

An Artificial Intelligence and Customer Engagement - An Indian Banking Scenario

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Abstract— In the dynamic world of finance and banking, artificial intelligence (AI) is much more than just a catchphrase—it's an incredible force that is radically altering the sector. This study examines how artificial intelligence (AI) impacts the banking industry's engagement with customers, with a particular emphasis on the regions of Thanjavur and Tiruchirappalli. Using 200 respondents and a theoretical framework provided by the Unified Theory of Acceptance and Use of Technology (UTAUT) model, primary data was collected through purposive sampling. The goal of the study is to determine the degree to which AI improves transaction procedures in banks and how it impacts bankers and consumers. Statistical tools such as regression analysis, correlation analysis and chisquare analyses have been used to analyse the collected data. The results offer insightful information for enhancing interactions with customers and minimizing bankers' workloads.

Index Terms— Artificial Intelligence, Customer Engagement, Banking Sector, UTAUT Model, Purposive Sampling, Thanjavur, Tiruchirappalli

I. INTRODUCTION

Artificial intelligence, or AI, is more than just a trendy term in the quickly changing world of finance and banking; it's an innovative force that's changing the sector. It is crucial that the question be asked if AI will end up replacing people in banking, as a growing number of banks are adopting artificial intelligence. The relationship of technology innovation with human interaction needs to be investigated in detail. By increasing productivity and optimising procedures, AI has transformed banking operations. Thanks to AI algorithms that make robotics a fundamental aspect, the time and effort needed for everyday tasks such as data entry, processing of transactions or customer assistance are shortened significantly. This enhanced efficiency enables staff to focus on more complicated and important tasks that are essential for creative thinking, intelligence of the mind as well as emotion. The improvement of artificial intelligence has a significant impact on customer engagement. Artificial intelligence (AI)-powered chatbots and virtual assistants can now respond quickly to inquiries from customers and offer 24/7 support. These intelligent robots enhance customer satisfaction and engagement through the provision of differentiated product

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recommendations, handling of complex transactions or resolution of frequent queries. These technologies are good at repetitive tasks, but they're having difficulty in complicated interactions that require empathy and understanding of people.

Artificial intelligence has a major impact on risk management and fraud detection, which is changing the way that companies are protecting themselves from threats. In order to find patterns and variation that indicate possible fraud, real time machine learning algorithms analyze massive amounts of data. The proactive cybersecurity measures have improved the security of both customers and banks, by significantly reducing fraudulent transactions. However, in order to get a better understanding of the data and make appropriate preventive measures for new threats, human interaction is still required. A total human displacement is still some time away, even if AI has had a significant impact on the financial sector. Because banking is achieved through its very nature people-oriented, it depends on empathy, trust, and human connection. Human bankers have the ability to interact with customers individually, to understand their specific financial objectives, and to provide specific recommendations based on particular situations. These human traits are essential in building long lasting relationships with customers, even when AI is becoming more sophisticated. Human attention is necessary in view of the ethics and legal nature of banking. Before making decisions on investments, loan approvals and compliance procedures, legal frameworks, ethical issues as well as social implications should be carefully considered. Human bankers must manage these difficulties in order to ensure that banking procedures comply with the law and ethics guidelines. AI helps with data analysis and decision-making, but human judgment is still necessary to understand customer behaviour and preferences.

To achieve its full potential, the banking sector needs to interact with artificial intelligence technologies and human skills. As the industry develops, AI and Human Intelligence will work together to develop a future in which safety is guaranteed, efficiency gains are achieved, and customers should be at the top of their priorities.

II. PROBLEM STATEMENT

Traditional methods, such as physical visits to banks for enquiries and transactions, have often led to errors and inefficiencies in the area of banking transactions. Since the introduction of AI, error reduction and transaction efficiency have been significantly improved. However, a rise in unemployment would appear to be one of the possible drawbacks. Therefore, whereas AI enhances transactional accuracy and convenience and so improves customer

engagement, it also presents issues with employment dynamics and employment opportunities in banking sector.

