Customer Perception on role of Artificial Intelligence (AI) in the Banking Industry in Chennai

G. Ashwardhini*[1] and R.M. Duraiarasan[2]

[1]Research Scholar, Patrician College of Arts and Science, Adyar, Chennai-600 020.
[2] Assistant Professor & Research Supervisor, Patrician College of Arts and Science, Adyar, Chennai-600 020.
ashwinig252000@gmail.com

Abstract. Artificial Intelligence (AI) has become a transformative force, driving advancements in automation, data analysis, and decision-making across various industries. Its integration plays a pivotal role in shaping the technological landscape and addressing complex challenges in the modern era. This study focuses on the transformative impact of AI in the banking industry, specifically focusing on customer perceptions in Chennai city. Analyzing data from 120 respondents through a structured questionnaire, the research reveals that more than fifty percent customers in the region are aware of AI in banking. The study categorizes 33 variables into three factors, emphasizing Efficiency and Security Optimization, Enhanced Customer Interaction and Transactions, and Advanced Customer Services and Risk Management. Findings indicate a moderate awareness level, suggesting the need for customer education on AI implementation. Targeted awareness campaigns, especially across all age groups, are crucial for fostering positive perceptions. The study underscores the importance of banks embracing adaptability, prioritizing data access and privacy, and collaborating with regulatory bodies to establish ethical guidelines for responsible AI implementation, addressing concerns such as potential job displacement. As AI in banking continues to evolve, this research highlights its growing significance in enhancing efficiency, security, and overall customer experience.

Keywords: Artificial Intelligence (AI), Banking Sector, Security Optimization, Customer Perceptions.

1   INTRODUCTION

In the 21st century, the world is undergoing significant transformations, with artificial intelligence (AI) playing a pivotal role across various sectors. AI has emerged as a trendsetter, facilitating streamlined operations in numerous industries. This algorithmic technology is adept at executing tasks faster and with greater precision, eliminating human errors. Among the pivotal sectors influenced by this technological shift is the banking industry, a cornerstone of any country's economic landscape. The transition from traditional to modern banking practices has intensified the demand for AI solutions, benefitting both bankers and customers alike. The evolution of banking technology has witnessed landmark innovations, starting in the 1960s with the advent of automated teller machines (ATMs), moving on to the emergence of mobile banking in 2010. The dependency on physical wallets is diminishing, and digital payment mechanisms are becoming more prevalent. AI applications, including chatbots, virtual assistants, cyber security and fraud detection,

loan and credit decision support, risk management, and enhanced customer experiences, have automated routine tasks, saving time and improving efficiency in banking operations. This study specifically focuses on understanding customer perceptions regarding the usage with respect of AI in the banking industry in Chennai city. This article explores the impact of AI factors on customers of both public and private sector bank from 120 respondents. The collected data was analyzed using SPSS software. Thus, the concluding remarks on the awareness of AI applications are 78% of customers. The questionnaire employed 33 variables to gauge the level of awareness and benefits among customers. The factors identified are efficiency and security Optimization, enhanced customer interaction and transactions, and advanced customer services and risk management. It highlights the growing awareness and positive perception of AI applications, emphasizing its role in enhancing efficiency, security.

1.1   Applications of AI in Banking Sector

1.1.1. Credit Scoring

ML's application in banking, particularly in credit scoring, is crucial for assessing a customer's ability to pay and their likelihood of debt repayment. With billions of unbanked individuals globally, credit scoring solutions are essential, and ML algorithms consider factors like work experience, income, transactions, and credit history for accurate assessments. By employing statistical and accounting principles, ML generates precise and unbiased credit scores, expanding access to credit for a wider audience. Unlike human scorers, ML systems objectively grade borrowers, eliminating conscious or unconscious biases. With just a few clicks and from the comfort of their homes, clients can now apply for loans with ease thanks to this advancement.

1.1.2. On boarding and Document Processing

To reduce the tasks that were laborious and time-consuming, AI applications are made faster and more efficient by machine learning. An essential first step is optical character recognition (OCR), which allows machine learning (ML) algorithms to comprehend scanned text and classify it for later use.ML-based document processing can be very advantageous for traditional banks that use paper forms for client onboarding. Quick onboarding is made possible by this incredibly efficient and scalable technology, which enables users to open bank accounts in a matter of minutes and finish necessary checks instantly. In addition to increasing productivity, machine learning in document processing helps businesses and their clients establish long-lasting, positive relationships.

