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The Role of Artificial Intelligence in Fintech Services: Applications and Benefits

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ABSTRACT

The aim of this research was to investigate the role of artificial intelligence (AI) in fintech services. The research was done using explanatory and review research approaches. The work comprises the discussion on the benefits and applications of AI in fintech and the discussion of some types of fintech. The results show that some benefits of fintech are enhanced convenience and speed, improved accessibility and financial inclusion, real-time payments and settlements, increased efficiency and reduced costs, etc., as well as some applications of AI in fintech services such as transaction monitoring and fraud detection, digital payments and mobile wallets, chatbots and virtual assistants, risk management and credit scoring, portfolio management, and investment analysis. From the results, it was concluded that artificial intelligence has paramount roles. These results will be beneficial to the general public as regards their views towards Fintech and will be useful to the stakeholders in the finance sectors too.

KEYWORDS: *Artificial intelligence, banking, fintech, financial inclusion, virtual assistants*

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1. INTRODUCTION

Fintech, abbreviated from financial technology, is defined as the technology used to provide financial services. Fintech is defined as financial technology, which is an industry that includes all forms of technology used to deliver financial services to businesses and households (Nwosu et al., 2022). It describes the use of technology to improve and automate financial services, making them more accessible, efficient, and convenient. According to Rayan (2023), Fintech, short for financial technology, is a term used to describe innovative and technology-driven companies that are transforming traditional banking and financial services through the use of technology. These companies provide services such as online banking, digital payments, peer-to-peer lending, crowdfunding, and robo-advisors.

Unlike their traditional counterparts, such as established banks and insurance companies that are making moves to integrate technology within their offerings, fintech firms leverage technology as a fundamental component for providing new services, forging new business models, and penetrating previously inaccessible market segments (Arnab and Purnaprasad, 2021). Artificial intelligence (AI) refers to the design and application of computer programs capable of acquiring and applying knowledge autonomously without human intervention (Rich, 2009).

Fintech has evolved significantly over the years, from simple online banking and payment systems to more complex technologies like blockchain, artificial intelligence (AI), and machine learning (ML). Today, Fintech encompasses a broad range of financial services, including digital payments, lending, and credit.

Investment and wealth management, insurance, blockchain, and cryptocurrency. According to Das

(2019), the integration of artificial intelligence (AI) and machine learning (ML) into the finance industry highlights how financial problems are being reframed as pattern recognition challenges. By utilizing deep learning techniques, pricing models can be developed directly from market data without relying on traditional theoretical models like those used in option pricing. AI and ML technologies are increasingly employed in financial services, facilitating tasks such as payment processing, customer behaviour analysis, personalized financial advice, and customer service through chatbots.

2. RESEARCH METHODOLOGY

The research work made use of the explanatory research method to discuss the various points regarding the types, benefits, and applications of AI in fintech services. It also made use of review methods to provide the views or findings of some other researchers that have worked on the subject area recently across various parts of the world.

3. TYPES OF FINTECH

Fintech can be classified into various types, and this classification is based on the functions or uses of it.

3.1. Payment Fintech: This is defined as the online financial technology platforms or companies that provide digital payment solutions, enabling users to make transactions online or through mobile devices. Examples of payment fintech are mobile wallets such as Apple Pay, online payment gateways such as PayPal and Stripe, and digital payment platforms such as Venmo.

3.2. Lending Fintech: Lending Fintech is defined as the online financial technology platforms or companies that provide alternative lending solutions, often using AI-powered credit scoring and risk assessment for the customers. Examples of lending fintech are peer-to-peer lending platforms such as Lending Club, online lenders such as SoFi and Renmoney, and microfinance platforms such as Kiva, Kuda Bank.

3.3. Investment Fintech: Investment Fintech is defined as the online financial technology platforms or companies that provide digital investment platforms, enabling users to invest in various assets, such as stocks, bonds, and cryptocurrencies. Examples of Investment Fintech are Robo-advisors such as Betterment and Wealthfront, Online brokerages such as Robinhood and eToro, and cryptocurrency exchanges such as Coinbase and Binance.

3.4. Insurance Fintech: Insurance Fintech is defined as the online financial technology platforms or companies that provide digital insurance solutions, using data analytics and AI to assess risk and provide personalized policies. Examples of insurance Fintech are online insurance marketplaces such as Policygenius and CoverHound, Insurtech companies such as Lemonade, Digital insurance platforms such as AXA.

3.5. Blockchain and Cryptocurrency Fintech: Blockchain and Cryptocurrency Fintech is defined as the online financial technology platforms or companies that provide solutions using blockchain technology and cryptocurrencies, such as Bitcoin and Ethereum. Examples Blockchain and Cryptocurrency are Cryptocurrency exchanges Binance, and Blockchain-based payment platforms such as Ripple.