III. OBJECTIVES

- To evaluate the **effort expectancy**, perceived performance expectancy of AI-powered banking tools in enhancing customer engagement and task efficiency.
- **To recognize the impact of social factors** behavioural intention of bank customers **on customer adoption of AI in banking.**

IV. LITERATURE REVIEW

Sambre, K., Joshi, D., & Thapliyal, (2022) emerged the banking industry is fast changing due to artificial intelligence (AI), which holds the capacity to provide benefits including lower costs, better customer service, and more security. The impact of AI on automation, risk management, and customer experience in banking is examined in this paper. The future effects of AI on financial institutions and their clients are covered in the conclusion

Mhlanga (2020) conducted research on the effects of AI on digital financial inclusion, highlighting the role that features like chatbots, cybersecurity, and fraud detection have in improving the calibre of services provided to bank clients. Omoregie et al. (2019) investigated the relationship between customer satisfaction and trust and loyalty in retail banking. Their results highlight how important it is to establish trust since it is essential for keeping clients and encouraging good word-of-mouth advertising.

Veerla, V. (2021) examined the potential of artificial intelligence to produce favorable outcomes for the banking sector's effective implementation in India. It focuses on the application of AI in that country.

Fares H, Butt, and Mark Lee (2023) explored the use of artificial intelligence in the banking industry and its impact on the customer's banking experience across three areas: customer interaction, internal processes, and support functions.

Ampornklinkaew (2023) found that the increased customer satisfaction and commitment—which indicate the degree of devotion and loyalty towards a brand or company—lead to increased trust in a firm. Therefore, there is an increase in consumer loyalty and repeat business due to this enhanced trust.

Sukendia et al. (2021) studied the effect of service quality on customer engagement in B2C e-commerce was investigated. Findings from 205 participants indicate a significant correlation between service quality and customer engagement.

Jitendar Kumar and Dr. Sudipta Sen Gupta (2023) examined The banking sector's emphasis on meeting customer needs—particularly customers who are technologically adept people—has resulted in innovations like e-banking and digital money. For seamless services, banks work with telecom, IT, and retail. Although this improves accessibility, the financial institution faces difficulties as a result. Based on information

from 187 Delhi clients, the author examined the benefits and drawbacks of AI use in Indian banks, highlighting how technology affects customer interactions.

Neves, J. M. T. D. (2022) in his thesis author explores the broad subject of Artificial Intelligence and its current implementation and development trends. Focusing on the banking sector, the research investigates how AI enhances customer experiences, analyzes purchases, and improves operational efficiency. The study aims to assess the on-going impact and benefits of AI in modern banking practices.

Through a case study, Samartha et al. (2022) investigated the impact of online transactions and mobile banking apps in India, a developing nation. To evaluate the effect, they used an adapted version of UTAUT.

Geetha (2021) in her research she discussed how consumers and clients view artificial intelligence's application in banking and financial services. The use of artificial intelligence in several sectors, improving the efficiency of customer service, is a positive development. This results in improved overall satisfaction and retention of customers.

V. NEED FOR THE STUDY

The study analyses how AI, specifically Chatbots, Robotic Assistance and Predictive Analytics are affecting customer engagement in the banking sector. It examines the way in which customers behave and perceive AI driven banking services, as well as their degree of acceptance, satisfaction or trust across channels. It also assesses the impact of AI on process automation, revenue generation, cost reduction and banking operations. In addition to its primary aim of providing information on the impact of artificial intelligence on customer engagement, this study could use case studies for more detailed investigation. This would provide important information on the ongoing discussion on the integration of artificial intelligence into banking.

VI. RESEARCH METHODOLOGY

Primary data collection and analysis through purposive sampling shall be part of the research methodology for this study. To take part in the survey, 200 respondents in total from the Thanjavur and Tiruchirappalli regions would be chosen. Purposive sampling facilitates the deliberate selection of participants Performance Expectancy, Effort Expectancy, Social Influence, Behavioural Intention, User Behaviour and Facilitating Condition. Descriptive statistics will be used to evaluate the gathered data in order to highlight the salient features of the sample and offer insights into customer engagement in the banking sector. Data presented with the help of Demographic Analysis, ANOVA, correlation and regression.

VII. EMPIRICAL RESULTS

Analyzing the data collected from a variety of respondents deeply is necessary earlier than making decisions. This chapter emphasizes on the analysis and data collection process utilizing an inquiry form titled "An Artificial Intelligence and Customer Engagement - An Indian Banking Scenario". These analytical tools enable an in-depth

understanding of the ways in which Artificial Intelligence impacts consumer engagement in the banking industry.