1.1.3. Fraud Detection and Compliance

Machine learning is pivotal in addressing fraud challenges in banking, as it employs diverse algorithms to sift through extensive data, monitor transactions, and analyze client behaviour. Financial institutions utilize ML to efficiently detect and respond to cyber attacks, reducing human intervention and updating models in real time. This automated fraud detection, associated with global AI, enables intelligent prediction of fraudulent patterns. In addition to fraud prevention; machine learning plays a crucial role in investment evaluation by handling real-time data from various sources. This ML application aids teams in investment asset management, considering factors like risk tolerance, investments, and time horizon, leading to more informed and efficient decision-making processes.

1.1.4. Personalized Offers

Banks leverage machine learning to understand clients' preferences and spending habits, allowing for personalized offers based on user activity. The personalized approach enhances the customer experience, identifying subtle patterns in user activity for more individualized interactions. Machine learning provides insights into clients' habits, needs, and desires, enabling financial institutions to enhance customer loyalty, customize offers, offer AI-assisted wealth management, and meet real-time customer expectations.

1.1.5. Client Assistance

Machine learning in finance has significantly improved client assistance through advanced chatbot experiences, enhancing overall satisfaction. ML-powered chatbots exhibit quick and accurate responses due to robust natural language processing engines, learning from past interactions. Chatbots streamline processes for customers, making banking more accessible and less frustrating. By reducing the reliance on human labour, technology-driven chatbots provide accurate and real-time information, benefiting both banking organizations and customers alike.

1.1.6. Risk Management

Risk management in banking benefits from AI's predictive analytics, offering insights into potential risks associated with external factors like currency fluctuations or political unrest. Furthermore, AI aids in regulatory compliance, using deep learning and natural language processing to keep abreast of changing regulations and making compliance processes more efficient.

1.1.7. Anomaly Detection.

Finding anomalies in fintech is essential because they could be signs of fraudulent activity, money laundering, account takeover, or network intrusion, all of which could have unanticipated repercussions. Anomaly detection uses machine learning, notably financial ML anti-fraud systems, to examine minute patterns and relationships in user behaviour. In order to determine the possibility of fraudulent transactions, these systems compare multiple variables while processing large datasets in real time. The financial sector's anomaly detection becomes more accurate and efficient with the incorporation of artificial intelligence. This methodology facilitates the anticipatory detection and alleviation of possible hazards linked to anomalies in standard protocols.

1.1.8. Payments

The payments industry benefits from the application of machine learning to payment processes. Payment service providers can reduce transaction costs because of technology, which attracts more customers. One advantage of machine learning in payments is its capacity to optimize payment routing based on a variety of factors, including performance, functionality, pricing, and many more.

1.2 Review of Literature

Durwin (2023) highlighted that the AI applications such as chatbots, virtual assistants, and robot-advisors in enhancing customer experiences and optimizing processes. Findings emphasize the challenges faced by AI implementation, including regional language handling and employment concerns. Leading banks like SBI and ICICI are acknowledged for their effective use of AI technologies. The review concludes by recognizing the potential of AI in revolutionizing the Indian banking landscape while emphasizing the need for addressing challenges such as data security, regulatory compliance, and skill gaps.

Reza Farishy's (2023) explored that the transformative AI in the banking sector, used more in credit rating of customers and predicting bank failures. The Systematic Literature Review (SLR) reveals that AI, particularly logistic regression and artificial neural networks, enhances efficiency in credit card eligibility assessment and bank collapse prediction. It emphasizes the need for a unified framework for AI integration in diverse industries and foresees AI's increasing role in managing risk, improving customer experience, and boosting profitability in the evolving landscape of the banking industry.

