

Exploring The Awareness of Artificial Intelligence Among HDFC Customers in Madurai City

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Abstract

Recently, there has been a resurgence of enthusiasm by the banking sector and large finance in the application of emerging technology. With the introduction of disruptive technologies such as Artificial Intelligence (AI), Machine Learning (ML), blockchain technology and robotics, the Indian Banking Sector is gearing up for an extensive transformation. In this study, we will evaluate the demographic characteristics and perceived utility of Artificial Intelligence by HDFC Bank account holders in the city of Madurai. The recent use of Artificial Intelligence technology by HDFC Bank customers has been influenced by many factors, including an increasing amount of digital data available for analysis and an increase in AI computing power.

Keywords: Artificial Tools, Chatbots, Automation, Private banking sector, etc.,

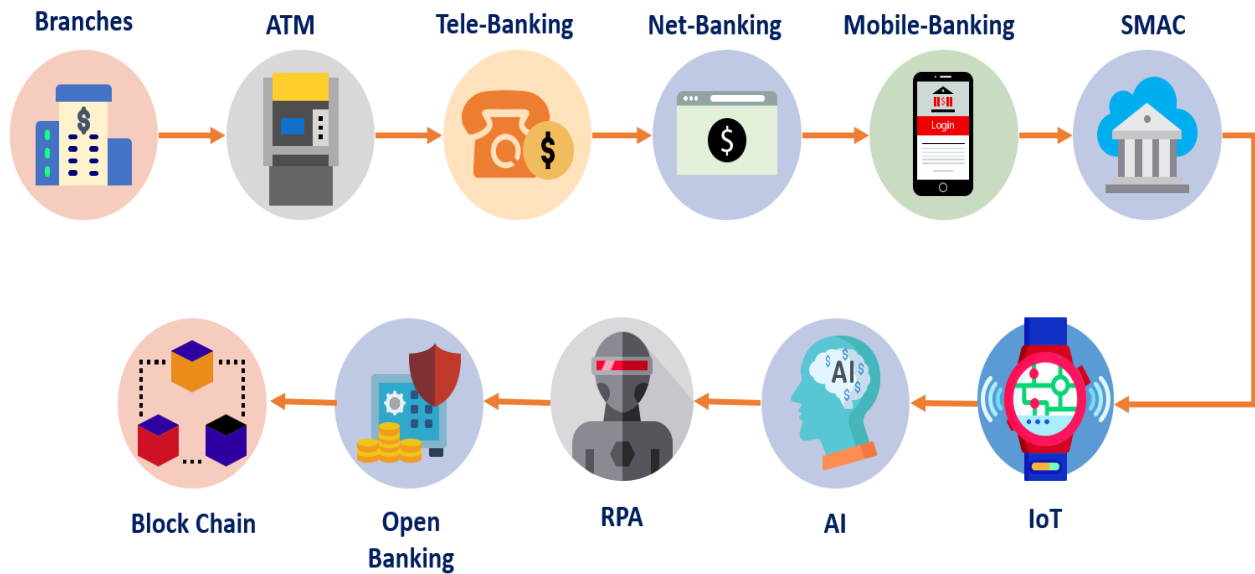
1. Introduction

In the fast evolving background of the global banking sector, technological innovation has emerged as a key driver of competitive advantage and operational efficiency. Among these innovations, Artificial Intelligence (AI) stands out as a transformative force reshaping traditional banking practices. Banks are increasingly adopting AI to enhance customer experiences, optimize risk management, advance decision-making and update internal processes. In this context, HDFC Bank one of India's leading private sector banks has taken significant strides in integrating AI technologies into its operations. This study aims to evaluate HDFC Bank's financial performance before and after the adoption of AI, that are programmed to think like humans and mimic their actions. The term may also be applied to any machine that exhibits traits associated with a human mind such as learning and problem-solving. The ideal characteristics of artificial intelligence are its ability to explain and take actions that have the best chance of achieving a specific goal.