Fig 1 – Demographic Analysis

Items	Category	Number of Respondents	Distribution (%)
Age	18-24	107	53.5
	25-34	45	22.5
	35-44	23	11.5
	45-54	12	6.0
	55+	13	6.5
Gender	Male	84	42.0
	Female	116	58.0
Marital Status	Married	78	39.0
	Unmarried	116	58.0
	Divorced	4	2.0
	Others	2	1.0
Education	Less than SSLC	9	4.5
	SSLC	5	2.5
	HSC	13	6.5
	Undergraduate	88	44.0
	Post Graduate	85	42.5

As shown in the figure it is identified that, most of responses are young adults (18–24 years old), and most of them are unmarried. The representation of the genders is mostly balanced, though there is some bias in favour of women. The majority of participants had postgraduate or undergraduate degrees, indicating their high level of education.

Fig 2 – One-way ANOVA Analysis between Behavioural Intention and other variables

Factor	F	Sig	Result
Performance Expectancy	8.142	.000	Rejected
Effort Expectancy	4.453	.000	Rejected
Social Influence	4.515	.000	Rejected
Facilitating Condition	6.891	.000	Rejected

* = significance at 5% level

Null Hypothesis (H_0) – There is a no significant difference between behavioural intention and other UTAUT variables. From the above table, analysis shows that behavioural intention is significantly influenced by the variables of performance expectancy, effort expectancy, social influence, and facilitating condition.

Fig 3 - Correlation Analysis

	Performance Expectancy	Effort Expectancy	Social Influence	Facilitating conditions	Behavioural intension	User Behaviour
Performance Expectancy	1					
Effort Expectancy	.498**	1				
Social Influence	.480**	.565**	1			
Facilitating conditions	.517**	.603**	.663**	1		
Behavioural intension	.575**	.427**	.433**	.558**	1	
User Behaviour	.460**	.516**	.508**	.593**	.517**	1

** = significance at 1% level

There is a Moderate positive relationship between performance expectancy and effort expectancy, hence performance expectancy has little impact on effort expectancy, whereas social influence is positively correlated with effort expectancy, facilitating conditions has a positive relationship with effort expectancy and social influence, hence from the correlation table we can predict that facilitating condition is the major driving factor for overall satisfaction. Performance expectancy has little impact on User Behaviour.

Fig 4 – Regression Analysis

	Unstandardized Coefficients		Sig.
	B	Std. Error	
(Constant)	1.026	.257	.000
Performance Expectancy	.399	.070	.000
Effort Expectancy	.224	.065	.017
Social Influence	.412	.076	.074
Facilitating conditions	.311	.074	.000
R = 0.651, R Square = 0.424 and Adjusted R Square = 0.412			

* = significance at 5% level

The multiple correlation coefficient is 0.651 which measures the degree of relationship between actual values and the predicted values. As the predicted values are obtained as a linear combination of Effort expectancy, performance expectancy, social influence and facilitating conditions. The coefficient value of 0.651 indicates that the relationship between behavioural intention and the four independent variables is quite strong and positive.

The Coefficient of Determination R-square measures the goodness-of-fit of the estimated Sample Regression Plane (SRP) in terms of the proportion of the variation in the dependent variables explained by the fitted sample regression equation. Thus, the value of R square is 0.424 which means that about 42.4% of the variation in behavioural intention is explained by the estimated SRP that uses Effort expectancy, performance expectancy, social influence and facilitating conditions as independent variables and R-square value is significant at 1 % level.

The positive, moderate linear relationship between predictors with dependent user behaviour.

VIII. FINDINGS AND SUGGESTION

For those in the 18–24 age range, the majority of respondents (53.5%) report being aware of younger people. Of those surveyed, 42% were men and 58% were women. 58% of respondents are single, making up more than half of the sample. The two categories of undergraduate (44%) and postgraduate (42.5%) have the largest percentages in terms of education. Banks need to customize mobile-oriented solutions and individualized insights for younger audiences

through AI-powered products and services. Banks need to ensure that their solutions work for everyone, regardless of gender, if they want to increase involvement and satisfaction. It can help if artificial intelligence is used to offer personalised financial services for single people. The study examined how AI affects customer engagement in the banking sector. It has found that there are several factors related to how people accept and use technology. While people's expectations of how well the technology works don't affect how much effort they think they're going to have to put in, having the right conditions in place does. Overall, factors such as how easy it is for people to use the technology, how well they think it's going to work, how much influence other people have on their choice and support from the environment are strongly associated with satisfaction. About 65.1% of people's satisfaction is explained by these factors together. In order to keep customers happy in the banking world, it is clear that it is essential to improve the conditions that make it easier for customers to engage and to use artificial intelligence effectively.

