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# ROLE OF ARTIFICIAL INTELLIGENCE IN THE BANKING SECTOR

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**Abstract**

*Banks are currently relying on outdated systems while engaging with a wide range of clients. However, with the advancement of technology, there is a pressing need for a revolution in traditional financial institutions. By not keeping up with current trends, banks are missing out on opportunities to transform their business models, reduce repetitive tasks, prevent fraud and make better decisions, ultimately leading to financial losses. To address this bank can implement new technologies such as Virtual Assistants and Artificial Intelligence (AI) systems, similar to how other industries have modernized their processes. This research paper will delve into the impact of AI implementation in banking procedures, highlighting its potential to enhance profitability performance and reduce reliance on human resources. In summary, AI - powered Virtual Assistants significantly improve the efficiency of business processes across all sectors, particularly in banking ,by making them faster ,reliable and less dependent on human intervention.* **Keywords***: Artificial Intelligence, Automation, Banking Systems, Virtual Assistants, Chatbots*



**Introduction** : Artificial Intelligence (AI) is the capacity of machines to perform human-like cognitive functions. In the banking sector, AI algorithms are used for customer management, credit information services, FAQs, and financial assistance. AI improves efficiency and effectiveness in areas like cybersecurity, risk management, fraud detection, sales, internal audit, asset and loan management, and customer management. It enables data-driven insights, automation of tasks, and personalized services. As AI evolves, it holds immense potential for further advancements in banking, offering greater efficiency, accuracy, and customer satisfaction.

This study focuses on the implementation of an AI machine in the banking sector. Various models will be tested using historical data and surveys. These models can be applied to automate business processes in all areas of the banking industry, utilizing robot processing, chatbots, and AI agents. With the use of a predefined chatbot on the website, customers can access services without physically visiting a bank. The chatbot collects necessary information and determines if it can assist or if the customer needs to visit a branch. The advantage of a chatbot is its ability to gather data quickly, leading to higher efficiency. The data warehouse and query engines are optimized for analysis, providing users with a single source of processed information. An AI system monitors transactions and traffic to prevent fraud, learning from experience without interrupting transactions. Computational methods for finding information yield better results compared to classical methods. The integration of the AI system with the front-end improves operational efficiency, automatically populating fields and providing quick insights for decision-making. AI ensures secure and efficient real-time document tracing.

Commercial banks are adopting modern technologies and process automation, such as Unicredit Bank's Emerging Opportunities Engine (EOE). This AI-powered system provides funding recommendations and specializes in the capital marketplace. It guides customers in purchasing shares or making investments in the stock market, benefiting trading brokers. The initial results of this software are promising, leading to its implementation in financial institutes. AI adaptation helps banks and the finance industry engage customers more efficiently by addressing their issues promptly. AI-based software utilizes machine learning algorithms to understand and solve problems based on predefined instructions. Artificial intelligence, powered by machine learning algorithms, is the most effective tool for quickly transforming data into valuable insights to meet customer requirements. Research has shown that customers are willing to adapt to technology, even if they initially resist it. This was evident during the Covid-19 crisis in 2020. Financial institutions recognize the long-term profitability of investing in digital transformation, robotics, and 24/7 availability through virtual assistants and chatbots.

**Statement of the Problem :** The problem with the current banking system is its reliance on large amounts of data, which is costly and often leads to incorrect decisions due to incomplete or irrelevant information. An advanced AI system can intelligently handle these issues by monitoring stakeholder-related data and generating reports. This AI system uses real-time information to guide customers in making immediate decisions and adhering to rules and policies. It also improves organizational profitability by efficiently managing credit and facilitating multiple customer investments in the banking sector simultaneously.

**Objective :**

1. To understand the significance and objectives of Artificial Intelligence.
2. To examine the integration of Artificial Intelligence in the banking industry.

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3. To examine the positive and negative impacts of Artificial Intelligence in the banking industry.

