

# **ARTIFICIAL INTELLIGENCE- APPLICATIONS AND USES IN THE BANKING INDUSTRY IN INDIA-A SYSTEMATIC LITERATURE REVIEW**

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## **Abstract**

*This research presents a holistic perspective, and it investigates all of the published works on the subject of artificial intelligence (AI) in banking that have been made available to the public after the year 2005. The writers of this research carried out a comprehensive literature review in order to choose 44 relevant papers and publications. From these sources, the authors retrieved data in order to carry out a topic and content analysis. This study bridges the gap between academic research and industry knowledge by presenting a list of research topics that illustrate how artificial intelligence (AI) may be applied in banking, as well as an AI banking service architecture. This fills in the gap between academic research and industry*

*knowledge that has previously existed. The findings indicate that the study of artificial intelligence (AI) in banking has advanced to include three new subfields: strategy, process, and customer. When it comes to determining how artificial intelligence (AI) technology may be used most effectively in the financial industry, the marketers and decision-makers at banks may find these insights to be helpful. These findings generate inquiries about what else may be looked at as a possible next step.*

**Keywords:** *Artificial Intelligence, Digital Innovations, Digital Banking, Banking, Systematic Literature Review.*

## **I. INTRODUCTION**

Digital innovations are no longer a luxury in the banking industry; rather, they are becoming increasingly essential as banks attempt to stay up with a highly competitive market and rapidly changing customer expectations (Eren, B.A. 2021, Rajaobelina, L., and L. Ricard 2021, Valsamidis et al. 2020). The use of artificial intelligence (AI) has been the primary motivating factor behind a significant number of digital advancements that have presented a challenge to the conventional banking industry in the modern era (Dobrescu, E.M., and E.M 2018). The development of artificial intelligence has created a variety of possibilities and obstacles. (Malali, A.B., and S. Gopalkrishnan 2020). Banks have been able to enhance their customer service and optimize their sales operations with the assistance of artificial intelligence. (R. B. Jora, K.K. Sodhi, P. Mittal and P. Saxena. 2022).

Over the course of the last several years, it has been more apparent that AI-based solutions are both beneficial and trustworthy. However, many high-level executives working for major corporations are still unaware of how artificial intelligence (AI) may be strategically used inside their organizations. In instance, research conducted by R revealed that the majority of business executives (86%) saw AI as (Nusar, K., I Butt, and S. R. Nikhashemi 2019) an essential tool that may provide their organizations with a long-term advantage over their competitors. Despite this, just 39% of companies have

developed a comprehensive strategy for how they will make use of AI. This is probably due to the fact that they do not understand how to use AI in their companies.

In this article, we examine the history of the field of artificial intelligence in banking as well as the present status of the literature on the topic. This is done so that we may have a better understanding of how AI's position in banking has evolved over time, so that we can recommend a framework for services, and so that we can identify promising topics for study in the future. In the context of management, artificial intelligence (AI) has only been investigated in a limited number of literature studies. (e.g., Harzing, A.W., and S. Alakangas 2016). However, there are certain holes in the previously conducted research, and these holes may be described in terms of the breadth and depth of the study, or they can be described in terms of how relevant the research is to the industry. Down response: We intend to be distinct from prior evaluations by concentrating on the banking business and investigating it in more detail using a range of research approaches (Ranbotham et al. 2017).

**Based on the above the following are some of the Research Questions that can be framed:**

1. Where do the findings from the prior study on AI applications in banking lead us, and what is the pattern that emerges to draw further analysis?
2. In what way AI improves the customer service over the services being provided in the banking industry?
3. What other researches are available to learn more and what will be the future of AI research?

## **II. METHODOLOGY**

### *A. Selection of Articles*

Because of a comprehensive search of the available literature, utilizing databases that were chosen with care and keywords that were designed with care. The academic papers were obtained from Web of Science (WoS) and Scopus respectively (Jindal, N. 2020). These databases were selected due to their interoperability with one another and their capacity to give access to scholarly literature (Mongeon, P., and A. Paul- Hus. 2016. This was the first precaution taken to ensure that only high-quality items were chosen [16].