Saloni Tripathi, Riya Garg, and Krishna Varshini's (2022) emphasized to reinvent operations and enhance customer experiences. It also posed the challenges by fintech enterprises and the need for banks to integrate AI into their strategies for competitiveness by using a qualitative, deductive approach, relying on secondary sources to investigate in India. The objectives include assessing challenges, recognizing activities to address them, and foreseeing the future of AI in Indian banking. The study concludes that AI is reshaping banking, providing personalized services

and efficient transactions while acknowledging cyber security concerns and the evolving landscape of modern banking.

Sharan Kumar Shetty, Cristi Spulbar, Ramona Birau, and Robert DorinFilip (2022) investigates the challenges faced by bankers, assesses post-implementation performance, and suggests valuable insights. Findings indicate that customers and bankers, particularly the younger demographic, are aware of AI in banking, though knowledge gaps persist. By concluding that customers should embrace digital transactions, and banks need government support for expensive AI implementation, emphasizing the importance of training for both employees and customers. Despite the cost, the study concludes that AI has a positive impact on reducing errors and work pressure in banking.

Geetha (2021) described that the increasing importance of AI methodologies in enhancing consumer experiences. The study emphasizes the significant role of AI in mining digital transaction data for monitoring and predicting consumer behaviour. The findings reveal a positive reception among clients toward AI applications, particularly in areas such as Chatbots, Authentication, and KYC/AML. To increase customer satisfaction, private banks and other financial institutions are actively implementing different AI services to meet regulatory compliance, detect fraud, and speed up customer service in the ever-changing banking and financial services industry.

1.3. Statement of the Problem.

To investigate how customers in Chennai City perceive artificial intelligence (AI) in the banking sector. Even though AI is now widely used in banking operations, little is known about how Chennai consumers view its effects. To measure the customers' awareness of and attitudes towards artificial intelligence (AI) applications like automation, chatbots, and virtual assistants. To investigate on whether or not customers are aware of the (AI), how it affects security and risk management, and how it affects their entire banking experience. By focusing on these issues, the study hopes to shed light on Chennai consumers' perceptions of and comprehension of artificial intelligence (AI) in the banking industry.

1.4. Scope of the Study: The shift from traditional banking to digital banking has significantly improved customer convenience and ease of use. The gradual integration of AI into the banking sector has brought about tremendous changes. The utilization of AI in various applications. However, it's important to note that this study is limited to the usage and benefits of AI in the banking industry specifically for bank customers in Chennai city.

1.5. Objectives

- To study the overview and reason for AI in the banking industry.
- To measure the most influencing factors of AI in the banking industry.
- To analyse the interventional changes of AI in the banking industry.

2. METHODOLOGY

The researcher used primary and secondary data collection methods. Both descriptive and analytical research approaches were utilized to conduct this investigation. It consists of 120 users of the bank for all products and services. The convenience sampling technique is used for this research. The primary method involved the use of a structured questionnaire to collect data. The questionnaire comprised two parts: Part A covered demographic details, while Part B focused on customer perceptions regarding the usage and benefits of AI in the Banking Industry. Data analysis was performed using SPSS application.

3. RESULTS AND DISCUSSION

Table 1 Demographic Profile of the Respondents

Particulars	Frequency	Percentage
Gender		
Male	47	39.2
Female	73	60.8
Total	**120**	**100**
Age		
18-25	96	80
26-35	17	14.2
36-45	5	4.2
46-55	1	.8
Above 56	1	.8
Total	**120**	**100**
Educational qualification		
Up to 12th	7	5.8
Under Graduate	69	57.5
Post Graduate	22	18.3
Others	22	18.3
Total	**120**	**100**
Marital Status		
Single	97	80.8

Married	23	19.2
Total	**120**	**100**
Occupation		
Banking/Finance Professional	7	5.8
IT/Technology Professional	5	4.2
Business Owner/Entrepreneur	5	4.2
Student	87	72.5
Others	16	13.3
Total	**120**	**100**
Annual Income (In Rs.)		
0-250000	85	70.8
250000-500000	24	20
500000-750000	5	4.2
7500000-100000	3	2.5
Above 1000000	3	2.5
Total	**120**	**100**
Bank:		
Public Sector Bank		
Private Sector Bank	94	78.3
Total	26	21.7
	120	100
What type of account do you hold with your bank?		
Savings Account		
Current Account	94	78.3
Fixed Account	12	10
Joint Account	0	0
Other	11	9.2
Total	3	2.5
	120	100
Which mode of banking do you prefer for your banking transactions?		
In-Person Branch Visits		
Online Banking	15	12.5
Mobile Banking Apps	42	34
ATM Transactions	44	36.7
Total	19	15.8
	120	100
Awareness:		