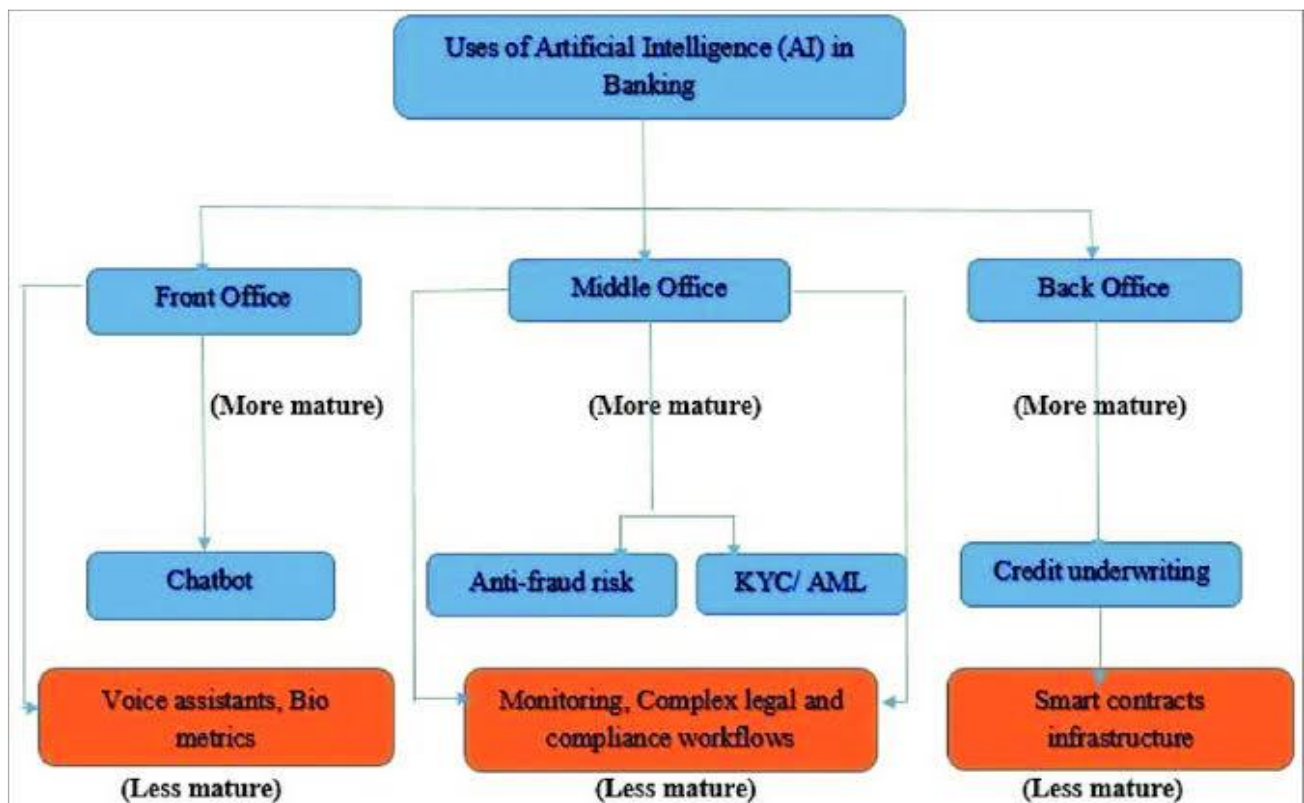
AI usage for that traditional systems for Deep learning techniques enable this automatic learning through the societies are challenge on the very deep transformation due to HDFC developments in social networks, communications, artificial intelligence and big data analytics. There is growing need to adopt

AI as it is not only able to retain clients, but also improves the processes and personalize the customer's experience. There is growing need to adopt AI as it is not only able to retain clients, but also improves the processes and personalize the customer's experience. Artificial Intelligence could be the key to transforming many of these crucial customer facing processes and retaining the competitive edge.