3.6. Digital Banking Fintech: Digital Banking Fintech is defined as the online financial technology platforms or companies that provide digital banking solutions, often using mobile apps and online platforms to offer banking services. Examples of Digital banking Fintech are digital-only banks such as Revolut; Mobile banking apps such as Simple; and Online banking platforms such as Opay, Ally.

3.7. Regulatory Technology (RegTech) Fintech: RegTech Fintech is defined as the online financial technology platforms or companies that provide solutions to help financial institutions comply with regulatory requirements, such as anti-money laundering (AML) and know-your-customer (KYC) regulations. Examples of Regulatory Technology Fintech are Compliance software such as Thomson Reuters; Regulatory reporting platforms (such as Lombard Risk, Identity verification solutions such as ID.me.

4. SOME BENEFITS OF FINTECH

Fintech has many benefits, and here are a few of them.

4.1. It is convenient and fast.

The use of fintech is very convenient and fast, as it has transformed the way people conduct financial transactions, making them faster, more convenient, and more secure. That is why, with mobile payments, online banking, and digital wallets, users can now make transactions in seconds, thus ensuring a reduced need for physical bank branches and ATMs. By utilizing deep learning techniques, pricing models can be developed directly from market data without relying on traditional theoretical models like those

used in option pricing. AI and ML technologies are increasingly employed in financial services, facilitating tasks such as payment processing, customer behaviour analysis, personalized financial advice, and customer service through chatbots, and all these make the processes fast, convenient, and secure (Rayan, 2023).

4.2. Improved Accessibility and Financial Inclusion

Fintech makes financial services more accessible to the people irrespective of the locations, including the underserved populations, unbanked, and underbanked populations. This is made possible through the use of digital payment platforms, mobile wallets, and online lending solutions, which can allow individuals to access financial services from anywhere, at any time.

According to Giudici (2018), Fintech solutions use big data analytics, artificial intelligence, and blockchain technologies at a rapid rate, and these new technologies are changing the nature of the financial industry as they create many opportunities, offering more inclusive access to financial services to the populace, not minding their locations.

4.3. It allows real-time payments and settlements.

Fintech makes it possible for real-time payments and settlements, thus reducing the need for intermediaries and increasing the speed of transactions. This can be done through the blockchain-based payment systems and digital wallets, which now help one to make instant payments.

4.4. Increased Efficiency and Reduced Costs

Fintech has automated many financial processes. This automation will increase the efficiency of the operation or processes, reducing manual errors, increasing speed, and lowering costs. With AI-powered chatbots, automated payment processing, and digital document management, this can be achieved by financial institutions, and they can now reduce operational costs. Blockchain technology can be used for smart contracts, enduring record keeping, and decentralised finance. AI, cloud computing, and blockchain technology may be increasingly adopted for growth in these areas (Rayan, 2023).

4.5. Improved Security and Risk Management

Fintech has advanced security measures, which make its systems secure. Some of these security measures are biometric authentication, encryption, and AI-powered fraud detection. With these measures, crimes like identity theft and money laundering can be reduced, thus providing enhanced customer trust and confidence.

4.6. Personalized Financial Services and Advice

Fintech has enabled the development and use of personalized financial services and advice, using AI-powered analytics and machine learning algorithms. With robo-advisors, digital investment platforms, and personalized financial planning tools, users can now receive tailored financial advice. This helps to improve investment decisions as well as portfolio management.

5. Some applications of Artificial Intelligence (AI) in Fintech services

5.1. Transaction Monitoring and Fraud Detection

Transaction monitoring and fraud detection is defined as the process of tracking and analysing financial transactions to identify potentially fraudulent activity. This involves using machine learning and data analytics to detect trends and anomalies that may reveal fraudulent transactions previously or recently carried out or at the point of their occurrence. In other words, AI-powered systems monitor transactions in real-time, detecting and preventing fraudulent activities such as money laundering, identity theft, and credit card scams. In the same way, these systems can identify suspicious patterns and alert authorities.

AI-powered fraud detection systems automate the identification and prevention of fraudulent activities, from unauthorized transactions to identity theft. Continuous monitoring, pattern analysis, and real-time anomaly detection enable banks to flag suspicious activities, mitigate fraud risks, and safeguard customer assets, bolstering trust (Gupta and Mehta 2021)

5.2. Digital Payments and Mobile Wallets

Digital payment and mobile wallet are defined as the electronic payment systems that allow users to make transactions using their mobile devices. This includes mobile wallets, online payment platforms, and other contactless payment systems that facilitate secure and convenient transactions. AI-powered digital payment systems enable fast, secure, and convenient transactions through mobile wallets and other digital payment platforms. It can also detect and prevent fraudulent transactions.

Leveraging machine learning algorithms and alternative data sources, banks expedite loan processing, diminish manual review efforts, and enhance decision accuracy, culminating in faster turnaround times and heightened customer satisfaction (Bartlett et al., 2020).