**Artificial Intelligence (AI) in Banking :** Artificial intelligence (AI) encompasses machine learning and natural language processing, making it applicable in the banking industry. Machine learning automates the construction of analytical models by analyzing data, allowing computers to adjust their parameters and algorithms when exposed to new information without human intervention. Natural language processing enables technology to understand and process human communication, whether spoken or written, to initiate computer actions. Natural language generation, on the other hand, involves technology generating high-quality human-like prose. It sifts through vast amounts of available data to produce responses that sound human. Natural language generation can take the form of speech or generate multi-page reports summarizing financial results.

**Different AI Application in Banking and Financial Services:**

- **Customer Support and Marketing Chatbots:** Self-learning programs designed for intelligent conversations with humans through chat or audio, accessible 24x7 and user-friendly. However, these programs require a significant amount of time for training.
- **Robo - Advisors for Financial Products :** Online platforms that utilize algorithms for financial advice, reinvesting dividends, automatic portfolio creation, and portfolio rebalancing require minimal to zero human involvement.
- **Personalized Financial Services**: Robo-advisors are utilized to monitor customer goals and provide recommendations on buying or selling stocks or bonds. They offer personalized attention to customers, regardless of their risk appetite.
- **Smart Wallets :** Intelligence has been integrated into mobile wallets to enable smart services such as chat functionality, bus ticket and cab booking, event and movie reservations, utility bill payments, and more.
- **Hedge Fund Trading & Management :** AI-based mobile app solutions for the banking sector enable hedge fund trading and management on the go. These solutions utilize AI-related tools to gather real-time data from global financial markets. By analyzing various financial markets, AI models can assist users in making quick decisions.
- **Offering High Security:** AI offers enhanced security to the banking sector by utilizing AI-based mobile applications to facilitate faster and more secure transactions. These applications enable banks and financial institutions to understand individual user behavior and provide personalized experiences through the app. By leveraging AI, banks can efficiently manage customer-oriented operations while reducing the need for hiring additional employees, thereby minimizing costs.
- **Employee Effectiveness & Customer Experience:** Artificial intelligence enhances employee effectiveness and enhances customer experience through targeted emails and personalized offers. It boosts sales and increases the productivity of sales representatives. AI provides greater precision and accuracy in various tasks, including cash transfers, bill payments, and card management. It enriches customer satisfaction levels by streamlining these operations, all easily accessible and manageable through desktops, smartphones, and other mobile devices.
- **Shifting obligations from Humans :** Artificial intelligence has the capability to transfer tasks from humans to AI, resulting in cost reduction, faster response times, keeping individuals informed about regulatory changes, and saving time through report preparation. The bank utilizes computer programs that handle repetitive tasks, including automated systems that respond to data requests from external auditors.
- **Increase in Efficiency, Accuracy :** Artificial intelligence enhances the efficiency, precision, and speed of mathematical calculations. It has the capability to handle large volumes of data, enabling banks to identify the optimal combination of trades that reduce initial margin at a given time. This analysis is based on historical data and specific combinations of trades that have previously resulted in initial margin reduction.
- **Identification of Fraudulent Transactions :** The finance industry is leveraging machine learning to reduce operational costs and drive profitability. This encompasses various activities in both the front and back-office across multiple institutions. Machine learning algorithms have the capability to analyze a vast amount of data points in real-time, enabling the identification of suspicious or potentially fraudulent transactions. By doing so, it helps prevent numerous fraudulent claims and ensures the integrity of financial operations.
- **Better Customer Support :** There is substantial evidence indicating that customers actively choose self-service options that enable them to interact with a virtual assistant as if it were a human representative. Many prominent banks have already integrated digital assistants into their website chatbots, voice response systems, and mobile applications. Artificial Intelligence treats each interaction as a learning opportunity, allowing the chatbots (virtual assistants) to continuously improve their understanding of users.

