LOVELY PROFESSIONAL UNIVERSITY

School of computer Science and Engineering

Lovely Professional University

Jalandhar, Punjab, India-144411

ARTIFICIAL INTELLIGENCE REPORT

Artificial Intelligence (INT 404)

TITLE: ARTIFICIAL INTELLIGENCE IN BANKING

SUBMITTED BY: **Ajita Yadav**

REG. NO: **12107460**

ROLL NO: **13**

SUBMITTED BY: **Ganeshwar Sahoo**

REG. NO: **12217484**

ROLL NO: **61**

SUBMITTED BY: **Ashmit Gupta**

REG. NO: **1217794**

ROLL NO: **37**

SUBMITTED TO: ANKITA WADHAWAN

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ABSTRACT

Artificial Intelligence (AI) is a fast-developing technology across the world. The banking sector is becoming one of the first adopters of Artificial Intelligence. Banks are exploring and implementing technology in various ways. Artificial Intelligence is getting better and smarter day by day. In this paper, we will discuss how Artificial Intelligence is used in the banking sector, the benefits and challenges which are faced by AI. Development that Artificial Intelligence offers to FinTech and the different ways in which it can improve the operations of banking sector.

AI also enables banks to manage huge volumes of data at record speed to derive valuable insights from it. Features such as AI bots, digital payment advisers and biometric fraud detection mechanisms lead to higher quality of services to a wider customer base. All this translates to increased revenue, reduced costs, and a boost in profits.

To date though, AI implementation in banking has been modest. AI is being tested for real-time identification and prevention of fraud in online banking as well as in know-your-customer (KYC) processes. Robo-advisors are also evolving over time to become true AI solutions. Looking forward, regulatory measures around data privacy and concerns regarding cybersecurity might create obstacles to AI use in banking. In addition, the highly regulated nature of banking may cancel out some efficiency gains of AI. Banks are in a race to become AI-first, and that too for a good reason. For many years, the banking industry has been working on transforming itself from a people-centric business to a customer-centric one. This shift has forced banks to take a more holistic approach to meet their customers' demands and expectations.

INTRODUCTION

Artificial Intelligence is the future of banking as it brings the power of advanced data analytics to combat fraudulent transactions and improve compliance. AI algorithm accomplishes anti-money laundering activities in few seconds, which otherwise take hours and days. The aim of this report is to identify the ways and sectors in banking where AI is being used and what are the major challenges experienced to implement the same. Among the various IT breakthroughs of recent years, the advancement in AI is particularly remarkable. In short, AI refers to computers having cognitive skills like humans, which could result in immense efficiency gains for firms and their clients alike. The financial sector has been one of the early experimenters with AI technologies, not least due to its likely contribution to stronger profitability. It is therefore essential to take a closer look at the potential role of AI in banks' digital transformation.

Fintech companies and traditional banks are occasionally thought of as being at odds with each other. But lately, AI has been changing that dynamic. The AI in banking industry is expected to keep growing too, as it's projected to reach $64.03 billion by 2030.

Artificial intelligence has transformed every aspect of the banking process. AI technologies are making banking processes faster, money transfers safer and back-end operations more efficient.

Technology and the fourth industrial revolution have penetrated its way into many sectors. This technology is now reconstructing social skills and the workforce. Not only limiting the existence of a changing workforce, but the use of artificial intelligence is very evident in the banking sector. Artificial intelligence applications are not just modernizing the banking sector but the entire world as we know of.

Artificial intelligence (AI) technology is being used more and more by banks and other financial institutions for a variety of purposes, such as improving customer service through the use of virtual assistants or credit scoring to correctly determine a borrower's risk. But the battle against fraud and money laundering is one of the most significant applications of AI in the banking sector.

FUNCTIONS OF AI IN BANKING

Artificial Intelligence has numerous functions in banking. If we talk about banking as a whole there are many different categories in which artificial intelligence can play vital role. Some of those are personal banking, finance management, net banking. The field of banking is much larger to explain as it has a lot of branches to cover. To sum up the common functioning of each field, some points are given below:

1. Reduction in operational costs and risk

The banking industry is largely digital in operation, but it is still riddled with human-based processes that sometimes are paperwork-heavy. In these processes, banks face significant operational cost and risk issues due to the potential for human error.

Robotic process automation (RPA), software that mimics rules-based digital tasks performed by humans, is being applied in banking to eliminate much of the time-intensive and error-prone work involved in entering customer data from contracts, forms and other sources.

Coupled with improved handwriting recognition, natural language processing and other AI technologies, RPA bots have become intelligent process automation tools that can handle an increasingly wide range of banking workflows previously handled by humans. This definition of hyper automation explains in detail the benefits of combining AI and RPA.

