A Survey on Artificial Intelligence techniques in Finance Sector

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Abstract

The rapid growth of Artificial Intelligence (AI) and computing power in their application to banking and financial markets, both academic and non-academic literature is evolving. The economic growth constraints imposed by the financial crisis, followed by subsequent pandemic outbreaks, have offered additional difficulties to AI-related technology. Improved efficiency, new data, information, advisory and management services, risk mitigation, and certain unaddressed questions about negative repercussions on sustainable growth and enhancing economic wellbeing have all been mentioned in the surveyed publications.

Keywords: Artificial intelligence, Survey, financial crisis, technology

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1 Introduction

Artificial Intelligence (AI) is the way of the future in banking, as it combines the power of advanced data analytics with the ability to prevent fraud and improve compliance. Anti-money laundering activities that would ordinarily take hours or days are completed in a matter of seconds thanks to an AI algorithm. AI also enables banks to manage massive amounts of data at breakneck speed in order to extract key insights. AI bots, digital payment counsellors, and biometric fraud detection techniques all contribute to greater service quality for a larger consumer base. All of this equates to more income, lower costs, and higher profits.

Everything from chatbot assistants to fraud detection and task automation is covered by Artificial Intelligence (AI) and machine learning in banking. According to Insider Intelligence's AI in Banking report, most banks (80%) are well aware of the potential benefits of AI.

Technological advancements, improved user acceptance, and altering regulatory frameworks will all help Financial Institutions (FIs) make the decision to employ AI. By providing 24/7 access to their accounts and financial advisory services, banks utilizing AI can reduce laborious operations and greatly improve the consumer experience.

1.1 Applications of AI in Financial Services

FIs are implementing AI algorithms in all of their financial services

1.1.1 AI in Personal Finance

Consumers yearn for financial independence, and the capacity to handle one's own finances is pushing AI adoption in personal finance. AI is a must-have for every financial institution wanting to be a top player in the business, whether it's providing 24/7 financial advice via chatbots powered by natural language processing or customizing insights for wealth management products.

1.1.2 AI in Consumer Finance

The potential of AI to detect fraud and cyberattacks is one of the most important business cases for AI in banking. Consumers seek out banks and other financial services that offer secure accounts, especially because Insider Intelligence estimates that annual online payment fraud losses will reach $48 billion by 2023. AI has the ability to examine and identify abnormalities in patterns that humans would otherwise miss.

1.1.3 AI in Corporate Finance

Artificial intelligence (AI) is very useful in corporate finance since it can better predict and assess loan risks. AI technology like machine learning can help organizations raise their value by improving loan underwriting and lowering financial risk. As firm accountants, analysts, treasurers, and investors strive toward long-term prosperity, AI can also reduce financial crime through better fraud detection and uncover aberrant behaviour.

1.2 Benefits of AI in Finance

The advantages of using AI in banking, such as task automation, fraud detection, and personalized recommendations, are enormous. AI use cases in the front and middle office have the potential to alter the banking industry in the following ways:

- Enabling frictionless, 24/7 customer interactions
- Reducing the need for repetitive work
- Lowering false positives and human error
- Saving money

By 2025, AI-assisted middle-office jobs have the potential to save North American banks $70 billion. Furthermore, the overall potential cost savings for banks from AI applications is anticipated to be $447 billion by 2023, with $416 billion coming from the front and middle office.

1.3 Most Popular Examples

Even in typically conservative domains, AI's ascent in the financial industry demonstrates how swiftly technology is transforming the commercial landscape. Here are a few of the most well-known AI in finance applications**.**

1.3.1 Artificial Intelligence and Credit Decisions

Artificial Intelligence allows for a faster, more accurate evaluation of a possible borrower at a lower cost, while also accounting for a wider range of parameters, resulting in a better-informed, data-backed choice. When compared to traditional credit scoring systems, AI credit scoring is based on more complicated and sophisticated rules. It aids lenders in distinguishing between candidates who pose a significant risk of default and those who are creditworthy but lack a lengthy credit history.

Another advantage of the AI-powered process is objectivity. A machine, unlike a human, is unlikely to be biased.

