

Impact of Artificial Intelligence On Business Operations in Opay Nigeria

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Abstract: *The integration of artificial intelligence (AI) into business operations has emerged as a transformative force across global industries, with the financial services sector experiencing particularly profound changes. This paper examines the impact of AI on business operations in Nigeria's fintech ecosystem, using OPay—one of Nigeria's largest financial technology companies—as a case study. Drawing on the Central Bank of Nigeria's Fintech Report 2025, industry data, and OPay's publicly reported AI initiatives, this study analyzes how AI technologies are reshaping operational processes, risk management, customer service, and strategic decision-making within the organization. The findings reveal that AI adoption at OPay manifests across four primary domains: fraud detection and security (AI-driven scam alert systems processing over 60,000 daily risk notifications), customer service automation (AI-powered chatbots serving 62.5% of Nigerian fintech users), credit scoring and risk modelling, and strategic business intelligence. The study further identifies key challenges including talent shortages, infrastructure deficits, and regulatory uncertainties that constrain deeper AI deployment. The paper concludes that AI serves as a critical enabler of operational efficiency, security enhancement, and competitive advantage in Nigeria's rapidly evolving digital financial landscape, while recommending strategic investments in AI talent development, infrastructure, and regulatory frameworks to sustain this trajectory.*

Keywords: artificial intelligence, business operations, Fintech, Opay Nigeria, fraud detection, digital financial services, operational efficiency

INTRODUCTION

The twenty-first century has witnessed an unprecedented acceleration in the adoption of artificial intelligence across virtually every sector of the global economy. From manufacturing and logistics to healthcare and finance, AI technologies have fundamentally altered how organizations operate, compete, and create value. Within the financial services industry, AI has emerged as a key driver for improving productivity, automating processes, and optimizing decisions, with particularly marked effects in sectors where automation is crucial. Nigeria, as Africa's largest economy and most populous nation, has experienced a remarkable fintech revolution over the past decade. The country processed close to 11 billion real-time payment transactions in 2024, more than double the volume recorded in 2022, positioning Nigeria among the world's most active instant payment markets. Within

this dynamic ecosystem, financial technology companies have leveraged AI to address critical operational challenges, enhance customer experiences, and build more resilient business models.

The Central Bank of Nigeria's Fintech Report 2025 reveals that AI is widely adopted in Nigerian fintech, primarily for risk management and operational efficiency. An astounding 87.5% of Nigerian fintech companies now deploy AI for fraud detection, making it the most dominant use case across the sector. This pattern reflects both the scale of digital fraud challenges confronting Nigeria's financial system and the growing reliance on data-driven tools as fintech services become more embedded in payments, lending, and remittances.

Despite the proliferation of AI technologies in Nigeria's fintech sector, there remains a limited understanding of how specific organizations implement and benefit from these technologies in their day-to-day operations. While aggregate data on AI adoption exists, contextualized case studies examining the operational impact within leading fintech enterprises are scarce. This gap is particularly pronounced for OPay, a company that has grown from its 2018 founding to become a dominant force in Nigeria's digital financial landscape, with over 60 million users, a valuation approaching \$3 billion, and a 51% market share of Nigeria's mobile wallet market. Understanding how OPay leverages AI across its business operations is essential for several reasons. First, as a market leader, OPay's AI practices may set industry benchmarks and influence broader adoption patterns. Second, the company's operational scale—processing tens of millions of monthly transactions and serving over one million businesses—provides a rich context for examining AI's real-world impact. Third, the challenges OPay encounters in AI deployment may illuminate broader constraints facing the Nigerian fintech ecosystem. This study aims to:

1. Identify and analyze the key areas of AI application within OPay's business operations;
2. Assess the impact of AI on OPay's operational efficiency, security architecture, and customer service delivery;
3. Examine the challenges and constraints affecting AI deployment at OPay; and
4. Provide recommendations for optimizing AI integration in fintech operations.

This research contributes to the academic literature on AI adoption in emerging market fintech ecosystems, providing empirical insights from Nigeria's largest fintech operator. For practitioners, the study offers a benchmark for AI implementation strategies. For policymakers, it highlights areas requiring regulatory attention to foster responsible AI innovation.