2. Improved customer experience

There’s a reason people derided banking hours. Banks never seemed to be open when you needed them most, such as later in the day or on holidays and weekends. Call centers of yore were notorious for long wait times and operators, when finally engaged, often couldn't resolve the customer's issue.

AI technologies are changing that.

Chatbots on call. One of the big benefits of AI in banking is the use of conversational assistants or chatbots. A chatbot, unlike an employee, is available 24/7, and customers have become increasingly comfortable using this software program to answer questions and handle many standard banking tasks that previously involved person-to-person interaction.

"Chatbots also aren't brand new, and some banks have been using them for a while, both internally and customer facing, and getting benefits," Bennett said. The COVID-19 outbreak underscored their usefulness.

3. Improved loan and credit decisioning

Similarly, banks are using AI-based systems to help make more informed, safer and profitable loan and credit decisions. Currently, many banks are still too confined to the use of credit scores, credit history, customer references and banking transactions to determine whether or not an individual or company is creditworthy.

However, as many will attest, these credit reporting systems are far from perfect and are often riddled with errors, missing real-world transaction history and misclassifying creditors. In addition to using data that's available, AI-based loan decision systems and machine learning algorithms can look at behaviors and patterns to determine if a customer with limited credit history might in fact make a good credit customer or find customers whose patterns might increase the likelihood of default.

The big challenge with using AI-based systems for loan and credit decisions is they can suffer from bias-related issues similar to those made by their human counterparts, an issue discussed below under "AI risks and challenges." This is due to how loan decision-making AI models are trained. Banks looking to use machine learning as part of real-world, in-production systems must try to root out bias and incorporate ethics training into their AI training processes to avoid these potential problems.

Explain ability is also an issue when using AI algorithms using deep learning approaches. (See "What are the risks and downsides" below.)

4. Automation of the investment process

Finally, some banks are delving deeper into the world of AI by using their smart systems to help make investment decisions and support their investment banking research. Firms like Switzerland-based UBS and Netherlands-based ING are having AI systems scour the markets for untapped investment opportunities and inform their algorithmic trading systems. While humans are still in the loop with all these investment decisions, the AI systems are uncovering additional opportunities through better modeling and discovery.

In addition, many financial services companies are offering robot-advisers to help their customers with portfolio management. Through personalization, chatbots and customer-specific models, these robo-advisers can provide high-quality guidance on investment decisions and be available whenever the customer needs their assistance.

5. Improved fraud detection and regulatory compliance

Fraud detection. Fraud detection is an area where machines are "genuinely superior to people," Bennett said.

"They can crunch vast amounts of numbers, applying different algorithms. They don't make mistakes, unless they're badly programmed," she said. Humans have a habit of making mistakes, especially with repetitive tasks."

Prior to the pandemic, the U.K.-based Bennett said she could be in a different country every day for work. Her credit card company's fraud detection had gotten so good that her card was never declined as she traveled from one geography to another. The one instance when there was fraud -- someone tried to buy a computer as she was buying cheese in Madrid -- she was contacted immediately.

"What I'm saying is that companies with well-structured, good data have already been able to put AI to good use in detecting fraud," she said. As companies improve their data collection and algorithms become more advanced, the benefit to financial firms is growing.

Regulatory compliance. Banking is one of the most highly regulated sectors of the economy, both in the United States and worldwide. Governments use their regulatory authority to make sure banks have acceptable risk profiles to avoid large-scale defaults, as well as to make sure banking customers are not using banks to perpetrate financial crimes. As such, banks have to comply with myriad regulations requiring them to know their customers, uphold customer privacy, monitor wire transfers, prevent money laundering and other fraud, and so on.

Banking regulatory compliance has significant cost and even higher liability if not followed. As a result, banks are using smart, AI virtual assistants to monitor transactions, keep an eye on customer behaviors, and audit and log information to various compliance and regulatory systems.

Big-data-enhanced fraud prevention has already made a significant impact on credit card processes, as noted above, and in areas such as loan underwriting, as discussed below. By looking at customer behaviors and patterns instead of specific rules, AI-based systems help banks practice proactive regulatory compliance, while minimizing overall risk.

ADVANTAGES AND DISADVANTAGES

Banking is a crucial field to deal with. As one mistake from user's end or banker's end could lead to serious issues but on the other hand the knowledge in the same field could make miracles for people.
Every problem solved by artificial intelligence has both negative and positive impacts in the field of banking. Some of those are mentioned below:

ADVANTAGES:

1.Improved customer service: AI-powered chatbots and virtual assistants can provide 24/7 customer support, answer common questions, and help customers with basic banking tasks. This reduces the burden on human customer service representatives and allows banks to provide faster and more personalized service to their customers.

2.Fraud detection: AI can be used to identify suspicious transactions and patterns of behavior that may indicate fraud. By analyzing large volumes of data, AI algorithms can quickly identify potential fraud and alert the appropriate parties for further investigation.