Machine learning algorithms are used by digital banks and loan-issuing applications to analyze loan eligibility and propose customized solutions using alternative data (e.g., smartphone data).

1.3.2 Artificial intelligence and risk management

When it comes to risk management, it's tough to exaggerate the influence of AI in financial services. Massive processing capacity allows massive volumes of data to be processed in a short amount of time, and cognitive computing aids in the management of both organized and unstructured data, a task that would take a human much too long to complete. Algorithms examine the history of high-risk patients to spot early warning indications of future problems.

Artificial intelligence in finance is a formidable ally when it comes to assessing real-time actions in any market or environment; the precise predictions and thorough projections it delivers are based on various variables and critical to business success.

1.3.3 Artificial Intelligence and Fraud Prevention

Artificial intelligence has been quite successful in combating financial fraud for a number of years now, and the future is looking brighter every year as machine learning catches up with the crooks.

AI is particularly good at avoiding credit card fraud, which has increased dramatically in recent years as e-commerce and internet transactions have grown. When something seems out of order and contradicts the established spending pattern, fraud detection systems assess clients' behaviour, location, and buying patterns and activate a security mechanism.

1.3.4 Artificial Intelligence and Trade

Data-driven AI and trading investments have consistently increased over the last five years, approaching a trillion dollars in 2018. High-frequency trading is also known as algorithmic, quantitative, or algorithmic trading.

This type of trading is becoming increasingly popular on stock exchanges throughout the world, and for good reason: artificial intelligence provides a number of major advantages.

Intelligent Trading Systems monitor both structured (databases, spreadsheets, etc.) and unstructured (social media, news, etc.) data in a fraction of the time that humans would. And in trading, the adage "time is money" is more true than anywhere else: faster processing equals faster judgments, which means faster trades.

1.3.5 Artificial Intelligence and Personalized Banking

When it comes to discovering innovative ways to deliver additional benefits and comfort to particular users, artificial intelligence truly shines.

In the banking industry, AI enables smart chatbots that give customers with extensive self-help solutions while lowering the workload of call centres. Voice-controlled virtual assistants powered by smart technology, such as Amazon's Alexa, are also gaining favour quickly, which is unsurprising given that they have a self-education function that allows them to become smarter every day, so expect significant advancements in this area. Both apps may be used to check account balances, schedule payments, and look up account activity, among other things.

1.3.6 Artificial intelligence and process automation

When it comes to cutting operational expenses and increasing productivity, forward-thinking industry leaders turn to robotic process automation.

Intelligent character recognition allows for the automation of a range of dull, time-consuming processes that formerly required thousands of hours of labour and inflated payrolls. Software with artificial intelligence validates data and provides reports based on the criteria set, evaluates documents, and pulls information from forms (applications, agreements, etc.).

2. Related Study Reviews

This section begins with a review of existing AI-related information systems literature. The lack of clarity surrounding the idea and classification of artificial intelligence is examined.

Vedapradha R (2021) concludes with framed research questions being addressed, fetching statistical shreds of evidence that the proposed conceptual model developed based on service differentiation can predict qualitative service delivery among the investment banks. There is a strong relationship between disruptive technologies and the level of service delivery and the relationship between service differentiation and employee performance.

Meghani (2020) concluded that artificial intelligence holds the future of banking in its hands since it possesses the power of advanced data analytics to combat financial fraud, unlawful activities, and increase compliance. In the year 2009, a new idea in the financial industry was developed in the shape of Bit-coin. Bit-coin was dubbed the "new era's digital money." Customers benefit from Bit-coins because they are secure and non-centralized, and they provide honest and non-inflatable money. In this paper, the author looks at artificial intelligence and block chain technologies, as well as how they may help the Indian banking business.

Mhlanga (2020) highlighted that today's primary topic of debates and discussion is financial inclusion, and how to ensure that individuals who are still at the bottom of the pyramid become financially active. Fintech companies, on the other hand, are taking advantage of artificial intelligence's accessibility and applying it to ensure that the goal of digital financial inclusion is met by including low-income people, impoverished people, young people, women, and small businesses in the financial market. The study discovered that artificial intelligence has a significant impact on digital financial inclusion in areas such as risk investigation, measurement, and management, addressing issues of information imbalance, utilizing customer support and helpdesk through chatbot, and fraud detection and cyber security.

