A STUDY ON ARTIFICIAL INTELLIGENCE IN FINANCIAL SECTOR

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ABSTRACT

Artificial intelligence (AI), a significant advancement in technology, is composed of algorithmic language and machine learning (ML). It is popular in a wide range of businesses, including those related to social media, robotics, finance, surveillance, entertainment, space exploration, robotics, and many more. The goal is to develop a self-contained, intelligent system. Our research, which has a brief introduction, focuses on how artificial intelligence is used in the financial industries (banking, investing businesses, and insurance companies). The study discusses issues, their effects, benefits, and disadvantages in the financial sectors. The research also predicts how artificial intelligence will affect the banking sector in the future with few recommendations.

Keywords: Artificial Intelligence, BFSI, Fintech, Machine learning

INTRODUCTION

The present-day industry is seeing a rise in interest in artificial intelligence. Artificial intelligence (AI) is the most recent technological advance that combines algorithmic language with machine learning. Artificial intelligence (AI) is the ability of machines (computers) to make intelligent judgments, i.e., decide what to do, often in the context of achieving a certain aim.

OBJECTIVES

- To examine, the uses of artificial intelligence in the field of finance.
- Researching both the benefits and challenges of AI in the financial industries.
- To study on the application of AI in finance sector.

SCOPE OF STUDY

The research examines the potential of artificial intelligence (AI) in the financial industry by examining its uses and advantages in a number of fields, including banking, investments, insurance, risk management, fraud detection, customer service, and financial analysis.

METHODOLOGY:

The study is based on secondary data and descriptive. The data collected from various journals, reports, and articles.

LIMITATIONS:

Our study just looks at financial applications of artificial intelligence, but there are much more. These industries include those in the transportation, health care, entertainment, gaming, robots, surveillance, agricultural, e-commerce, and social media sectors.

REVIEW OF LITERATURE

Kunwar M (2019) The impact of artificial intelligence on the modern world, particularly in the subject of finance, is examined in the current thesis, "Artificial Intelligence in Finance: Understanding how automation and machine learning is transforming the financial industry." The study comes to the conclusion that technology will continue to advance throughout the whole value chain of financial services, whether it be processing, analytics, or investment.

Development of Artificial Intelligence and Effects on Financial System by Xie, M (2019) dealt with the creation and use of machine learning and artificial intelligence in the financial sector, as well as how these developments affect both macroeconomics and microeconomics. Based on the financial risk management issues created by artificial intelligence, certain recommendations and tactics for the responsible use of AI in financial risk management were offered.

"Artificial intelligence applications in corporate finance" by Wallon (2019) focuses on the existing applications and potential future applications of AI in corporate finance. Through data gathered from articles, studies, and specialists as well as a developing survey employing qualitative and quantitative analysis, it provided a stance on this issue. It makes it possible to obtain ideal perspectives on the situational analysis of the present and the expectations for AI in finance, and specifically in corporate finance.

Tom C.W. Lin, 2019 on "Artificial Intelligence, Finance, And the Law "A study into these risks and constraints—the ways that artificial intelligence and misconceptions of it might hurt and impede law, finance, and society. The dangers and drawbacks of artificial codes, biased data, virtual threats, and systemic risks associated with financial artificial intelligence are highlighted. Additionally, it raises more serious concerns about how financial artificial intelligence may affect society, competitiveness, and financial cybersecurity.

The research paper on "Artificial Intelligence in Finance "by Patel, K (2018) investigating human thinking processes. The representation of such processes by machines (such as computers, robots, etc.) is another area that AI focuses on. The banking industry is only one of the many areas that AI has currently dominated.

DEFINITION OF ARTIFICIAL INTELLIGENCE

Artificial Intelligence (AI), a term coined by emeritus Stanford Professor John McCarthy in 1955, was defined by him as "the science and engineering of making intelligent machines". Much research has humans program machines to behave in a clever way, like playing chess, but, today, we emphasize machines that can learn, at least somewhat like human beings do.

ARTIFICIAL INTELLIGENCE - HISTORY

If AI is a popular buzzword now, it has been around for a while. The history of AI may be traced back to the era of the ancient thinkers. The formal recognition, however, dates from the 1950s. The phrase was first used in 1956 at the John McCarthy and Marvin Minsky-hosted Dartmouth Summer Research Project on Artificial Intelligence (DSRPAI). To learn more about these individuals, search for them on Google.

The number of Fortune 1000 corporations with at least one AI project in development increased to more than two-thirds in the 1980s. I want to get back to the original question about AI and money. AI first became noticeable in the financial services sector in 1982. A distinguished mathematician named James Simons established Renaissance Technologies at that time.