Yes		
No		
Total		
	78	65
	42	35
	120	**100**

Inference:

The above table represents a demographic profile of the customers and indicates that 60.8% of the respondents are female. Additionally, 80% fall within the age group of 18-25 years. The data also shows that 57.5% of the sample holds under-graduate degrees. Moreover, 80.8% of the respondents are single, while 72.5% identify as students. It is noted that 70.8% of the respondents report an annual in-come between Rs.0 - Rs.2,50,000. The table further highlights that 78.3% hold their bank accounts in public sector banks, and 78.3% of the respondents possess savings accounts. Concerning banking preferences, 36.7% of the respondents pre-fer mobile banking apps for conducting transactions. Furthermore, it is identified that 65% of the respondents are aware of AI in the banking sector.

3.1 Factor Analysis

Table 2
KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.913
Bartlett's Test of Sphericity	Approx. Chi-Square	5416.041
	Df	528
	Sig.	.000

Inference: From the above table, it is found that the KMO measure of sampling adequacy is .913 and Bartlett's test of Sphericity with an approximate Chi-Square value is 5416.041 are statistically significant at 5%. This implies the sample size of the research is adequate for the segment of factors. This leads to a variance check as shown in the following communalities table.

From the Extraction Method: Principal Component Analysis, it is found that the 33 variables possess the variance ranging from .702 to .917, this indicates the 33 vari-ables possess the variance ranging from 30.122% to 81.907%. The above values are statistically significant at 5% level which leads to the extraction of a number of factors from all 33 factors. This implies that all the variables possess high reliabil-ity and cooperate appropriately with the factor segmentation. The Principal Com-ponent Analysis found that 33 variables are reduced into 3 factors with a cumula-tive variance of 81.907% and the 3 factors possess individual variances of 30.122% 57.272%, and 81.907%. This leads to the variables loading in each factor as shown below. The rotated component matrix clearly reveals that factor one consists of fif-

teen variables, factor two of nine variables, and factor three of nine variables as follows:

Table 3
Rotated component Factor Loadings

Rotated component matrix	
AI technology provides speed and accuracy in credit scoring, allowing individuals to access credit.	.746
AI-driven customer service is more responsive than traditional methods.	.739
AI enhances the speed and accuracy of account reconciliation.	.734
AI assists in automating routine tasks and saving time in banking.	.693
AI provides instant alerts for potential overdrafts or low balances, helping customers manage their finances more effectively.	.686
AI-driven Optical Character Recognition (OCR) technology in passbook maintenance helps automate data entry.	.683
AI assists in monitoring and mitigating cyber security risks to protect customer data.	.682
AI technology has reduced human errors in financial transactions.	.648
AI enables quicker loan approval decisions.	.647
AI banking services are more accessible and inclusive.	.631
AI enhances the security of banking transactions.	.624
It provides real-time updates on their account activities and transaction alerts, enhancing transparency.	.578
AI enhances the speed and efficiency of online banking.	.577
AI is a valuable tool for enhancing customer financial literacy.	.569

AI streamlines document processing and reduces manual paperwork in banking operations.	.549
Efficiency and Security Optimization	
AI enhances the overall efficiency of banking services.	.802
AI technology has led to more personalized financial recommendations for customers.	.800
AI has made it easier for customers to track their spending and manage their finances.	.792
AI in banking will continue to evolve and bring even more benefits in the future.	.750
AI delivers warning messages to discourage sharing OTPs, debit card, or credit card PIN numbers with strangers.	.682
AI generates immediate OTPs 24/7, enhancing transaction security and safety.	.635
AI-driven services offer multi-language support.	.622
AI has helped in detecting and preventing fraudulent activities	.610
AI has improved customer satisfaction and engagement.	.561
Enhanced Customer Interaction and Transactions	
AI provides the convenience of voice recognition technology during banking interactions.	.787
AI supports efficient fund transfers and cross-border transactions.	.714
AI-driven chatbots provide quick and accurate assistance.	.706
AI-driven customer support is available 24/7.	.657
AI technology has improved the speed and efficiency of banking operations.	.646
AI streamlines the KYC process faster and more efficiently.	.622
AI-driven technology has reduced the number of unauthorized transactions.	.615

