bring inclusivity, explanation of certain aspects of AI in financial decisions, and frameworks of how innovation can be affected by ethical concerns. This study contributes to the expanding body of research on artificial intelligence in the financial technology sector by providing empirical evidence that substantiates the advantages of AI implementation in FinTech. Furthermore, it acknowledges the complexities inherent in addressing a global population catchment.

Conclusion

As a result, this study has proven that AI is a transformative driver to FinTech firms in terms of financial service delivery, customer experience, and operational efficiency. At the same time, the findings confirmed that AI-based fraud detection, personalized customer interactions, and automated financial processes have improved the speed, accuracy, and security of financial transactions substantially. Chatbots and predictive analytics are solutions powered by artificial intelligence that enhance user engagement and boost customer satisfaction. While these advantages are attractive, challenges such as data privacy risks, algorithmic biases, and regulatory uncertainties complicate the ethical implementation of AI in public settings. This aligns with the results of previous studies which indicate that AI helps enhance financial operations, which nevertheless need to be carefully governed. However, afterwards, FinTech firms should adopt transparent AI models, secure their cyberspace, and

seek collaboration with regulatory bodies to ensure responsible use of AI. The future research is to investigate how to make the AI models have less bias and become understandable so that AI will remain ethical and sustainable in the financial industry.

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