AI AND FINANCE - HISTORY

In the 1980s, AI started to become more well-known in the banking industry. During this period, expert systems developed as a superb financial commercial product. Expert systems are knowledge-based intelligence systems that are employed in the financial sector to forecast market trends and offer specialized financial strategies.

In order to lower the danger of human error, financial institutions and the banking sector started to deploy expert systems more frequently. It aided in financial research, global trade, currency conversion, company expansion, and bank management.

When you go back to the 1990s, fraud detection was all the rage. Over 200,000 transactions were evaluated each week by the FinCEN Artificial Intelligence system (FAIS). The algorithm might spot 400 possible money laundering instances totalling close to $1 billion over the course of two years. This was all in the 1990s.

AI IN STOCK MARKETS – HISTORY

What fire was to ancient people, artificial intelligence is to investment. AI is altering the game for investors, much as fire altered everything for the cavemen.

Fuzzy systems and artificial neural networks both increased in popularity in the 1980s. It was included to improve the predicting ability of financial tools. The "Protrader expert system" was the first artificial intelligence-driven computer that purportedly anticipated the stock market. K.C. Chen, a student at California State University's

School of Business, and Ting-Peng Lian, a student at the University of Illinois, created it. These two professionals correctly forecasted the well-known Dow Jones Industrial Average decline of 87 points in 1986.

AI'S POSITION IN DIFFERENT FINANCIAL SECTORS

Financial institutions use AI algorithms across all industries while keeping in mind the huge economic benefits and demand from tech-savvy customers. Let's examine some of the important sectors of the banking sector where artificial intelligence is having the most influence and outperforming traditional methods.

ARTIFICIAL INTELLIGENCE WITH PERSONAL FINANCE

The use of AI in personal finance is affected by consumer desires for financial independence and the ability to manage one's financial condition. Whether it's linguistically driven chatbots that offer 24/7 financial counselling or customized insights for wealth management solutions, any financial institution that aspires to be a market leader must have AI. One of the first applications of AI in personal finance was Eno from Capital One. Eno was the first language available for SMS text-based companions given by a US bank when they were initially introduced in 2017.

Eno collects data and foresees consumer demands with the use of more than 12 proactive features, such as warning clients of suspected fraud or price increases for subscription services.

ARTIFICIAL INTELLIGENCE AND CONSUMER FINANCE

One of the most important commercial uses of artificial intelligence in banking is the detection and prevention of frauds and breaches. Customers are searching for banks and insurance companies that offer secure accounts, particularly since Insider Intelligence projects that losses from digital payment fraud would top $48 billion annually by 2023. AI has the capacity to dig into and identify patterns with anomalies that humans would otherwise miss.

One such bank that employs AI in consumer lending is JPMorgan Chase. More than half of Chase's net profits come from consumer finance; thus, the bank has created essential fraud detection applications for its customers.

For example, it has developed a unique fraud detection algorithm that provides information about each payment transaction to central computers at

ARTIFICIAL INTELLIGENCE AND CORPORATE FINANCE

Corporate finance may greatly benefit from artificial intelligence since it can more accurately predict and evaluate credit risks. For businesses aiming to grow, machine learning, for instance, may enhance loan screening and lower financial risk. By identifying sophisticated fraud and unusual behaviour, artificial intelligence (AI) can help decrease financial crime as corporate accountants, researchers, treasurers, and financiers strive for long-term success.

AI is used by US Bank in both its back- and middle-office operations. To help identify problematic actors, U.S. Bank gathers and analyses all pertinent data on clients using deep learning. According to an Insider Intelligence

review, it has been employing this technology for anti-money laundering and has quadrupled the output compared to the ordinary capabilities of the prior systems.

APPLICATION OF ARTIFICIAL INTELLIGENCE IN FINANCE

i. **Risk Evaluation:** Can the eligibility for a loan be determined by artificial intelligence? Definitely. In fact, banks and applications are using machine learning algorithms to not only determine a person's loan eligibility but also to provide tailored options, according to Towards Data Science. The advantage? AI can more quickly and accurately identify loan eligibility since it is unbiased.

ii. **Management Of Risk:** For the banking industry (and pretty much every other organization), reducing risk is an important, continuing concern. Machine learning is now able to help professionals use data to "pinpoint trends, identify risks, conserve manpower and ensure better information for future planning," according to Built In.

iii. **Fraud Management, Detection, And Prevention:** Have you ever received a call from your credit card company after making many purchases? According to Towards Data Science, fraud detection systems look at a person's purchase history and issue an alert if anything looks out of the ordinary or goes against your typical spending patterns.