AI in banking is user-friendly	.539
AI-based virtual assistants make banking more convenient. **Advanced Customer Services and Risk Management**	.521

Inference: From the Evidence, from the high Kaiser-Meyer-Olkin measure (.913) and the statistically significant Bartlett's test (Chi-Square = 5416.041), the data is fit for factor analysis. The Principal Component Analysis, the 33 variables were condensed into three distinct factors. These factors collectively explain 81.907% of the total variance, with individual contributions of 30.122% 57.272%, and 81.907%. The rotated component matrix reveals key insights into these factors. The first factor, labelled "Efficiency and Security Optimization," encompasses features like speed, accuracy, and security in various banking functions. The second factor, "Enhanced Customer Interaction and Transactions," captures attributes related to customer service, accessibility, and transaction convenience. The third factor, "Advanced Customer Services and Risk Management," includes elements such as personalized recommendations, fraud detection, and risk mitigation.

3.2 Chi- Square Analysis

Table 4 Chi-Square Test Results for Awareness of AI Factors

Awareness of AI	Efficiency and Security Optimization			Chi-Square value	Df	Asymp. Sig. (2-sided)	Result
	Low	High	Total				
Yes	36	42	78				Not significant
No	25	17	42	**1.953**	1	.162	
Total	61	59	120				
	Enhanced Customer Interaction and Transactions						
	Low	High	Total				Not significant
Yes	38	40	78	**1.907**	1	.167	
No	26	16	42				
Total	54	56	120				

	Advanced Customer Services and Risk Management			7.719	1	.007	Signifi-cant
	Low	High	Total				
Yes	32	46	78				
No	28	14	42				
Total	60	60	120				

Inference:

The awareness percentage is high among the data for the Efficiency and Security Optimization factor, 40 customers are highly aware of the Enhanced Customer Interaction and Transactions factor, and 46 customers are highly aware of the Advanced Customer Services and Risk Management factor. It is also observed from the table that the chi-square values for Efficiency and Security Optimization (1.953a) (p= 0.162) and Enhanced Customer Interaction and Transactions feature (1.907a) (p= 0.167) are not significant at the 5% level. Furthermore, the Advanced Customer

Services and Risk Management (7.719a) (p=0.000) is statistically significant at the 5% level. There is high recommendable relationship between awareness of AI in the banking sector and Advanced Customer Services and Risk Management.

4. FINDINGS

4.1. Demographic Profile of Customers
The respondents are major female gender and the age distribution falls within the group of 18-25 years. The study also shows that majority of the respondents hold UG degrees. Additionally, (80.8%) of the respondents are single, and a substantial proportion of the respondents are identified as students (72.5%). The majority of respondents report an annual income between Rs. 0 - Rs. 2,50,000 and a significant portion possesses savings accounts (78.3%). In terms of banking preferences, (36.7%) prefer mobile banking apps for transactions. It is noted that (65%) are aware of AI in the banking sector.

4.2. Factor Analysis

It is found that the sample size is suitable for this study, as indicated by KMO (.913) and a statistically significant Bartlett's test (Chi-Square = 5416.041). The communalities table further affirms the reliability of the variables for factor segmentation. The Principal Component Analysis condenses the 33 variables into three distinct factors. These factors are labeled as follows:

- Efficiency and Security Optimization
- Encompassing features like speed, accuracy, and security in various banking functions.

- Enhanced Customer Interaction and Transactions
- Capturing attributes related to customer service, accessibility, and transaction convenience.
- Advanced Customer Services and Risk Management
- Including features such as personalized recommendations, fraud detection, and risk mitigation.

