Role of Artificial Intelligence in Financial Services

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ABSTRACT

In the modern period, artificial intelligence (AI), and more specifically generative AI (genAI), has risen to the top of the agenda for companies, legislators, and other stakeholders. The significant impact of the technology and the possible course of future policy frameworks were hot topics in many forums. Nevertheless, this study started its own dialogue series in the financial services industry in response to the growing interest in the development of AI. The purpose of the study was to investigate a basic question: how may this technology affect the strategic orientation of specific financial institutions as well as change the financial services industry in the years to come? The purpose of this article is to give a summary of the current state of AI in financial services, along with important unanswered concerns and potential hazards that corporate executives, legislators, and consumers should consider as research into AI's wide-ranging effects continues. With their operations that rely heavily on language and data, financial services companies are in a unique position to benefit from the advancements in artificial intelligence, and they have been doing so for years. Financial services companies invested $35 billion in AI in 2023, and by 2027, it is anticipated that investments in banking, insurance, capital markets, and payments will total $97 billion. With this substantial investment, the financial services sector is among the most heavily involved in artificial intelligence (AI). There are notable use cases throughout the organization where automation and machine learning are increasing accuracy, decreasing operating costs, and simplifying processes. According to studies conducted more recently with the advancements of generative artificial intelligence (genAI), 32–39% of the labour done by the banking, insurance, and capital markets industries has a high potential for complete automation, and 34–37% has a high potential for augmentation. As a result, new investments in AI have increased significantly. The industry is being forced to remake itself at a never-before-seen, and frequently uncomfortably pace and scale due to the quick development of AI and the growing variety of potential applications. The integration of several cutting-edge technology, like AI agents, quantum computing, and tiny language models, will spur both creativity and uncertainty in the financial services industry as technological advancements pick up speed. Business executives, legislators, and regulators will continue to face difficulties because of this change. Business executives' focus is now turning to potential for revenue development, as most of the AI adoption now occurring in the financial services industry is primarily concentrated on increasing efficiency. In addition, around 70% of financial services executives think AI would directly boost revenue growth in the upcoming years, indicating the continued importance of backend applications.

Keywords: artificial intelligence, financial services, technology, stakeholders, legislators.

INTRODUCTION

From the introduction of online banking and ATMs (automated teller machines) to the widespread usage of mobile apps, the digitalization of financial services has changed the sector from the standpoints of suppliers, consumers, workers, regulators, and other stakeholders. Though there will be significant changes, artificial intelligence (AI) is expected to have an impact that is at least as significant. It is generally accepted that the digital era began in the middle of the 1980s and lasted for three to four decades. Although artificial intelligence (AI) has existed for much longer, the advent and broad use of generative AI (genAI), as well as its enhanced accessibility two years ago, have had a profound impact on both technology and industry. Its ability to automate and enhance tasks across most enterprises' operating models immediately made it as one of the most transformative technologies the world has ever seen. Among the industries where its effects are anticipated to be most widespread are banking, insurance, capital markets, and payments. However, the speed at which AI is developing, and the sheer number of possible applications make it especially difficult for board members and executives in the financial services industry. They are expected to create a vision of how AI will transform their

industry, business and operating models, offerings and experiences, and workforces, even though the majority have no technological understanding and experience. Financial services executives are beginning to feel tremendous pressure to plan their investments to take advantage of the benefits that are clearly there, as some early adopters of genAI are already bragging about their accomplishments. In addition to getting ready to adhere to a few new rules, leaders will need to take quick action to protect their systems, data, and clients from a powerful new danger. By examining trends and forecasts in the industry, the paper hopes to encourage engagement from all parties in the future role of AI in financial services. By promoting a better understanding of both the potential and the risks of the technology, it seeks to help build a foundation for the effective and responsible application of AI for the benefit of all. Looking ahead, financial services stakeholders must increase collaboration to address key risks such as data transparency, privacy, cybersecurity and the spread of misinformation, while also closing policy gaps that could hinder the use and innovation of AI. Overcoming these challenges is essential to ensuring that AI can be leveraged effectively and responsibly across the industry, now and in the future.