LITERATURE REVIEW

Theoretical Framework: AI and Business Operations

The influence of artificial intelligence on business operational efficiency has been extensively documented in scholarly literature. A systematic review by the Latin American and Caribbean Consortium of Engineering Institutions (LACCEI) found that AI emerged as a key driver for improving productivity, automating processes, and optimizing decisions, with the greatest impact in sectors such as manufacturing, logistics, and finance. The review concluded that AI transforms operational efficiency, with more marked effects in sectors where automation is crucial, highlighting it as a strategic tool to improve business performance.

Generative AI, in particular, has demonstrated great potential to add value in organizations by improving creative processes and operational efficiency. Adoption is accelerating: 65% of organizations reported using AI in 2024, with notable increases in professional services and widespread expectations of rising investment over the next three years.

AI in Financial Services

The financial services sector has been at the forefront of AI adoption globally. According to industry projections, AI could help financial services globally save over \$1 trillion by 2030. In Nigeria, financial services firms lead AI adoption, with more than nine in ten Nigerian organizations having begun adopting AI, and banks and other financial companies leading the charge.

AI technologies in banking are used for analyzing customer data and predicting customer behaviour, with the aim of customer retention and satisfaction. Nigerian banks are increasingly deploying AI in recruitment, fraud detection, compliance automation, and customer service. The integration of AI and automation in traditional banks is helping institutions reduce operating expenses by as much as 22 percent.

AI in the Nigerian Fintech Ecosystem

Nigeria's fintech sector has experienced remarkable growth, with nine leading fintech firms valued at a combined \$10.6 billion as of January 2026. Within this ecosystem, AI has become a cornerstone of operational strategy.

The Central Bank of Nigeria's Fintech Report 2025 provides the most comprehensive assessment of AI adoption in the sector. The report reveals that:

- **87.5%** of Nigerian fintech companies deploy AI for fraud detection
- **62.5%** use AI-powered chatbots for customer service
- **37.5%** deploy AI for credit scoring and risk modelling
- **37.5%** apply AI to customer onboarding and know-your-customer (KYC) processes
- Only **12.5%** of surveyed firms reported not using AI at all

These figures underscore the pervasiveness of AI across Nigerian fintech operations, with fraud detection emerging as the dominant use case by a "significant margin". The report further notes that this emphasis reflects the severity of the fraud challenge, which was described in stakeholder workshops as a "big issue in the industry".

AI Applications in Fintech Operations

Scholarly research has identified several key areas where AI transforms fintech operations:

Fraud Detection and Security: Machine learning, predictive analytics, and behavioural biometrics are key AI tools helping fintechs combat scams, phishing, and identity theft. AI-powered systems can detect fraudulent transactions in real-time, a critical capability given that Nigerian banks lost over ₦472 million to fraud in the first quarter of 2023 alone.

Customer Service Automation: AI chatbots have significantly improved customer engagement, reduced response times by over 50%, and accelerated the adoption of digital banking platforms.

Credit Scoring and Risk Assessment: AI models assess creditworthiness for borrowers with no formal credit history—a population representing tens of millions of Nigerians. This capability is transforming financial access for unbanked populations.

Workforce Optimization: Studies investigating AI tools adoption and their impact on workforce optimization in Nigeria's fintech sector have found that only about 20% of financial institutions currently utilize AI, suggesting significant room for growth.

METHODOLOGY

This study employs a qualitative case study research design, focusing on OPay Nigeria as a representative case of AI adoption in the Nigerian fintech sector. The case study approach is appropriate for examining complex contemporary phenomena within their real-world contexts and allows for in-depth exploration of AI implementation strategies and outcomes. Data for this study were drawn from multiple sources to ensure triangulation and validity: Official communications from OPay, including press releases, executive statements, and corporate publications. The Central Bank of Nigeria's Fintech Report 2025, industry reports from BusinessDay, TechCabal, Nairametrics, and other financial publications, as well as academic literature on AI in financial services. Transaction volume statistics from the Nigeria Inter-Bank Settlement System (NIBSS), market valuation data, and AI adoption metrics. Data were analyzed using thematic analysis, with themes derived from both the conceptual framework and emergent patterns in the data. The analysis focused on identifying AI application domains, assessing operational impacts, and surfacing implementation challenges. This study is limited by its reliance on publicly available secondary data and may not capture internal operational details not disclosed by the organization. Additionally, as a single case study, findings may not be generalizable to all fintech enterprises, though they offer valuable insights applicable to similar contexts.