CONCLUSION

Artificial intelligence (AI) has an important and significant effect on how customers interact with banks. This study has clarified the complicated relationships between many demographic variables and the acceptability and usage of AI-powered banking technologies through an in-depth analysis using the UTAUT model. The results show a significant relationship between age, gender, education level, and the utilize AI in banking, highlighting how crucial it is to understand the various demographics of the customer. This study highlights how crucial AI is to improving transaction processes, task automation, and overall operational efficiency in banking. Because of their capacity to provide 24/7 individualized services, AI-powered chatbots, virtual assistants, and data analytics tools have become important drivers of customer engagement. This study highlights the complementary link between AI technology and human intelligence in the banking sector, even though the gains brought out by AI. Human bankers are still necessary for establishing trust, understanding complicated customer requirements, and navigating ethical and legal issues, even while artificial intelligence (AI) improves operational efficiency and risk management. The results of regression analysis further highlights the significantly positive association between overall customer satisfaction and a number of factors, including effort expectancy, performance expectancy, social impact, facilitating conditions, and behavioural intention. This shows that improving facilitating conditions should be given top priority in the banking industry for the purpose of greatly increase customer satisfaction and engagement. In conclusion, artificial intelligence has definitely transformed banking's operational effectiveness and customer service, but its ability can only be reached by carefully balancing AI technology with human intelligence. A banking industry are able to ensure long-term viability in the constantly changing banking market by fostering deeper connection with customers, fostering innovation, and increasing customer-centric factors while employing AI efficiently.

REFERENCE

- [1] Ampornklinkaew, C. (2023). A Bibliometric Review of Research on Customer Commitment. *Journal of Relationship Marketing*, 1-45.
- [2] Fares, O. H., Butt, I., & Lee, S. H. M. (2023). Utilization of artificial intelligence in the banking sector: A systematic literature review. *Journal of Financial Services Marketing*, 28(4), 835-852
- [3] Geetha. A (2021). A Study on Artificial Intelligence (Ai) In Banking and Financial Services. *International Journal of Creative Research Journal*, 9(9), 110-114.
- [4] Kumar, J., & Gupta, S. S. (2023). Impact of Artificial Intelligence towards customer relationship in Indian banking industry. *Gyan Management Journal*, 17(1), 105-115.
- [5] Mhlanga, D. (2020). Industry 4.0 in finance: the impact of artificial intelligence (ai) on digital financial inclusion. *International Journal of Financial Studies*, 8(3), 45.
- [6] Neves, J. M. T. D. (2022). The impact of artificial intelligence in banking (Doctoral dissertation).
- [7] Omoregie, O. K., Addae, J. A., Coffie, S., Ampong, G. O. A., & Ofori, K. S. (2019). Factors influencing consumer loyalty: evidence from the Ghanaian retail banking industry. *International Journal of Bank Marketing*, 37(3), 798-820.
- [8] Samartha, V., Shenoy Basthikar, S., Hawaldar, I. T., Spulbar, C., Birau, R., & Filip, R. D. (2022). A study on the acceptance of mobile-banking applications in India—unified theory of acceptance and sustainable use of technology model (UTAUT). *Sustainability*, 14(21), 14506.
- [9] Sambre, K., Joshi, D., & Thapliyal, (2022) An Analyzing the impact of Artificial Intelligence (AI) in the Finance and Banking sector
- [10] Sukendia, J., & Harianto, N. (2021). The impact of e-service quality on customer engagement, customer experience and customer loyalty in B2C e-commerce. *Turkish Journal of Computer and Mathematics Education (TURCOMAT)*, 12(3), 3170-3184.
- [11] Veerla, V. (2021). To study the impact of Artificial Intelligence as Predictive model in banking sector: Novel approach. *International Journal of Innovative Research in Technology*, 7(8), 94-105