Artificial Intelligence And its Integration with the banking industry

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Abstract- **This systematic literature review's (SLR) main goal was to locate, evaluate, and compile the available data regarding the advantages and disadvantages of using artificial intelligence (AI) in the banking industry. It is clear from the SLR that AI presents the industry with a number of opportunities. Fintech startups are proliferating with banking AI solutions, and banking authorities are promoting AI usage with joint ventures and laws. Personalized services, smart wallets, decision-making and problem-solving, customer happiness and loyalty, process automation (particularly with regard to repetitive tasks), cybersecurity and transaction security enhancements, and the promotion of digital financial inclusion are some additional opportunities. As a result, strategy, process, and customer service are the three main areas where AI is incorporated. However, the major players in the banking sector must develop suitable plans to address current and future AI obstacles. The following are some of the AI challenges that need to be given top priority: loss of employment and user acceptance issues, privacy violations, loss of creativity and adaptability, stringent operational and implementation requirements, digital divide, access to a wealth of high-quality data, alignment between AI and business strategies, and emotional "human touch" The majority of current research, however, is descriptive in nature and is derived from secondary data sources. This calls for empirical research to increase the amount of.**

Introduction:

The banking sector has a big influence on people's lives, businesses, and the economy. It has made strides toward implementing artificial intelligence (AI), but there have also been setbacks. The adoption of AI-based technology in all banking disciplines—front, middle, and back offices—is dramatically changing the banking sector. Although AI has many advantages, there are also risks that must be carefully considered. Artificial intelligence (AI) has become increasingly prevalent in the financial industry, particularly in the aftermath of the COVID-19 pandemic. Academic output on AI has continued, and general interest in the field has remained strong despite the pandemic. AI is currently used in banking to fuel a variety of functions, such as machine learning systems for trading and customer interaction. Numerous research papers have addressed the use of AI and machine learning in the financial industry, emphasizing both the advantages and disadvantages of these technologies. Case studies from real life have shown how well AI has been implemented in banks and other financial institutions. A thorough overview of the application of AI in the banking industry has also been given via a systematic literature analysis, which has identified important areas for further study, including strategy, process, and customer. Additionally, studies have looked into how AI influences the relationship between a bank's market share and its creative financial processes. In general, the application of AI in banking since COVID-19 has demonstrated promise in terms of spurring creativity, increasing productivity, and improving client experiences. There's no doubt that AI will continue to have a big impact on how banks operate in the future. The study examines the advantages and challenges of integrating AI technology into the banking sector and suggests crucial success factors for its adoption, all based on a survey of peer-reviewed research.

In order to bridge the gap between academic research and industry knowledge, this review develops and classifies sub-themes of previous research, identifies research themes showing how AI is used in banking, and uses thematic findings in conjunction with previous research to propose an AI banking service framework. The banking industry's marketers and decision-makers may find these data useful in developing strategic judgments about the application and maximization of value from AI technologies. Future research prospects are also presented by this work. The banking sector has a big influence on people's lives, businesses, and the economy. It has made strides toward implementing artificial intelligence (AI), but there have also been setbacks. The adoption of AI-based technology in all banking disciplines—front, middle, and back offices—is causing a huge transformation in the banking industry, according to Kaur et al. (2020). Even while artificial intelligence has many advantages, there are also risks that must be carefully considered (Achary, 2021; Fares et al., 2022; Fountaine et al., 2019; Naik et al., 2022). There's no doubt that AI will continue to have a big impact on how banks operate in the future. Banks need to adopt the technology and keep expanding its use in order to stay competitive. To ensure the best possible outcome from its implementation, it will be necessary to have a clear awareness of its potential advantages, difficulties, and important implementation benchmarks up front. The article investigates the integration of AI in three primary research areas, namely strategy, process, and

customer, through a thorough analysis of peer-reviewed literature. It also seeks to provide advice on how to overcome implementation obstacles in order to successfully install AI and how to boost user adoption of the system.

Literature Review:
Even while artificial intelligence is expanding quickly, its use in the banking sector is still relatively new. Kaur et al. (2020) state that Alan Turing, who wrote a paper that popularized the term artificial intelligence, first entertained the notion of robots possessing exact cognitive artificial intelligence (AI) in the 1950s. But it wasn't until the development of the Internet that the application of AI technology in the banking industry was examined (Fares et al., 2022). According to Kaur et al. (2020), AI technology has mostly been used in the banking sector for the past 20 years to assess, approve, and manage consumer loans. Deep learning, picture and voice recognition, human language analysis, and the analysis of human emotions are among the areas where continuing research and development are also visible at this moment (Fares et al., 2022). Major IT businesses did not begin integrating AI technology into their business applications until 2011, which ultimately resulted in its broad acceptance. With time, the application of AI grew to streamline workflows and enhance customer service, leading to higher productivity. Noreen et al. (2023) claim that artificial intelligence (AI) has become essential in a number of industries, including banking, in both developed and developing nations. Even though AI technology is still in its infancy, its applications now and in the future seem important and will likely have a big impact. People's perceptions of AI's usefulness, ease of use, and reliability will largely determine its acceptability and adoption, as the technology's broad use is bringing about a fundamental shift in how firms, employees, and customers interact (Qahtani & Alsmairat, 2023). Artificial Intelligence has advanced quickly and has had a big influence. It is anticipated that this progressive slope will continue to be steep, offering banks numerous benefits as well as difficulties. AI technology in banks significantly benefits organizations, employees, and customers. Its benefits enable banks to reduce risk, be more efficient and competitive, allow employees to be more productive, and boost customer satisfaction, loyalty, and usage.