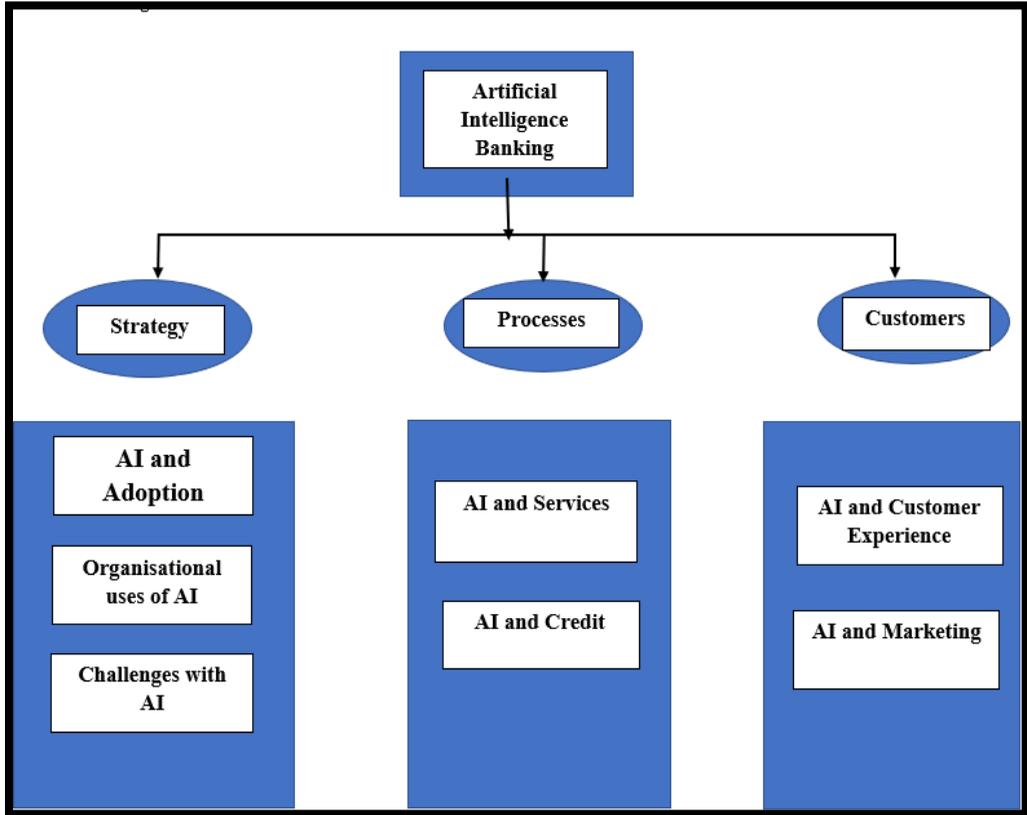
PRISMA is a term that stands for the ideal reporting technique for systematic reviews and meta-analyses. In this particular investigation, we employed PRISMA to ensure that we followed a methodical strategy and monitored the flow of data throughout the several phases of the SLR (Harzing, A.W., and S Alakangas 2016, Loureiro, S.M.C., J. Guerreiro, and T Tussyadiah 2020). After the articles were removed, a special identification number with a different format was assigned to each of the 626 papers so that they could be distinguished from one another. This identification number was preserved all the way through the analysis procedure.

The exclusion of papers was done out in an organized manner using the following procedure:

- 1) All duplicate papers in the database were removed, totaling 105 duplicates;
- 2) As a second quality check, papers that had not been published in ABDC journals were left out of the review, totaling 163 papers; this was done to ensure that the review adhered to a quality standard for inclusion and to query a practice that is consistent with other recent SLRs (Goyal, k., and S. Kumar. 2021). Publications that focused directly on the particulars of AI's computational process were disqualified from consideration and removed from the pool (4 papers). After going through this process, a total of 44 articles were selected for more investigation. This decision was made so that we could better understand the data (Borges et al. 2020).

### III. FINDINGS

**RQ 1. Where do the findings from the prior study on AI applications in banking lead us, and what is the pattern that emerges to draw further analysis?**



**Fig 1.**

**Source: Self- Created by Author**

### IV. THEMATIC ANALYSIS

To begin the process of identifying recurring themes, we logically categorized the articles into numerous categories. Then, through an inductive approach, we identified the underlying themes and offered context for the overarching themes.

#### A. **Strategy**

New research on artificial intelligence's organizational applications and implementation was only just made available in the area of study known as Strategy (21 different studies).

(e.g., Akkoc, S. 2012). Financial institutions stand to gain more in terms of operational efficiency from the expanding usage of AI-driven technology to improve organizational performance than they would from using more traditional ways of planning and constructing risk models (Verma, S., R. Sharma, S. Deb, and D. Maitra. 2021). That's because AI is what powers these innovations. These options allow for more effective management of a business. There are 14 articles under "Organizational use of AI," and they all discuss the many ways that businesses, particularly financial institutions, are now using AI to raise their levels of productivity and revenues. One of these applications is the use of AI to direct the strategic decisions and internal operations of a corporation (Loureiro, S.M.C., J. Guerreiro, and I. Tussyadiah 2020).