Artificial intelligence, according to Hassija and Srivastava (2020), is one of the most interesting and powerful technologies in recent history, and it will become more important and universal in the future years, having a substantial impact on current civilization. Artificial intelligence is becoming increasingly crucial for both major corporations and small businesses. According to the author's analysis, artificial intelligence has the potential to add $1 trillion to the Indian economy by 2030. Artificial intelligence adoption is still in its early stages, and more work remains to be done in order to fully comprehend its potential. Artificial intelligence and its applications and functionalities enable the banking industry to develop and give more tailored and efficient services to their consumers. Banks have also been able to grasp perceptions of their consumers as well as their expectations from banks by reaching 9 International Journal for Modern Trends in Science and Technology such aims.

Artificial intelligence, according to Kumar et al. (2019), improves customer satisfaction, lowers fraud, and increases profitability while also lowering operating costs and complexities. Proof of concept has been demonstrated through the use of corporate instances involving artificial intelligence that have resulted in rapid growth in the insurance industry. Artificial intelligence aids in the customization and personalization of services supplied to clients, as well as in advertising and marketing initiatives. As a result, insurers can include new data sources, including proprietary data, from digital and social media, as

well as sensory devices. As a result, personalized experiences can be created by examining consumer categories for customization.

Venkatesan and Sumathi (2019) stated that the goal of this study was to determine their customers' perceptions about the use of artificial intelligence tools in banks. Artificial intelligence in business operations will not be able to keep clients, but it will assist in offering excellent service to clients, which will encourage them to return to the company. Artificial intelligence assists banks in providing safe and dependable services to their customers, as well as assisting them in identifying prior mistakes.

According to Burri et al. (2019), innovative and cutting-edge technologies are entering the market and finding their way into practically every industry of business. In this regard, the insurance industry does not lag behind. The use of statistics in the insurance industry has a long history. As a result, the fact that insurance companies are diligently embracing data science analytics is not surprising. The goal of using data science analytics in the insurance industry is the same as it is in any other company: to improve marketing tactics, improve business, increase revenue, and lower costs. Several machine learning algorithms are described in this study to properly assess insurance claims and compare their performance using various criteria.

According to Alzaidi (2018), the banking sector in the Middle East has been lagging behind other worldwide markets in terms of technological adaption. Finally, there has been a shift in attitude toward technological instruments, and now banking industry professionals are trying to work hand in hand with technological advancements. Although the industry's adoption of artificial intelligence is still far from complete, its use in the banking sector has become fashionable. As a result, it is clear that the banking sector's performance in the Middle East has improved as a result of the use of artificial intelligence.

According to Vedapradha and Ravi (2018), today's banks are automating their operations, migrating their infrastructure, and moving their applications to the cloud in order to provide their consumers with a seamless experience. Even with the increased use of artificial intelligence in the banking business and its contribution to banking sector innovation, AI adoption is still in its early stages. Some banks are still hesitant to use this technology due to some of its frequent dangers, such as technical difficulties, low maturity, infrastructure, workforce reductions, and lack of transparency.

Conclusion

AI offers unparalleled technological possibilities. This is a real-world technology that can be deployed in any business today, despite its origins in science fiction. As enormous data sets required for training AI solutions become more available, the capabilities of AI technologies will continue to develop tremendously. Now is the time to take action on AI. Because of the low hurdles to entry, competition for AI expertise, AI patents, and AI capabilities will become even more heated.

The way financial organizations organize, run, accelerate, and accomplish growth will be transformed if AI is implemented early. Financial institutions will strive to cut costs and improve consumer and staff experiences by embracing new creative technology. This necessitates a comprehensive rethinking of an organization's core business processes, including its staff, as well as a culture transformation to accept new methods of working and technologies.

Every day, the applications and capabilities of AI expand and evolve. This research work focuses on the most important factors and benefits to consider, and more research is advised. AI should not be viewed as a commercial tool or a technological extension, but rather as a cultural shift that must be understood in a broad, multi-dimensional framework.

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