4.3. Chi- Square Analysis

The analysis reveals that the chi-square values for Efficiency and Security Optimization (1.953a) (p= 0.162) and Enhanced Customer Interaction and Transactions (1.907a) (p= 0.167) are not statistically significant at the 5% level. However, Advanced Customer Services and Risk Management (7.719a) (p=0.000) is found to be statistically significant at the 5% level. However, a strong relationship is identified between awareness of AI in the banking sector and Advanced Customer Services and Risk Management.

5. Conclusion

Indeed, the integration of Artificial Intelligence (AI) into the banking sector has brought about significant transformations in various aspects of operations, efficiency, and customer experiences. AI-driven chatbots provide instant support, enhancing customer service, while predictive analytics and machine learning personalize services and optimize customer engagement through targeted marketing. Automated lending processes speed up loan approvals, fostering financial inclusion, and AI strengthens cyber security by identifying and preventing potential threats. From Indian AI context, initiatives like the National Strategy for Artificial Intelligence (NSAI) and the recent GPAI summit highlight the nation's dedication to responsible AI development. The study, centred on customer perceptions in the banking sector, discloses that out of 120 participants, 78, predominantly young individuals, are aware of AI's usage and benefits. This moderate awareness emphasizes the need for focused educational efforts to enhance customer understanding, maximizing AI's positive impact in banking and aligning with the evolving technological landscape.

6. Suggestions

From this study it has been found that the awareness level of AI in banking sector among the customers is moderate. Customers should receive knowledge about AI implementation in banks. Educating customers enhances the success of AI implementation in the banking sector.
Majority of the opinions belong to the age group of 18-26. Raising awareness across all age groups about the specific advantages, security protocols, and poten-

tial advancements of AI in banking is essential. Disseminating targeted information through easily accessible channels can improve comprehension and cultivate a favourable perception of AI in the banking sector.

The bank should be ready to stay adaptable and open to integrating new technologies. Fintech is continually evolving, and a willingness to embrace change will benefit both employees and customers.

Banks engaging in AI must prioritize data access and privacy due to global regulations. Safeguarding data is crucial for ethical, business, and security reasons. Organizations need to be vigilant in protecting data assets as they navigate the ethical, business, and security implications of AI.

References:
1. Alzaidi, A. A. (2018). Impact of artificial intelligence on performance of banking industry in Middle East. International Journal of Computer Science and Network Security, 141-146.
2. Arjun, R., Kuanr, A., & Suprabha, K. R. (2021). Developing banking intelligence in emerging markets: systematic review and agenda. International Journal of Information Management Data Insights, 1(2), 100026.
3. Bhattacharya, C., & Sinha, M. (2022). The Role of Artificial Intelligence in Banking for Leveraging Customer Experience. AABFJ, 16(5), 89.
4. Bhuvana, M., Thirumagal, P. G., & Vasantha, S. (2016). Big Data Analytics - A Leveraging Technology for Indian Commercial Banks. Indian Journal of Science and Technology, 9.
5. Catherine, S., Kiruthiga, V., Suresh, N. V., & Gabriel, R. (2024). Effective Brand Building in Metaverse Platform: Consumer-Based Brand Equity in a Virtual World (CBBE). In Omnichannel Approach to Co-Creating Customer Experiences Through Metaverse Platforms (pp. 39-48). IGI Global
6. Fares, O. H., & I. B. (2022). Utilization of artificial intelligence in the banking sector: a systematic literature review. Journal of Financial Services Marketing, 3-15.
7. Geetha, A. (2021). A Study on Artificial Intelligence (AI) in Banking and Financial Services. International Journal of Creative Research Thoughts (IJCRT), 9(9), 110.
8. Jayesh, G.S. (2023). Virtual Reality and Augmented Reality Applications: A Literature Review. A Journal for New Zealand Herpetology, 12(2), ISSN NO: 2230-5807.
9. Jewandah, S. (2018). How Artificial Intelligence Is Changing The Banking Sector – A Case Study of top four Commercial Indian Banks. International Journal of Management, Technology and Engineering, 525-530.
10. Jewandah, S. (2021). How Artificial Intelligence Is Changing The Banking Sector – A Case Study of top four Commercial Indian Banks. International Journal of Management, Technology and Engineering, 8(7), July 2018, ISSN NO: 2249-7455.
11. Kochhar, K., Purohit, H., & Chutani, R. (2019). The Rise of Artificial Intelligence in Banking Sector. In Proceedings of the 5th International Conference on Educational Research and Practice (ICERP) (p. 127). FMS-WISDOM, Banasthali Vidyapith, India.
12. Lakshmi, B. (2023). Rural Entrepreneurship in India: An Overview. Eur. Chem. Bull., 12(Special Issue 4), 1180-1187.
13. Malali, A. B., & Gopalakrishnan, S. (2020). Application of Artificial Intelligence and Its Powered Technologies in the Indian Banking and Financial Industry: An Overview. IOSR Journal of Humanities and Social Science (IOSR-JHSS), 25(4), 55-60.