DEFINITION OF AFTIFICIAL INTELLIGENCE

Artificial Intelligence (AI) refers to the development of computer systems of performing tasks that require human intelligence. AI aids, in processing amounts of data identifying patterns and making decisions based on the collected information. This can be achieved through techniques like Machine Learning, Natural Language Processing, Computer vision and Robotics. AI encompasses a range of abilities including learning, reasoning, perception, problem solving, data analysis and language comprehension.

OBJECTIVE OF THE STUDY

1. To understand the role of AI in financial services.
2. To know what can be improved in area of AI with respect to financial services.

METHODOLOGY OF THE STUDY

The data related to this above paper is collected from journals, books, magazines, research papers, and publications from Ministry of Information and Broadcasting's. In this paper exploratory research is used to present and understand the research topic. In this paper the data collected is secondary in nature.

LIMITATION OF THE STUDY

The study of Role of AI is a very vast subject consisting of several dimensions. Only a dimension of financial services or aspects were studied here. Hence, the conclusion drawn is specific and cannot be generalized.

Key areas transformed by AI in financial services

- ***Fraud Detection****:* AI analyses transactional data in real-time to identify anomalies and prevent fraud.
- ***Credit Scoring****:* AI-powered models evaluate creditworthiness with greater accuracy and speed.
- ***Personalized Services****:* AI provides tailored financial advice and product recommendations, enhancing customer satisfaction.
- ***Algorithmic Trading****:* AI systems optimize trading decisions by analysing market trends and sentiment.
- ***Risk Management****:* AI proactively identifies and mitigates market, credit, and operational risks.

Benefits of AI in financial services

- AI streamlines decision-making by analysing market trends, customer behaviour, and historical patterns to provide accurate predictions and insights.
- It enhances risk management by continuously monitoring real-time data to detect potential risks and anomalies, enabling proactive mitigation.
- Additionally, AI boosts efficiency by automating repetitive tasks like data entry and customer service, freeing professionals for strategic work.
- According to, AI can increase productivity by up to 30%, leading to significant cost savings and faster transaction processing.

Key components of AI in financial services

Artificial intelligence in finance enhances decision-making, automates processes, and manages risk through several key components. These include AI techniques, applications in financial services, and their impact on financial analysis and risk management.

Role of AI techniques in Financial Services

In finance, AI techniques such as machine learning, deep learning, natural language processing (NLP), and computer vision play crucial roles. Machine learning algorithms analyse vast amounts of financial data to identify patterns, predict future trends, and make data-driven decisions. Deep learning, a subset of machine learning, utilizes neural networks to process complex data and uncover hidden insights. NLP analyses unstructured data like news articles and social media posts, while computer vision extracts information from images and videos. AI is transforming financial services, from streamlining processes to enhancing customer experiences. Many companies offer firsthand insights into the evolving role of AI, especially as it relates to customer support and fraud detection. AI revolutionizes financial analysis and risk management through predictive analytics, enhanced risk assessment, and optimized investment strategies. Predictive analytics leverages AI to forecast financial performance, identify potential risks, and make data-driven projections. AI-powered risk assessment models can consider a broader set of variables and adapt to changing market conditions, providing more accurate and timely risk evaluations. In investment management, AI algorithms analyse market data, news sentiment, and social media trends to identify profitable investment opportunities and optimize portfolio allocation. Organizations must consider several key factors, including data quality, governance, and the selection of appropriate tools and resources to successfully implement AI in finance. AI-driven chatbots are crucial for improving customer service efficiency. How do we use the chatbot to first help internal customer service agents to do their job better, to retrieve information better so that they can answer the customers quicker. This reduces the time and number of interactions with customers. Fraud detection is another area where AI makes a significant impact. Research highlights the use of both traditional and generative AI to optimize back-office operations. This shift allows the AI to act as the first line of defines, automating tasks and freeing up human resources to focus on higher-value work, enhancing operational efficiency. Research also emphasizes AI's potential to revolutionize product development. While AI currently drives efficiencies in tasks like summarization, we can see greater opportunities ahead. The enterprise-level impact that it would like to see is also about how we create new business revenues from GenAI today. We can say that, going on to imagine how AI could help product managers generate new banking products tailored to consumer segments in real-time, envisioning a future where AI plays a central role in innovation and revenue generation. This vision demonstrates how AI in finance is more than just process optimization. It is about unlocking new possibilities for growth and innovation.