iv. **Credit Choices:** According to Towards Data Science, using data from a variety of sources, including mobile devices, artificial intelligence can evaluate a potential customer faster and more accurately (plus, robots aren't biased).

v. **Financial Consulting Services:** Want to keep up with the latest financial trends? Do you want an evaluation of your portfolio? Forbes claims that artificial intelligence algorithms can assess a person's portfolio (or the most current trends or the vast majority of important financial information) to provide you the information you need as quickly as is practical.

vi. **Trading:** Trading commonly uses artificial intelligence because it can find patterns in enormous volumes of data. Built In claims that AI-enabled robots can analyse data more rapidly than humans, which accelerates the procedure and saves a substantial amount of time.

vii. **Taking Care of Money/Personalized Banking:** Thanks to chatbots and virtual assistants, the need to hold for a customer service representative on the phone has been reduced (and in some cases eliminated). According to Towards Data Science, thanks to technology and AI, consumers can now check their balances, make payments, verify account activity, chat with a virtual assistant, and receive customized financial advice whenever it's most convenient.

viii. **Prevent Cyber-Attacks:** Artificial intelligence can help consumers feel more confident that banks and financial organizations will keep their money and personal information as safe and secure as possible. Up to 95% of cloud breaches are thought to be the result of human mistake. By analysing and spotting common data patterns and trends and warning firms of deviations or odd activities, artificial intelligence may improve enterprise security.

ix. **Better Predict and Assess Loan Risk:** In order to forecast borrowing behaviour, artificial intelligence can analyse clients' spending patterns and activities, as Forbes explains. This is crucial in regions of the

world where people have cell phones and other types of connectivity and communication but do not have access to traditional finance.

Given by Forbes as an illustration Lenders utilize an app that loan applicants may download to analyse their "digital footprint"—including social media activity, internet history, and more—to build a more comprehensive picture of the applicant.

x. **Allows Interaction with Customers 24/7:** Customers may ask queries at any time of the day (and night!) and don't have to wait to talk to a people due to the prevalence of virtual assistants and chatbots. In a video posted to Yahoo! Financial, Rob Thomas, senior vice president of data and cloud platforms at IBM, said. But AI increases their productivity and improves their problem-solving abilities. In other words, "virtual assistants can respond to customer needs with minimal staff intervention," according to AI News.

xi. **Reduce The Need to Automate Repetitive Processes/Work:** AI can automate tedious, time-consuming processes like document inspection and data extraction from apps, freeing up staff time for other work.

xii. **Reduce False Positives and Human Error:** Human error is a terrible fact of life because people make mistakes. In the financial services sector, 94% of the IT professionals polled indicated they were unsure about the ability of their staff members, consultants, and business partners to securely protect consumer data. Fortunately, technological advancements like artificial intelligence can help minimize human mistake.

xiii. **Ability To Perform Tasks of Any Length:** Scalable technology like artificial intelligence allows you to use it for both short-term and long-term efforts.

xiv. **Make Smart Insurance Decisions:** When it comes to the approval of credit cards and loans, banks and lenders are able to "make smarter underwriting decisions" thanks to artificial intelligence technologies, claims Build In. not provided.

xv. **To Save Money:** The preceding things on this list all have the potential to boost sales. Instead of recruiting new workers, you may free up personnel to take on more responsibility by automating chores. Customer service is improved by virtual assistants and chatbots that are available around-the-clock, and utilizing AI to check someone's eligibility for a loan frequently results in identifying people with good credit who won't be approved. default.

EXAMPLES OF FINANCIAL FIRMS THAT ARE USING AI

According to Forbes, 54% of financial service organizations with 5,000+ employees are using artificial intelligence. Here are some examples:

- **Capital One**: The first SMS text-based natural language assistant in the United States was called "Eno" and was made available by a bank.

- **Bank of America:** Since its launch in 2018, the chatbot "Erica" has assisted more than 10 million people. By the middle of 2019, Erica could comprehend about 500,000 different question variants.

- **JPMorgan Chase**: According to Business Insider, the bank employs important fraud-detection software, including the deployment of an algorithm to identify fraud trends. Data centres get the specifics of credit card transactions and determine if they are fraudulent.

- **Kensho**: Kensho develops analytical tools that are utilized by some of the top financial organizations in the world, including Goldman Sachs, Bank of America, Merrill Lynch, and JPMorgan Chase, according to the business website.

- **Alphasens**e: According to Built In, this is "an AI-powered finance industry search engine...[serving] clients like banks, investment firms, and Fortune 500 companies." The software analyses keyword searches to find market trends and shifts using natural language processing.