3.Risk management: AI can be used to assess risk in lending and investment decisions. By analyzing customer data and market trends, banks can make more informed decisions about lending and investment opportunities.

4.Cost savings: By automating repetitive tasks and streamlining processes, AI can help banks reduce their operating costs. For example, AI can be used to automate loan underwriting or to monitor customer accounts for unusual activity.

5.Personalization: AI can help banks provide more personalized services to their customers. By analyzing customer data, banks can make personalized product recommendations, offer targeted promotions, and provide customized financial advice.

6.Efficient compliance: AI can help banks comply with regulatory requirements and reduce the risk of non-compliance by automating compliance processes and monitoring transactions.

7.Credit scoring: AI algorithms can analyze a vast amount of data, including credit history, employment status, income, and other factors, to assess a borrower's creditworthiness accurately. This can help banks make faster, more accurate lending decisions.

8.Investment management: AI-powered investment management tools can analyze market trends and provide insights that can help investors make better-informed investment decisions.

9.Process automation: AI-powered automation can streamline and automate many banking processes, such as account opening, loan processing, and customer onboarding, making them faster and more efficient.
10.Predictive analytics: AI can use predictive analytics to identify potential problems before they occur, such as predicting which customers are at risk of defaulting on a loan or which accounts are likely to be compromised by fraud.
11.Voice assistants: AI-powered voice assistants can provide hands-free banking services, allowing customers to check account balances, transfer funds, and pay bills using voice commands.
12.Cross-selling opportunities: AI can analyze customer data to identify cross-selling opportunities, allowing banks to offer targeted products and services that meet customers' needs

13.Enhanced security: AI can improve security by identifying potential threats and anomalies, enabling banks to take preventive measures to protect their customers' data and prevent fraud.

14.Chatbot customer service: AI-powered chatbots can provide customers with 24/7 support, answer questions, and provide guidance on various banking-related topics, such as account balances, payment history, and loan inquiries.

15.Optimized resource allocation: AI can help banks optimize resource allocation by identifying areas where resources can be allocated more effectively, such as reducing manual tasks and automating routine processes.

16.Compliance monitoring: AI-powered compliance monitoring tools can help banks detect and prevent financial crimes, such as money laundering, by analyzing vast amounts of data to identify suspicious activities.

17.Improved loan underwriting: AI algorithms can analyze a borrower's financial history, credit score, and other data points to determine the likelihood of loan repayment, allowing banks to make more informed lending decisions.

18.Better investment recommendations: AI-powered investment tools can analyze vast amounts of data to provide investment recommendations that are tailored to each individual investor's goals, risk tolerance, and preferences.

DISADVANTAGES:

While there are many advantages to using AI in banking, there are also some potential disadvantages, including:

1.Lack of transparency: One of the challenges with AI is that it can be difficult to understand how algorithms are making decisions. This lack of transparency can make it difficult for customers to understand why certain decisions are being made and can erode trust in the banking system.

2.Data security and privacy: AI relies on vast amounts of data to make decisions, which means that banks must be vigilant in protecting this data from cyber threats. Additionally, banks must ensure that they are using customer data ethically and in compliance with privacy laws.

3.Job displacement: As AI becomes more prevalent in banking, there is a risk that some jobs may be displaced. For example, customer service roles may be automated, which could result in job losses for human customer service representatives.

4.Bias and discrimination: AI algorithms are only as unbiased as the data that they are trained on. If the data is biased, then the AI may make biased decisions, which could lead to discrimination against certain groups.

5.Overreliance on technology: Banks must ensure that they do not become overly reliant on AI and that they maintain human oversight to ensure that decisions are being made in the best interest of customers.

6.Technical challenges: Implementing AI can be complex and require significant technical expertise. Banks must invest in the necessary infrastructure, software, and personnel to successfully implement and maintain AI systems.

7.Dependence on historical data: AI relies on historical data to make predictions and decisions. This means that AI may not be effective in situations where there is limited or no historical data available.

8.Customer acceptance: Some customers may be hesitant to trust AI for financial decision-making, preferring instead to interact with human representatives. This could limit the adoption and effectiveness of AI in banking.

9.Regulatory compliance: Banks must ensure that their use of AI is compliant with applicable regulations and standards. This can be challenging given the rapidly evolving nature of AI and the lack of clear regulatory guidance.

10.Ethical concerns: As with any technology, AI raises ethical concerns around issues such as privacy, bias, and discrimination. Banks must be mindful of these concerns and ensure that their use of AI aligns with ethical principles.

11.Inaccuracy and errors: While AI can be highly effective in analysing data and making decisions, there is always a risk of inaccuracies and errors. If these errors go undetected, they could lead to financial losses for customers and banks.