Operational Efficiency:
The companies, their workers, and their clients gain from the operational efficiencies. By reducing the need for staff intervention, the use of AI-powered technology in banks can improve operational efficiency, according to Umamaheswari et al. (2023). Similarly, Kaur et al. (2020) describe how AI might increase worker productivity by automating time-consuming and repetitive jobs. As a result, the bank and its clients will benefit from increased employee attention to more important tasks.

Stepped Up Risk Management:
AI can also lessen the risk that banks face from complex and frequent transactional velocities. Through machine learning skills and embedded algorithms that detect any internal or external irregularities in the data, artificial intelligence (AI) may detect fraudulent actions in real time (Mytnyk et al., 2023). Due to these features, AI-based fraud detection techniques are far more sophisticated than the traditional techniques that banks presently employ (Mytnyk et al., 2023; Noreen et al., 2023; Naik et al., 2022). Using AI significantly lowers the possibility of losses. Therefore, banks must now use this technology to reduce transactional fraud in order to avoid losses and give clients the assurance they require.

Informed Strategic Decision-Making
According to Fares et al. (2022) and Kaur et al. (2020), the banking sector may effectively establish business plans by utilizing AI technology, which provides precise data and analytical support for decision-making.

Cost Optimization:
Umamaheswari et al. (2023) draw a link between utilizing AI to assist faster and error-free processing and the consequent reduction in transaction costs. AI's lower cost advantages extend to industries like printing and paper (Noreen et al., 2023). Banks can pass on the savings to their customers by lowering banking fees when they reduce the cost of bank operations. Both the banks and their customers will see an increase in transaction volumes and profitability.

Improved Customer Service Delivery:
Better strategic choices made by the bank will help its clients by fostering customer loyalty, offering individualized solutions, and delivering consistent customer service. According to Li et al. (2023), banks require assistance in preserving customer loyalty because consumers have a plethora of options in the market. Customers expect consistent financial services, and Al-Araj (2022) notes that putting in place efficient customer relationship management (CRM) skills is essential for banks to meet this expectation. Al-Araj (2022) provides additional proof that AI enhances CRM capabilities.

Effective Customer Solutions

According to Noreen et al. (2023), artificial intelligence (AI) can help banks forecast the feelings and actions of their customers. The creation of customized service offerings, product solutions, and efficient consumer segmentation may all be made possible by the predictive data. The latter make it feasible for banks to increase and maintain customer loyalty, which is made possible by integrating AI.

Banks are able to change their operations and business procedures thanks to AI. However, there are a few obstacles that the banking industry must overcome if AI technologies are to be successfully implemented and run. Potential employee indifference, skill obsolescence, impaired creativity and flexibility, privacy breach worries, high implementation costs, and inequity are a few of these. 4.2. Discussion with Reference to Earlier Studies In the banking industry, AI provides a compelling business case. Numerous AI-based solutions, including as robots, natural language processing, big data analytics, machine and deep learning, neural networks, and predictive analytics, among others, can modernize and streamline both internal and customer-facing processes. AI systems give banks the chance to develop distinctive skills that set them apart from competitors. The ability to make wise business decisions, streamline operations, forecast the future with accuracy, and react quickly to both internal and external changes is the main factor that enables these capabilities [3]; (Ng & Shah, 2020). Banks are utilizing chatbots and robots to provide 24/7 customer help, better customer service, and enjoyable experiences [10], [12]. Big data analytics is also being utilized to better understand consumers, which serves as the foundation for providing customized goods and services. Highlight the contribution of AI to the decrease in lending-related losses [4]. Predictive analytics, statistical modeling, and machine learning are further tools that banks might use to anticipate financial crises, like the Great Recession of 2008 [13]. While there are worries that AI technology will replace human workers and render some talents obsolete [2], [8]. [10] Contend that AI has the potential to improve daily activities for bankers and modernize banking procedures. AI-powered information systems have the potential to free humans from tedious, time-consuming work. Cost savings could result from this. Additionally, it might permit bank staff members to commit more time and energy to learning and experimenting, opening up new, profitable prospects. However, in the aftermath of widespread banking automation, worries regarding unemployment cannot be disregarded. Additionally, it is possible for creativity and adaptability to decline [1, 2, 6,]. Large volumes of continuously changing statistics could be processed swiftly with the help of big data analytics and machine learning technologies, yielding priceless insights in a timely way. Such a feat would be almost impossible to accomplish if traditional information systems were to be used [5, 11]. In order to respond more quickly to new problems, businesses may become more agile in their approach to generating insights. However, the availability of large, high-quality information is the primary determinant of AI's prediction capability [11], [13]. Due to the perceived absence of the "human touch" in customer service, AI may also have a negative impact on customer relationship management [7], [8]. Though younger generations tend to be more tech-savvy than older generations, they may be able to adjust to "faceless" AI systems in some way. In order to facilitate transactions around-the-clock in the contemporary digital era, banks are progressively providing AI-based online and mobile banking solutions. Large datasets pertaining to customers and business must be gathered, analyzed, and stored in order to implement these solutions. These datasets are being thoroughly and accurately analyzed with the assistance of machine learning techniques, which combine several data sets to produce insightful findings. The method also raises the risk of expensive data leaks and privacy violations [10]. However, a number of studies have highlighted AI technologies (including anomaly detection, deep learning, machine learning, and predictive analytics) as outstanding facilitators of optimal information security and privacy protection in the banking industry [4], [20]. However, the implementation and upkeep of AI-based cybersecurity may come at prohibitively high prices [20]. Additionally, as social media and customer analytics tools become more widely used, banks and regulatory organizations must keep working together to strengthen cybersecurity and privacy protection.