**The Role of the Banking Industry :** Banks play a crucial role in the modern economy and are often referred to as the "lifeblood" of the economic system. This is because they oversee currency, credit, and other financial activities. Banks not only encourage individuals to save money and earn interest for a more secure future but also provide financial support to emerging businesses. It is essential for banks to maintain proper documentation for all financial transactions, and they rely heavily on computers to accomplish this task. Various channels such as ATMs, emails, phone banking, internet banking, and mobile banking are utilized by banks to carry out their operations. The efficient functioning

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of banking operations through computers and networks is made possible by the implementation of AI technology by banks.

**ICICI :** ICICI Bank, a prominent private sector bank in India, has successfully implemented software robotics in more than 200 business processes across various functions of the organization. This groundbreaking initiative has made ICICI Bank the first in the country to extensively deploy an AI system in multiple processes. As per the report, ICICI Bank has expanded its RPA (Robotic Process Automation) initiative to include over 750 software robotics, effectively managing nearly 2 million transactions on a daily basis. This accounts for approximately 20% of the total transaction volumes handled by the bank.

**HDFC :** HDFC, a banking and financial services firm based in Mumbai, India, leverages AI technology in its operations. The bank utilizes a smart chatbot named 'Eva' that collaborates with Google Assistant on numerous Android devices to address customer queries and enhance service delivery. Developed by Sense forth AI Research, based in Bengaluru, Eva has successfully responded to over five million user queries with an impressive accuracy rate of over 85%. Additionally, HDFC has introduced an AI-enabled chatbot called On Chat, which was launched on Facebook Messenger in 2016.

**Kotak Mahindra Bank :** Kotak Mahindra utilizes an intelligent AI-powered chatbot, named Keya, to provide prompt and accessible banking assistance to millions of Kotak customers round the clock. Keya, a bilingual voice Bot, is seamlessly integrated with Kotak's phone-banking helpline and enhances the traditional interactive voice response (IVR) system. In 2019, the bank introduced Keya 2.0 voice Bot with new features. The banking system in India is highly advanced and well-regulated. According to the report, the assets of public sector banks reached US$1.52 trillion in the fiscal year 2020, and bank credit experienced a compound annual growth rate (CAGR) of 3.57% during FY16-FY20. By FY2020, the total credit extended had reached US$1,698.97 billion. As the banking ecosystem in the country continues to expand, the adoption of artificial intelligence will further evolve, facilitating the development of a digital banking infrastructure.

**Conclusions:** Currently, significant investments are being made to reduce operational costs and enhance productivity in various industries. In this regard, artificial intelligence emerges as the optimal solution due to its speed, reliability, and lower risk of errors compared to human counterparts. Over time, virtual assistants, chatbots, holograms, and physical robots will flood the market as affordable technologies. The role of individuals will undergo a conceptual shift, as they may no longer be able to efficiently process large volumes of critical daily data on their own. Each person will require a personal assistant to handle tasks such as scheduling meetings, providing information, and even serving as mentors or educators in specific areas of interest. Labor-intensive and repetitive tasks will be replaced, benefiting individuals. Those who previously worked in the FinTech industry, processing data from databases a decade ago, will now be engaged in more innovative roles. The presence of physical bank branches in small communities is no longer essential; all that is required is an internet connection and spare time for individuals to utilize as they wish. The days of visiting business banks and waiting for a teller to call out "Next" are long gone.

AI is increasingly being integrated into the banking industry to enhance financial services. Especially during times of social distancing and quarantine, individuals are more inclined to opt for digital channels to stay updated with their bank accounts and conduct transactions. Given the numerous benefits, it is evident that a majority of banks and financial institutions will adopt AI to remain competitive and provide improved customer support. However, it is important to acknowledge that there are certain drawbacks associated with machine learning algorithms. As these algorithms continue to learn and evolve, their decision-making capabilities may pose challenges in the near future. Additionally, with the limitation on manual staff, the role of AI becomes crucial in ensuring efficient customer service by banks. This article aims to highlight the inevitable necessity of AI in reducing reliance on human resources within the banking sector.

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