12.Complexity: AI systems can be complex and difficult to understand, which could limit transparency and make it difficult for stakeholders to fully grasp how decisions are being made.

13.Unintended consequences: AI systems are designed to optimize certain outcomes, but they may have unintended consequences that are not immediately apparent. Banks must carefully consider these unintended consequences and be prepared to address them as they arise.

14.Legal liability: As with any technology, there is a risk of legal liability if an AI system makes a mistake or causes harm. Banks must ensure that they have appropriate insurance and legal protections in place to mitigate these risks.

15.Integration challenges: Implementing AI systems can be challenging, particularly if they need to be integrated with existing systems and processes. Banks must ensure that they have a clear plan for integrating AI into their operations and that they are able to do so without disrupting their existing business.

PROBLEMS AND SOLUTION

Problem:

The use of AI in banking has increased significantly in recent years, but it also poses some challenges. One of the major challenges is the potential for biases in algorithms and models used by AI systems. Biases can lead to unfair treatment of customers, especially those belonging to minority groups. Another challenge is the security and privacy concerns that come with the use of AI, as it requires access to sensitive information such as financial data.

Solution:

To address these challenges, banks can implement the following solutions: Improve transparency: Banks can improve the transparency of AI algorithms and models by providing clear explanations of how they work and what data they use. This can help reduce biases and increase customer trust.

Use diverse datasets: Banks can use diverse datasets that include data from different sources and populations to reduce biases in AI systems.

Regular auditing: Regular auditing of AI systems can help identify biases and other issues that may arise. This can also help improve the accuracy and performance of AI systems.

Strengthen cybersecurity measures: Banks must strengthen their cybersecurity measures to ensure that customer data is secure and protected from cyber threats.

Provide customer education: Banks can provide customer education on the use of AI systems, including how they work and what data they use. This can help increase customer trust and reduce concerns about privacy and security.

Problem:

Lack of human interaction: As AI systems become more prevalent in banking, there is a risk that customers may feel like they are losing the personal touch that comes with human interaction. This can lead to decreased customer satisfaction and loyalty.

Solution:

Maintain a balance of human and AI interaction: Banks can maintain a balance of human and AI interaction by ensuring that customers have access to human support when needed, while still leveraging the benefits of AI systems for efficiency and accuracy.

Problem:

Regulatory compliance: The use of AI in banking must comply with various regulatory requirements, including data privacy laws, anti-money laundering regulations, and consumer protection laws. Non-compliance can lead to significant financial and reputational risks for banks.

Solution:

Ensure compliance with regulatory requirements: Banks must ensure that their AI systems comply with all relevant regulatory requirements. This includes conducting regular audits and risk assessments to identify and mitigate compliance risks.

Problem:

Cost: Implementing AI systems can be expensive, and smaller banks may not have the resources to invest in advanced AI technologies.

Solution:

Partner with fintech companies: Banks can partner with fintech companies that specialize in developing AI technologies. This can help smaller banks access the benefits of AI systems without the high costs associated with developing and implementing them in-house.

CONCLUSION

Artificial Intelligence (AI) is transforming the banking industry by improving customer experiences, enhancing operational efficiency, and reducing fraud. AI is expected to continue to transform the banking industry in the future, including:

Personalized financial advice based on customer behavior and preferences.

Seamless integration of banking services with other technologies, such as voice assistants and smart home devices. Increased use of blockchain and distributed ledger technologies for secure and transparent transactions. Greater collaboration between traditional banks and fintech startups to develop innovative solutions. The growing adoption of AI promises to have a lasting impact on the banking industry. While legacy data systems worked yesterday, they may not necessarily work today and realistically won't work tomorrow. AI, which was once considered science fiction, is not only science fact today, but is also moving increasingly into the mainstream. Even though banks must still overcome significant operational and organizational challenges, as was discussed throughout this paper, they are making great strides forward in implementation and adoption. Banks are coming to recognize the changes that advanced technologies can foster, and, more importantly, they are embracing them.

In the long term, it is possible that banks' competitive features could very well depend on building the technological foundations and processes to fully realize the benefits that AI promises to deliver. Even so, technological advances could potentially outpace industry adoption, even as banks embrace an accelerated journey toward modernization. To successfully realize the benefits that AI can deliver in the future, banks must stay the course today, which, for some, can be easier said than done.

This report helps us to understand the scope of artificial intelligence in the sector of banking and several problems that could be dealt with easily with the help of artificial intelligence. It also gives a view about the problem and the possible solutions with our understanding. The report provides a clear idea of future scope of artificial intelligence in banking such as dealing with fraud detection, security and many other possible problems.

Artificial intelligence (AI) is transforming the banking industry by improving customer experiences, enhancing operational efficiency, and reducing fraud. This report explores the various ways in which AI is being used in the banking sector and its impact on the industry.

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