FIGURE 1
EVOLUTION AND USES OF AI IN BANKING SECTOR



Evolution of Banking Technology



2. Statement of the Problem

HDFC Bank faces challenges in effectively leveraging AI technology to enhance account holders awareness due to absence of personalized communication strategies tailored to individual customer needs. The bank encounters an obstacle in implementing AI-driven awareness initiatives as customers may express concerns regarding data privacy, leading to hesitancy in embracing technology – driven communication methods. HDFC Bank needs to address the challenge of overcoming technological barriers that some account holders may face, hindering their ability to engage with AI-driven awareness initiatives seamlessly and insufficient communication channels and educational resources lead to a lack of awareness among HDFC Bank account holders in Madurai city about the AI – driven features, security measures and personalized services available to them. Many HDFC Bank account holders in Madurai do not have a comprehensive understanding and appreciation for how AI is used in their banking services, even though AI technology is part of HDFC's banking operations. This knowledge gap limits the ability of customers to maximize the benefits of AI-derived operational efficiencies, which may limit customer satisfaction and thus limit the use of HDFC Bank's technological product offerings. The limited knowledge of AI technology by HDFC Bank account holders impedes them from utilizing AI-driven convenience and understanding banking security protocols, as well as from maximizing their customized banking experiences through the tailored financial solutions provided by HDFC Bank.

3. Objectives of the Study

1. To define the demographics of HDFC account holders regarding AI technology within the Madurai region.
2. To identify the practical applications of AI technology within a banking context.

4. Scope of the Study

When examining the understanding of AI by account holders in relation to banking, it may be helpful to examine the factors influencing their understanding of practical applications of AI (e.g., potential issues, willingness to accept services powered by AI), along with any demographic factors that might play a role in how well account holders understand and trust AI when using banking services, as well as how AI impacts their account preferences both through trust and choices regarding service provider(s). It may also be helpful to utilize various methods (e.g., interviews, other means) to gather data regarding consumers, such as number of participants in the samples selected and criteria for selection and ethical issues such as participant confidentiality/security. Discuss the anticipated results and implications of the research. HDFC bank could use the results from this study to improve the current level of AI awareness among their customers, resolve any identified issues, and ultimately develop a better-informed and trusting customer base.

By identifying and defining how to successfully share their findings about AI with HDFC bank account holders through this study, the banking industry as a whole can establish a foundation for future growth in downtown Madurai and in totality. In addition to the potential application of your findings to HDFC bank customers in Madurai, this study may open further avenues for future research (e.g.: evaluating the success of AI education initiatives focused on building account holder awareness and understanding of AI technology; understanding how personal and cultural characteristics strongly influence an

individual's perception of AI technology; determining the impact of AI technology on account holder loyalty).

5. Literature Review

Avivansh Kumar Gupta and Diksha Bisht (2024) in their article “The Analysis of HDFC Bank encompasses both fundamental and technical aspects. This article provides a comprehensive analysis of HDFC Bank utilizing a combination of fundamental and insight of HDFC Bank's performance. This research provides a robust methodology for evaluating the risk profile and investment attractiveness of HDFC Bank by combining technical and fundamental assessments. As research is an intellectual endeavor, it needs to have a technical application and systematic approach to answering and evaluating a research issue. This paper suggests that HDFC Ltd. should keep lending money to Indians so they can purchase homes and the nation would grow. Several aspects of financial institutions were examined in the study including deposits, interest rates, loans, assets, expenses, and more. Among the research's conclusions are recommendations for keeping correct financial records.