14. Noreen, U., Shafique, A., Ahmed, Z., & Ashfaq, M. (2020). Banking 4.0: Artificial Intelligence (AI) in Banking Industry & Consumer's Perspective. SHS Web of Conferences, 80, 01019.

15. Paramasivan, C. (2023). Perceptions on Banking Service in Rural India: An Empirical Study. Eur. Chem. Bull., 12(Special Issue 4), 1188-1201.

16. Patel, K. (2018). Artificial Intelligence in Finance. IJSART - Volume 4, Issue 4, April 2018.

17. Shetty, S. K., Nayak, M. S., Spulbar, C., Birau, R., & Filip, R. D. (2022). Impact of Artificial Intelligence in Banking Sector with Reference to Private Banks in India. Physics AUC, 32, 59-75.

18. Sindhu, J., & R. N. (2019). Impact of Artificial Intelligence in chosen Indian Commercial Bank - A cost benefit analysis. Asian Journal of Management, 2-7.

19. Suma, S. R., & Anupama, S. (2021). Banking 4.0: Artificial Intelligence and its applications in Indian Commercial Banks. MDIM Business Review, II (II), 50-58.

20. Suganya, V., & Suresh, N. V. (2024). Potential Mental and Physical Health Impacts of Spending Extended Periods in the Metaverse: An Analysis. In Creator's Economy in Metaverse Platforms: Empowering Stakeholders Through Omnichannel Approach (pp. 225-232). IGI Global.

21. Suresh, N. V., & Rexy, V. A. M. (2024, February). An Empirical Study on Empowering Women through Self Help Groups. In 3rd International Conference on Reinventing Business Practices, Start-ups and Sustainability (ICRBSS 2023) (pp. 957-964). Atlantis Press.

22. Thirumoorthi, B., Kalyanasundaram, P., & Naganandini, S. (2022). Implications of Artificial Intelligence on Banking Performance. Journal of Cardiovascular Disease Research, 13(6), 65. ISSN: 0975-3583, 0976-2833.

23. Tiwari, A. K., & Saxena, D. (2021). Application of artificial intelligence in Indian banks. In 2021 International Conference on Computational Performance Evaluation, ComPE 2021 (pp. 545–548).

24. Tripathi, S., Garg, R., & Varshini, K. (2022). Role of Artificial Intelligence in the Banking Sector. International Journal of Research Publication and Reviews, 3(9), 433-442.

25. Umamaheswari, S. (2023). Role of Artificial Intelligence in the Banking Sector. Journal of Survey in Fisheries Sciences, 10(4S), 2841-2849.

26. van der Burgt, J. (2020). Explainable AI in banking. Journal of Digital Banking, 4(4), 344-350.

27. Vijai, C. (2019). Artificial Intelligence in Indian Banking Sector: Challenges and Opportunities. International Journal of Advanced Research, 7(5), 1581-1587.

28. Vijai, C. (2021). Mobile Banking in India: A Customer Experience Perspective. Journal of Contemporary Issues in Business and Government, 27(3), P-ISSN: 2204-1990; E-ISSN: 1323-6903.

29. Xue, M., Xiu, G., Saravanan, V., & Montenegro-Marin, C.E. (2021). Cloud computing with AI for banking and e-commerce applications. The Electronic Library, 39(4), 539-552.

31. https://indiaai.gov.in/

32. https://appinventiv.com/blog/ai-in-banking/

33. https://www.analyticsvidhya.com/blog/2023/03/machine-learning-and-ai-in-banking-and-finance/