1. ***Natural Language Processing (NLP) and Computer Vision (CV)*** enable computers to understand and interpret human language and visual data, respectively. In finance, these techniques have several applications-

a. **Sentiment analysis**: NLP algorithms analyse news articles, social media posts, and other text data to

gauge market sentiment and inform investment decisions.

b. **Document processing**: NLP and CV automate the extraction and analysis of data from financial documents, such as contracts, invoices, and reports, reducing manual effort and errors.

c. **Fraud prevention**: CV analyses signatures, ID documents, and other visual data to prevent identity fraud and ensure compliance with Know Your Customer (KYC) regulations.

2. ***Deep learning and its impact on financial services:*** Deep learning, a subset of machine learning, uses artificial neural networks to model complex patterns in data. In finance, deep learning is particularly useful for:

a. **Market forecasting:** Deep learning models analyse historical market data, news sentiment, and economic indicators to predict future market trends and price movements.

b. **Customer segmentation**: Deep learning algorithms analyse customer behaviour and preferences, helping financial institutions personalize their services and improve customer retention.

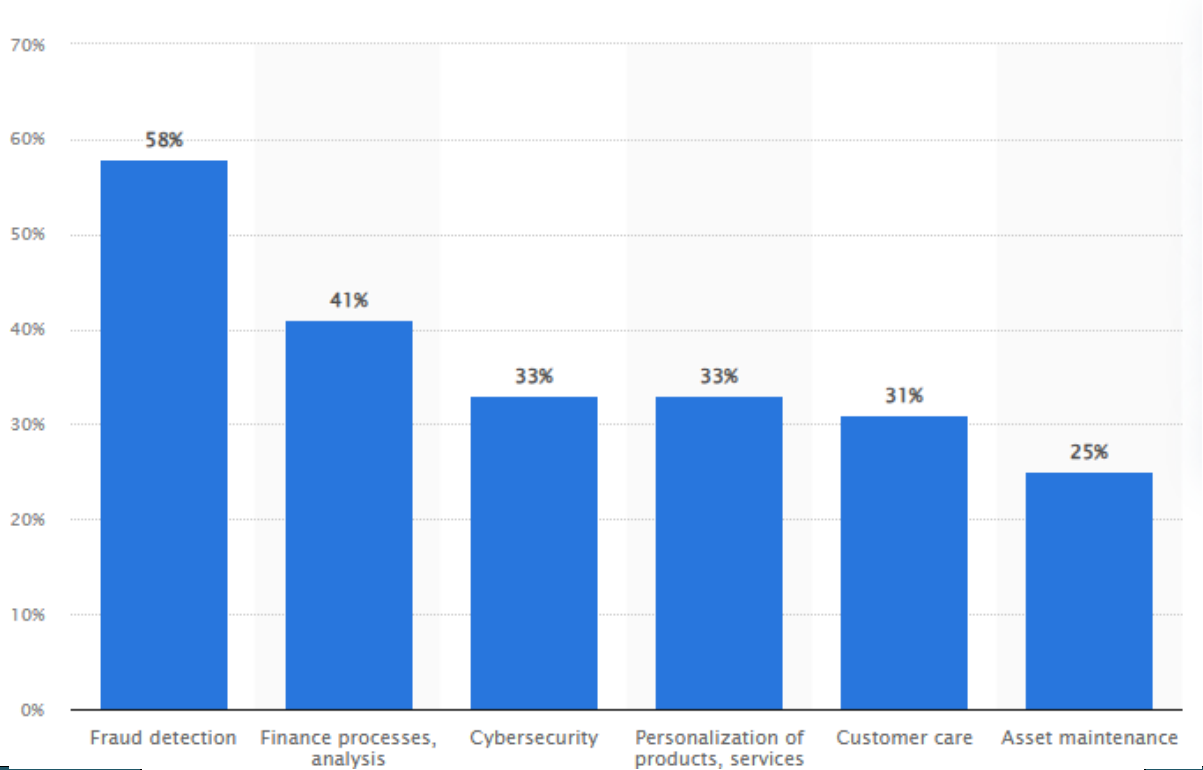
c. **Risk management**: Deep learning identifies complex risk factors and dependencies in financial portfolios, enabling more accurate risk assessment and mitigation strategies.