## **B. Processes**

Following the fall of the market crisis and coinciding with the advent of Web 2.0, research on artificial intelligence in banking began to expand in the Processes sector (34 publications). This series of events may have been started in motion by the concept of using artificial intelligence to forecast changes in the stock market and pick stocks (Tseng, C.C. 2003). AI and credit are a generates that consists of 15 articles and focuses on the application of AI-based technologies, such as data mining and machine learning, to the improvement of credit scoring, analysis, and granting procedures. Some examples of these technologies include deep learning and natural language processing. To name only a few of instances (Alborzi, M., and Khanbabaei 2016).

## **C. Customers**

Under the Customer theme (which has 26 articles), we found that AI is increasingly being used as a tool to explore how customers engage with digital financial services. This is something that we noticed.

Eleven articles investigate the topic of artificial intelligence (AI) and customer adoption, which focuses on how AI may be used as a research tool to learn more about consumers' adoption of digital banking technology, including the challenges they face and the incentives that encourage them to do so. The topic of artificial intelligence (AI) and customer adoption is covered in these articles. In addition, bank marketers have recognised that AI has the potential to assist them in better segmenting, targeting, and

placing the banking goods and services they provide. The nine articles that are a part of the AI and marketing subtheme investigate the ways in which AI may be used for various marketing activities, such as customer segmentation, the creation of marketing models, and the improvement of the effectiveness of marketing campaigns.

The papers that discuss artificial intelligence (AI) and customer experience belong under the subtheme "AI and customer experience." These papers discuss how AI may be utilised to enhance the banking experience and services provided to clients. For instance, conducted research on the use of chatbots in banking and the impact that these applications have on the customer experience.

### **RQ 2. In what way AI improves the customer service over the services being provided in the banking industry?**

There is a significant amount of space for improvement in the processes that are used to apply for credit and have it authorized when AI is used, and this is a subject that we have already explored at length. These acts have a direct impact on the ability to bring in new clients and provide service to existing ones. At this time, the main emphasis of the support procedures is on using AI as a methodological tool in order to get a better understanding of how clients utilize financial services. In addition, machine learning is being used in order to analyze and keep the segmentation efforts up to date. This is being carried out simultaneously with the use of AI as a methodological instrument to learn more about the ways in which clients utilize financial services (Bavaresco et al. 2020). At this point, it is of the utmost importance to have a thorough understanding of all the components that are involved in encouraging people to use the internet.

### **RQ 3. What other researches are available to learn more and what will be the future of AI research?**

As the application of artificial intelligence in banking continues to expand, financial institutions are being pushed to evaluate the ways in which their employees and other stakeholders perceive the value of the technology, the impact of leadership, and other aspects that play a role in the spread of AI throughout the business world. As a result, we strongly suggest that more study be carried out in order to discover the several elements (such as degree of leadership) that influence the incorporation of AI technology into

businesses. Additionally, as an increasing number of companies implement and use AI, there is a possibility that internal issues could arise (Johnk, J., M WeiBert, and K. Wvrtki. 2021).

As a result, we recommend addressing the various business difficulties that are associated with the adoption of AI, including the culture of the firm.

## **V. LIMITATIONS AND IMPLICATIONS**

In this study, each of the previous investigations (44) was taken into consideration. Research articles on artificial intelligence that pertain to banks that were published between the years 2005 and 2020. We believe in our firm as a whole. Experienced professionals in the field would find our findings to be informative. By this it will give individuals in positions of power the information they need to make educated decisions on the most effective ways to put AI to work in the financial industry. The next step will be taken after this.

The topic by presenting a more in-depth examination of the interaction of AI and banking, with a focus on both the past and the future. There is a possibility that in the not-too-distant future, AI may transform the way in which firms approach their planning. Streamlining of logistical operations and improving engagement with consumers are also being worked on value.

## **VI. Conclusion**

AI has been recognized by academics as having the potential to be utilized to enhance customer service. According to the coverage provided by the CCSA, service recommendation platforms like robo-advisors may be able to assist with things like product selection, the execution of financial solution strategies, and other basic chores that consume a significant amount of time. It has been shown that systems using artificial intelligence may serve as an effective instrument for the automation of monetary transactions. Recent research efforts have focused on figuring out how AI may be used to affect business objectives. Researchers, for instance, have looked at how AI may be used to standardize the assessment of strategic initiatives and internal audit reports. Recent research has proven that artificial intelligence (AI) comes with its fair share of

challenges. These challenges may be seen from a number of different perspectives, including resistance based on execution, culture, or organization.

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