The future of customer service builds on AI to deliver engaging experiences and generate lasting value.

The stages of an AI-supported customer-service process

- **A** Proactive communication linked to key demand drivers
- **B** Intent recognition and nudges before customer reaches out
- **C** Omnichannel enablement with self-service for service journeys
- **D** Conversational AI at each entry point
- **E** Frontline enablement with coaching for agents supported by a knowledge repository and AI
- **F** Highly personalized, advisory interactions drive relationship and value, with STP or quick resolution of issues
- **G** Performance measurement via a centrally managed nerve center that tracks resolution accuracy and efficiency
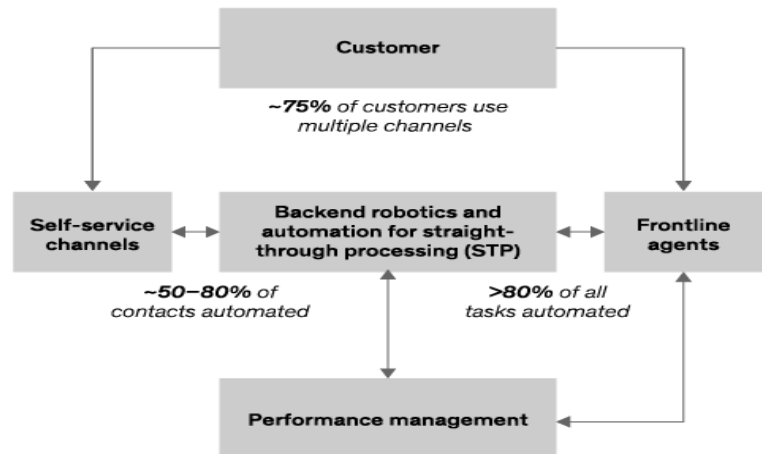
McKinsey & Company

Fig 1

The stages of the AI-supported customer service process are as follows:
1. Proactive communication linked to key demand drivers
2. Intent recognition and nudges before customer reaches out
3. Omni channel enablement with self-service for service journeys
4. Conversational AI at each entry point
5. Frontline enablement with coaching for agents supported by a knowledge repository and AI
6. Highly personalized, advisory interactions drive relationship and value, with STP or quick resolution of issues

The benefits of AI in customer service include:
1. Personalized services
2. Smart wallets
3. Decision-making and problem-solving
4. Customer happiness and loyalty
5. Process automation
6. Cybersecurity and transaction security enhancements
7. Promotion of digital financial inclusion

Conclusion

The banking industry as a whole has been impacted by a significant digital disruption brought about by AI technology in the twenty-first century. This is mainly due to the fact that AI solutions may support banking organizations in being more innovative, making better judgments, and finding more efficient and effective ways to tackle challenging issues. Moreover, banks can employ AI technologies like machine learning, neural networks, predictive analytics, and others to generate more accurate forecasts and react correctly and quickly to new concerns. As a result, banks may be able to maintain an advantage over competitors in the market thanks to AI. To guarantee that the opportunities presented by AI are fully utilized, there are a number of traps that must be avoided. A few noteworthy ones are data availability and quality issues, employment loss, privacy violations, and strategic AI-business alignment issues. Although there is a wealth of information regarding AI's potential and difficulties in the banking industry, most of the studies that have been done so far have been descriptive in nature and have relied on secondary data sources. Therefore, in order to provide specific data regarding AI prospects and problems in the banking industry, future research should make use of comprehensive empirical inquiry approaches.

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