3. ***Machine learning applications in finance***

Machine learning (ML) algorithms analyse vast amounts of financial data to identify patterns, predict outcomes, and make data-driven decisions. Key applications of ML in finance include-

- **Fraud detection**: ML models learn from historical transaction data to identify suspicious activities and prevent financial fraud in real-time.
- **Credit risk assessment**: ML algorithms predict the likelihood of default by analysing customer data and financial history, helping lenders make informed credit decisions.
- **Algorithmic trading**: ML-powered trading systems analyse market data, identify profitable opportunities, and execute trades faster than human traders.

Use of AI in financial services



Source: statista INTERPRETATION:

It is observed that improvements in fraud detection are the most important use case of artificial intelligence. Artificial intelligence improves fraud detection by combining supervised learning algorithms with unsupervised learning to the effect of gaining a better understanding of customers' behaviours. A better understanding of customers' behaviours allows organizations to better identify and prevent unauthorized activity.

ACHIEVEMENTS

With the renewed interest in AI spurred by the emergence of generative AI, the finance sector finds itself at the forefront of AI integration, exhibiting one of the highest adoption rates across industries. This is primarily attributed to the strong adoption of traditional AI, such as machine learning (ML), which has been used widely in the sector since the late 2000s. Generative AI, while currently less commonly used, will likely take hold in the industry in the coming years. In 2023, the financial services industry invested an estimated 35 billion US dollars in AI, with banking leading the charge, accounting for approximately 21 billion US dollar. Among the largest banks in the Americas and Europe, capital one leads in AI adoption, followed by JPMorgan Chase, and the Royal Bank of Canada. The high adoption rate of AI, along with the robust spending on AI technologies, signal the industry's readiness to adapt to an AI-centric world.

CONCLUSION

AI's practical applications span various aspects of financial services, transforming the way institutions operate and serve their customers through machine learning algorithms and vast data resources. Let's explore key areas where AI significantly impacts the industry. As Geraldine Wong, CDO of GXS Bank points out, today people are using AI to primarily automate routine tasks and processes in finance. Financial operations often involve repetitive, time-consuming tasks like data entry, document processing, and report generation. AI-powered solutions automate these tasks, reducing human error and freeing employees to focus on higher- level responsibilities. For instance, AI extracts relevant information from financial documents, populates databases, and generates reports with minimal human intervention. Fraud detection and prevention represent another critical AI application in financial services. Financial fraud poses a persistent threat, causing significant losses for institutions and consumers alike. AI algorithms analyse vast amounts of transactional data in real-time, identifying patterns and anomalies that may indicate fraudulent activity. Machine learning enables AI systems to continually adapt and improve their fraud detection capabilities, staying ahead of increasingly sophisticated fraudsters. AI also revolutionizes credit decisioning and enables personalized recommendations. Traditional credit scoring models often rely on limited data points, potentially misrepresenting an individual's creditworthiness. AI algorithms analyse a wide range of alternative data sources, such as social media activity, online behaviour, and payment history, to create more comprehensive and accurate credit risk assessments. This empowers financial institutions to make informed lending decisions and extend credit to previously underserved populations. Additionally, AI analyses customer data to provide personalized product recommendations, tailored investment advice, and targeted marketing campaigns. Beyond customer-facing activities, AI applications extend into financial analysis and risk management. AI-powered predictive analytics help institutions forecast market trends, identify potential risks, and make data-driven decisions. By analysing vast amounts of historical data and real-time market information, AI algorithms uncover patterns and insights that may not be apparent to human analysts. This enhanced decision-making capability proves particularly valuable in areas such as investment strategy, portfolio optimization, and risk assessment. Time is money in the finance world, but risk can be deadly if not given the proper attention. Accurate forecasts are crucial to the speed and protection of many businesses. Financial markets are turning to machine learning to create more exacting, nimble models. These predictions help financial experts utilize existing data to pinpoint trends, identify risks, conserve manpower and ensure better information for future planning.

REFERNCES

1. www.google.com
2. www.statista.com