RESULTS AND DISCUSSION

OPay Nigeria: Company Profile and Market Position

OPay was established in 2018 as a financial technology company in Nigeria with the mission to make financial services more inclusive through technology. Headquartered in Lagos, the company provides a comprehensive suite of digital financial services including money transfers, bill payments, card services, airtime and data purchases, and merchant payment solutions. The company's growth trajectory has been remarkable. By 2025, OPay had amassed over 60 million users and served more than one million businesses, with a valuation approaching \$3 billion. The company commands a 51% market share of Nigeria's mobile wallet market and is licensed by the Central Bank of Nigeria and insured by the Nigeria Deposit Insurance Corporation. OPay's market dominance is reflected in its transaction volumes. Mobile money operators, led by OPay and PalmPay, handled ₦20.71 trillion (\$13.49 billion) in transactions in the first quarter of 2025—a 1,518.64% increase from Q1 2021. This translates to approximately ₦230.09 billion (\$149.89 million) in daily transactions. The company has received numerous industry accolades, including being named the only fintech to win three major categories at the 2025 BusinessDay Banks and Other Financial Institutions (BAFI) Awards: Mobile Payment Solutions Provider of the Year, Business Solutions Provider of the Year, and Fintech Security Innovation of the Year. OPay was also recognized as Fintech Company of the Year and Best Fintech in Cybersecurity at the ninth Tech Innovation Awards.

AI Application Domains at OPay

Analysis of OPay's publicly reported AI initiatives reveals four primary domains of AI application:

Fraud Detection and Security Operations

OPay has developed what it describes as a "multi-layered scam alert system"—an AI-driven, real-time defense network designed to detect and stop fraudulent transactions before they happen. At the heart of this system is a machine learning engine trained on thousands of scam patterns, user reports, flagged accounts, and unusual transaction behaviours. The system's operational impact is substantial. According to company statements, over 60,000 users receive targeted risk notifications every day, while the AI-powered call-back system discourages up to 8,000 fraudulent transactions daily. The system can block transactions, send alerts, or prompt users with questions to verify the legitimacy of a transfer. OPay has built seven advanced security solutions, with additional features in development, designed to protect customers across different transaction scenarios. These include innovative tools such as Large Transaction Shield, NightGuard, and multiple fail-safes for high-value transactions. The company also combines voice and facial recognition to detect deepfake scams. This security architecture has positioned OPay as "one of Nigeria's most secure and trusted financial institutions" and was a key factor in its recognition as Fintech Security Innovation of the Year at the 2025 BAFI Awards. The emphasis on AI-driven security aligns with broader industry trends. The CBN Fintech Report 2025 found that 87.5% of Nigerian fintechs deploy AI for fraud detection, making it the most common use case by a significant margin. As the report notes, this underscores the severity of the fraud challenge in Nigeria's digital finance ecosystem.

Customer Service Automation

OPay leverages AI-powered chatbots for customer service, consistent with the 62.5% of Nigerian fintechs that employ this technology. While specific metrics for OPay's chatbot performance are not publicly available, industry research indicates that AI chatbots in Nigerian fintech have significantly improved customer engagement, reduced response times by over 50%, and accelerated the adoption of digital banking platforms. The company's leadership has emphasized the importance of using data and intelligence to create "more personalised financial experiences and smart solutions for customers and businesses". This focus on personalization reflects a broader industry trend where AI is used to analyze customer data and predict behaviour with the aim of customer retention and satisfaction.

Credit Scoring and Risk Modelling

OPay deploys AI for credit assessment and risk modelling, consistent with the 37.5% of Nigerian fintechs that use AI for credit scoring. AI models assess creditworthiness for borrowers with no formal credit history—a population representing tens of millions of Nigerians. This capability is transforming financial access for unbanked populations and represents a significant operational capability for OPay's lending services.

Strategic Business Intelligence and Operational Analytics

Beyond specific operational functions, OPay leverages AI and data analytics for strategic decision-making. As OPay's COO/CTO, Dotun Daniel Adekunle, stated at the BusinessDay Fintech Summit 2026: "The real opportunity now is building intelligent systems that understand users, support better decisions, and improve financial outcomes". The company's strategic vision centers on using data and technology "to move from enabling transactions to enabling real transformation". This involves shifting focus from transaction volumes to measurable impact such as financial health, user

empowerment, and long-term value creation. OPay's Head of IT Business Support and Operations, Ibukun Humphrey Oluwagbenga, has shared insights on how the company leverages data, automation, and advanced technologies to improve service delivery, strengthen fraud prevention, and create more personalized financial experiences.