5.3. Chatbots and Virtual Assistants

Chatbots and virtual assistants are defined as computer programmes that use artificial intelligence

algorithms to simulate human-like conversations with customers. They provide automated support for tasks or actions such as resolving issues, answering questions, and routing inquiries to human representatives. AI-powered chatbots and virtual assistants provide all-day and all-night support to customers, helping users with transactions, account management, and other queries.

According to Munivel et al. (2023), AI-powered chatbots enable banks to deliver continuous customer support, handling inquiries and resolving issues at any time and from any location. In addition, unlike conventional call centers which have restricted operating hours, chatbots ensure instant responses, enhancing accessibility and convenience for customers.

5.4. Risk Management and Credit Scoring

Risk management and credit scoring is defined as the process of assessing the creditworthiness of businesses or individuals and managing potential risks associated with lending or investing. It deals with the analysis credit history, financial data, and other factors to predict the likelihood of repayment or default. AI-powered risk management systems analyze vast amounts of data, including credit history, transaction patterns, and social media activity, to predict the likelihood of loan defaults or fraudulent activities. This analysis enables lenders to make more informed decisions and reduce risk. AI and blockchain increase banking services, lending efficiency, collection and payment competency, and asset management. Cryptocurrencies are encountering challenges of cybersecurity, mining, privacy, anonymity, and regulations (Hosen et al., 2022).

5.5. Portfolio Management and Investment Analysis

Portfolio management and investment analysis is defined as the process of managing and optimising investment portfolios to achieve specific financial goals. This involves analyzing market trends or activities, asset performance, and other factors associated with market risks to make informed investment decisions and adjust portfolio allocations in that order. AI-powered portfolio management systems analyze vast amounts of market data, identifying trends and patterns to optimize investment portfolios.

As quoted by Robin (2023), Portfolio Optimization: Predictive analytics enhances portfolio management by forecasting asset returns, correlations, and risks. Using optimization algorithms and simulations, predictive models construct diversified portfolios that maximize returns while controlling risk, supporting investment strategies. AI-powered tools are utilized in the field of investment management to evaluate market patterns and enhance investment portfolios. The efficacy of asset management can be augmented by using algorithms, together with deep learning models, which can develop enormous amounts of financial data, estimate market movements, and make mechanized investment choices. (Cao, 2022).

5.6. Predictive Analytics and Forecasting

Predictive analytics is defined as the use of advanced statistical and machine learning techniques to forecast or predict future events, trends, or patterns based on historical and current remote sensing data (Ayegba et al., 2024). AI-powered predictive analytics systems analyze vast amounts of data, including market trends, economic indicators, and customer behavior, to forecast financial outcomes and identify potential risks. These systems can also provide insights to support strategic decision-making. By utilizing historical data, market trends, and macroeconomic indicators, AI models forecast outcomes, pinpoint opportunities, and mitigate risks. This enables banks to optimize resource allocation and bolster profitability (Accenture, 2020).

5.7. Regulatory Compliance and Reporting

Regulatory compliance and reporting is defined as the process of ensuring that financial institutions comply with regulations, relevant laws, and industry standards. This involves generating reports, maintaining records, and submitting filings to regulatory bodies to demonstrate compliance. An AI-powered system assists financial institutions in complying with regulatory requirements, such as anti-money laundering (AML) and know-your-customer (KYC) regulations. AI-powered credit scoring and risk management solutions empower banks to make more precise, efficient, and data-driven credit decisions, fostering financial inclusion, profitability, and regulatory compliance. Leveraging AI technologies, banks can optimize risk-adjusted returns, mitigate credit losses, and navigate the intricacies of the lending landscape more effectively (Munivel et al., 2023).

5.8. Customer Segmentation and Personalization

Customer segmentation and personalization is defined as the process of dividing customers into distinct groups based on their characteristics, attitude, and preferences. This involves using data analytics and machine learning algorithms to create personalized experiences, offers, and recommendations tailored to each customer segment. AI-powered systems analyse customer data, behavior, and preferences to create personalized financial products and services. As reported by Munivel et al. (2023), AI-powered segmentation methodologies categorize customers

into distinct groups based on behavioral, demographic, or preference similarities. By segmenting customers effectively, banks can tailor marketing communications, promotions, and offers to specific customer segments, maximizing relevance and effectiveness while minimizing marketing costs.

6. CONCLUSION

The research on the role of artificial intelligence in fintech services has been carried out using explanatory and review research approaches. The work comprises the discussion on the benefits and applications of AI in fintech as well as some various types of fintech. The results show that some benefits of fintech are enhanced convenience and speed, improved accessibility and financial inclusion, real-time payments and settlements, increased efficiency, and reduced costs, etc. The results also show some applications of AI in fintech, such as transaction monitoring and fraud detection, digital payments and mobile wallets, chatbots and virtual assistants, risk management and credit scoring, portfolio management, and investment analysis. From the results, it can be concluded that artificial intelligence has paramount roles. These results will be beneficial to the general public as regards their views towards Fintech and will be useful to the stakeholders in the finance sector too.

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