CHALLENGE OF ARTIFICIAL INTELLIGENCE

As you know, AI is used in all fields, but there are still some challenges:

i. **Difficult to grasp:** Machine learning has a sophisticated language. It raises the level of governance while somewhat raising risk. To make them less difficult and to aid clients in avoiding making bad business decisions, banks must fully disclose to them the models and underlying assumptions.

ii. **Based on data availability and quality**: Big-data, as we are all aware, is the basis for AI technology. It only provides correct information when a sizable volume of high-quality data is supplied. Even with trusted sources, biases in the data might be hidden. Data referential are typically plagued by quality issues in the financial sector, and it is already difficult to reconcile the data from front to back. Any substantial artificial intelligence project has to get off to a good start with a data-quality program. When this is lacking, the users experience negative losses.

iii. **Responsibility:** Another substantial challenge for AI is this. A banker's reasoning mind could find it disconcerting if there was no explanation for why the algorithm responded positively or negatively to a certain question. This somewhat negates the initial aim of using a computer by necessitating the retention of a human supervisor to verify the machine's conclusions for critical functions like releasing/blocking funds or authenticating deals.

iv. **Rapidly evolving technology**: In order to use abstract AI ideas in day-to-day operations, each financial organization must look for ways to make them a reality. When used in conjunction with active systems, the right AI technology may automate labour-intensive manual tasks, deliver the performance needed to take advantage of cutting-edge technologies, and be recycled for a variety of uses.

v. **AI Reliability**: For Security Reasons The data an AI uses and how much control it has over the system determine how accurate it is. The slow but steady method of Test-Driven Development, which prioritizes assessment and verification to create the right algorithm, is necessary to produce a reliable system that can withstand the test of time.

vi. **Lack of emotional intelligence:** Even if AI is adept at solving a range of specific problems and identifying fraud, it lacks emotional intelligence. For instance, chat boxes are clever but lack empathy. They obey the directives of the program.

vii. **Regulatory obstacles:** Success in the strictly regulated financial services sector depends on AI transparency. A subject matter expert who can describe the logic behind and important context around the data must be consulted. The ability of machine learning to explain its reasoning will go a long way toward overcoming legal challenges to gain consumer acceptance.

viii. **Measuring progress:** AI forecasting relies on future prospectuses; thus, it can't guarantee with absolute certainty whether an investment will make money or lose money. It is challenging to monitor performance metrics such how ML positively affects human behaviour, how to save expenses, and how to boost productivity. As AI advances, other problems that financial institutions face will emerge.

THE ROLE OF AI IN FINANCE IN THE FUTURE

Given how prevalent artificial intelligence has become across all industries and how COVID-19 has changed how people communicate with one another, it is not surprise that it is advancing in the financial industry. The ability of artificial intelligence (AI) to combine and simplify tasks while processing data and information far more quickly than humans has had a significant impact. Analysts predict that by 2030, AI will have saved the banking sector $1 trillion.

According to McKinsey & Company, "banks need to deploy these technologies at scale to remain relevant as artificial intelligence technologies grow more and more widespread in the society, we live in. Success requires a broad transformation including several organizational levels.

Since they constitute the "biggest addressable consumer demographic" for banks in the United States, millennials and "Gen Zers" are particularly crucial. Banks are thus attempting to increase their IT and AI investment "to achieve higher digital standards" because younger clients usually choose internet banking. In fact, 78% of millennials claimed that if another choice is offered, they won't utilize a bank.

FINDINGS

- Since AI is used in every business and has the potential to replace human employment opportunities, deep learning is necessary. The business will grow immensely if the machine and human employees work together.
- AI must be put into practice in line with the needs of the sectors where skilled managers are required.
- As specific abilities are needed for AI, students must get superior teaching in comprehending and mastering algorithmic language. Institutions like universities should promote these courses.
- Government funding to advance AI so that we keep up with other countries in the field of technology

CONCLUSION:

Experts predict that AI will soon play a significant role in daily life. It fundamentally changes how we see the world. It offers effective answers to a number of problems. AI could diminish human desires; thus, we must maintain a balance by changing with the times. It's critical to keep in mind that humans developed the machines, not the other way around. We profit from using it correctly.

REFERENCES

- Artificial Intelligence in Finance [15 Examples] (sandiego.edu)
- https://onlinedegrees.sandiego.edu/artificial-intelligence-finance/
- https://www.javatpoint.com/history-of-artificial-intelligence
- IJCRT.ORG: article of artificial intelligence in finance by Dr. Pinky Soni