Impact Assessment

Impact on Operational Efficiency

AI has demonstrably enhanced OPay's operational efficiency across multiple dimensions. The automation of fraud detection through machine learning algorithms enables real-time transaction monitoring at a scale that would be impossible through manual review. The AI-powered call-back system that discourages up to 8,000 fraudulent transactions daily represents a significant operational capability that reduces both financial losses and the human resources required for fraud investigation. The company's ability to process tens of millions of monthly transactions with a high degree of reliability—described by BusinessDay as "one of the most reliable networks in the country"—is underpinned by AI-driven operational systems. This reliability has been a key factor in OPay's market dominance, particularly during periods when traditional banking systems experienced failures. Industry benchmarks suggest that AI adoption can reduce operating expenses by as much as 22% in financial services. While OPay has not publicly disclosed specific cost savings, the company's competitive positioning and market leadership suggest substantial operational efficiencies.

Impact on Security Posture

The security impact of OPay's AI initiatives is perhaps the most quantifiable. The company's multi-layered scam alert system processes over 60,000 daily risk notifications and stops 30,000 risky transactions in their tracks. The AI-powered call-back system discourages up to 8,000 fraudulent transactions daily. These capabilities have translated into tangible recognition. OPay was awarded Fintech Security Innovation of the Year at the 2025 BAFI Awards and Best Fintech in Cybersecurity at the ninth Tech Innovation Awards. BusinessDay commended OPay's "advanced security architecture" which has "set new standards for trust and protection in digital payments".

Impact on Customer Experience

AI has enabled OPay to deliver more personalized and responsive customer experiences. The use of AI-powered chatbots for customer service, combined with data-driven personalization, has contributed to the company's high user adoption rates. The platform's growth—with tens of thousands joining organically through referrals daily—suggests strong user satisfaction. The company's security features, including real-time scam alerts, also enhance customer experience by building trust and confidence in the platform. As OPay's Chief Commercial Officer Elizabeth Wang noted, "equipping users with the knowledge and advanced tools is essential to building trust and promoting financial inclusion".

Impact on Strategic Positioning

AI has become central to OPay's strategic positioning. The company's leadership has explicitly framed AI and data intelligence as the next frontier beyond basic payment services. As COO/CTO Dotun Daniel Adekunle stated: "Payments are no longer the problem we need to solve". This strategic orientation has positioned OPay as an innovation leader in the African fintech ecosystem. The company was shortlisted by the World Economic Forum as a "Global" leader and named Fintech

Company of the Year in Nigeria. Its participation as headline sponsor of the BusinessDay Fintech Summit 2026, themed "The Next Financial Frontier: Intelligence, Infrastructure & Inclusion in Africa's Digital Money Economy," further underscores this positioning.

Challenges and Constraints

Despite significant AI adoption, OPay and the broader Nigerian fintech sector face several challenges that constrain deeper AI integration.

Talent Shortages

Limited access to technical talent is a significant barrier to AI deployment. According to the CBN Fintech Report 2025, 37.5% of fintech firms identified limited access to technical talent as the biggest obstacle to AI adoption. This constraint is particularly acute in specialized areas such as machine learning engineering, data science, and AI ethics. The Nigerian Communications Commission reports a 35% annual increase in demand for roles such as data scientists, cybersecurity analysts, and AI specialists—positions that did not exist in traditional banking structures a decade ago. This demand-supply gap represents a significant operational constraint for fintech companies seeking to scale AI capabilities.

Infrastructure Deficits

Access to high-quality data and infrastructure was cited by 50% of fintech respondents as the most critical support needed for scaling AI use. The digital infrastructure in Nigeria, while improving, still faces challenges including unreliable electricity, limited internet connectivity in some regions, and data quality issues. These infrastructure deficits affect the ability to deploy AI systems at scale and maintain consistent service delivery.

Regulatory Uncertainty

Lack of regulatory clarity was cited by 37.5% of fintech firms as a barrier to AI adoption. While the Central Bank of Nigeria has shown interest in AI governance—75% of fintechs prioritized ethical and transparent use of AI in credit and risk decisions—clear regulatory frameworks remain under development. However, there is strong industry appetite for regulatory engagement. About 62.5% of fintech respondents expressed interest in participating in an AI-focused regulatory sandbox. The CBN report stresses that "as AI systems move from experimental tools to core components of financial services, governance and supervisory learning must evolve alongside industry adoption".

Data Privacy and Security Concerns

The rise of AI in financial services raises significant data privacy concerns. As fintechs collect and process vast amounts of customer data to train AI models, questions about data protection, consent, and algorithmic bias become increasingly important. These concerns are particularly acute in Nigeria, where data protection regulations are still maturing.

Algorithmic Bias and Fairness

AI systems trained on historical data may perpetuate or amplify existing biases, particularly in credit scoring and risk assessment. For a company like OPay serving a diverse population of over 60 million users, ensuring fairness and inclusivity in AI-driven decisions is both an ethical imperative and a business necessity.

CONCLUSION AND RECOMMENDATIONS

This study examined the impact of artificial intelligence on business operations at OPay Nigeria, one of the continent's largest and most innovative fintech companies. The research reveals that AI is deeply embedded across OPay's operational architecture, with particularly pronounced applications in fraud detection and security, customer service automation, credit scoring and risk modelling, and strategic business intelligence.

Key findings include:

1. **Security operations** represent the most significant AI application domain, with OPay's multi-layered AI-driven scam alert system processing over 60,000 daily risk notifications and stopping 30,000 risky transactions daily. The company has developed seven advanced security solutions leveraging machine learning and behavioral biometrics.
2. **Customer service** is enhanced through AI-powered chatbots and personalization engines, contributing to high user satisfaction and organic growth.
3. **Strategic positioning** has been transformed, with OPay's leadership explicitly framing AI and data intelligence as the next frontier beyond basic payment services.
4. **Challenges** including talent shortages, infrastructure deficits, regulatory uncertainty, and data privacy concerns constrain deeper AI integration, consistent with broader industry patterns identified in the CBN Fintech Report 2025.

Theoretical Implications

This study contributes to the theoretical understanding of AI adoption in emerging market fintech ecosystems. The findings support the conceptual framework positioning AI as an intervening variable influencing fintech operations across security, customer, analytical, and strategic dimensions. The case of OPay demonstrates that AI's impact extends beyond operational efficiency to encompass competitive differentiation and strategic repositioning. The research also highlights the importance of contextual factors—including regulatory environment, talent availability, and infrastructure quality—in shaping AI adoption trajectories. These findings suggest that theoretical models of AI adoption must account for the unique institutional and infrastructural contexts of emerging markets. Based on the findings, the following recommendations are offered:

For OPay and Nigerian Fintech Companies:

1. **Invest in AI talent development:** Given the critical shortage of AI talent, fintech companies should invest in training programs, partnerships with universities, and talent pipelines. The NCC reports a 35% annual increase in demand for AI-related roles, indicating that proactive talent development is essential.
2. **Strengthen data infrastructure:** With 50% of fintechs identifying data quality and infrastructure as critical for scaling AI, investments in data governance, quality management, and infrastructure resilience should be prioritized.
3. **Engage proactively with regulators:** With 62.5% of fintechs expressing interest in AI regulatory sandboxes, proactive engagement with the CBN can help shape appropriate regulatory frameworks while enabling innovation.
4. **Address algorithmic bias and fairness:** As AI systems become more central to credit scoring and risk assessment, developing robust frameworks for fairness, transparency, and accountability is essential for maintaining user trust.

For Policymakers:

1. **Develop clear AI regulatory frameworks:** The lack of regulatory clarity cited by 37.5% of fintechs as a barrier to AI adoption suggests an urgent need for comprehensive AI governance frameworks.
2. **Support digital infrastructure development:** Addressing the infrastructure deficits that constrain AI deployment should be a national priority.
3. **Promote AI education and skills development:** The talent shortage in AI and data science requires coordinated efforts across educational institutions, industry, and government.

Suggestions for Further Research

This study opens several avenues for future research:

1. **Quantitative impact assessment:** Future research could develop metrics to quantify the financial and operational impact of AI adoption at OPay and other fintech companies.
2. **Comparative analysis:** Comparative studies examining AI adoption across multiple fintech companies in Nigeria and other African markets would enhance generalizability.
3. **Customer perspectives:** Research examining how customers perceive and respond to AI-driven financial services would provide valuable insights for service design.
4. **Longitudinal studies:** Tracking AI adoption and impact over time would reveal evolving patterns and emerging challenges.
5. **AI and financial inclusion:** Given the emphasis on financial inclusion in Nigeria's fintech sector, research examining how AI contributes to or detracts from inclusive financial services would be valuable.

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