Tasleem Banu and Moula Hussain (2025) in their article “A Study on financial performance evaluation of HDFC bank using DuPont Analysis”. This study focuses on the financial performance of HDFC Bank, one of India's leading private sector banks, using the DuPont Analysis framework. The DuPont model disaggregates Return on Equity (ROE) into three key components of Net Profit Margin, Asset Turnover and Equity Multiplier. The research is based on secondary data collected from annual reports and financial statements of HDFC Bank over a selected period for 2021-2025. The Asset turnover ratio 2024–2025, the ratio dipped again to 0.125, though it remained higher than the earlier years and finally 7.06 in 2024–2025 indicating a shift towards slightly more equity based financing. Furthermore, the auto correlation test indicates that ROE does not follow a predictable pattern over time, suggesting that future financial performance cannot be reliably forecasted based on past trends. Therefore, a strategic approach focusing on enhancing each component of ROE profit margin, asset turnover, and leverage will be essential for sustaining long-term financial growth and value creation.

Rushikesh Prakash Kapate Prasad Shivajirao Kadam and Pradyuman Shastri (2026) in their journal entitled “A Study of Financial Statement Analysis of HDFC Bank”. This research paper evaluates the financial performance of HDFC Bank through a comprehensive analysis of its financial statements. The study employs ratio analysis, trend analysis and comparative analysis to assess key financial parameters, including profitability, liquidity, solvency and efficiency. Secondary data has been collected from annual reports and financial disclosures of the bank. The hypothesis is tested using financial ratios such as ROE, ROA, liquidity ratios and solvency ratios. Because the ratios show variation and growth trends, the null hypothesis is rejected and the alternative hypothesis is accepted. Finally conclude for that customer perception shows high trust in the bank, but awareness about financial performance is moderate.

6. Importance of the Study

Gaining an understanding of awareness among account holders will help to identify possible educational and improvement opportunities, as well as ensure a smooth transition of AI technologies in the banking industry. Additionally, this study will refine the future development of AI applications in the banking sector and will help to make them more user-friendly for account holders by aligning them with users'

expectations. Accounts in HDFC Bank in Madurai are expected to have similar product/service offerings and this research will produce valuable information on the use of similar products and services in Madurai and related banking markets.

Furthermore, this study will be relevant in the development of the ongoing global discourse of ethical AI and socially responsible technology use; while the results of the study should offer a benchmark for future studies; therefore similar studies conducted in other cities will allow researchers to understand how awareness and perceptions of AI in banking will continue to diverge as more cities and populations embrace increased technological advances in the banking sector. Eventually, this study will provide valuable insights to HDFC Bank when making strategic decisions regarding the implementation of their AI system.

Table 1
Hdfc Bank Branches Location in Madurai City

S.NO	HDFC BANK BRANCHES	HDFC ATM BRANCHES
1	Andalpuram	Anna Nagar
2	Anna Nagar	Arappalyam
3	Arappalayam	East Veli Street
4	Bungalow Road	Kalavasal
5	ChinnaChokikulam	Kamaraja Street
6	Gandhi Park	KK Nagar
7	Jainhindpuram	Kochadai
8	Kattaboman Nagar	Lake Aread Main Road
9	KK Nagar	Mahatma Gandhi Nagar
10	Kochadai	Munichalai
11	Krishnarayar Tank Road	North Veli Street
12	North Velli Street	NarayanaPuram
13	PethaniaPuram	Palanganatham
14	Ranan Nagar	Shenoy Nagar
15	Thallankullam	Simmakkal
16	Thirunagar	SS Coloni
17	Vasunagar, narayanapuram	Thallankuam
18	Vilangudi	Valaiyaikadi
19	West Tower Street	VilamKudi

20	West Tower Street
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Source:

7. New Technologies in Banking

The following are the various new technologies in banking sector that is playing a vital role in digitalization.

- Robotic process Automation
- Biometrics
- Big Data
- Cloud computing
- Cyber Security
- Chatbot
- Internet of things
- Instant payments
- APIs (Application programming Interfaces)
- Embedded Finance
- Mobile apps
- Reg Tech
- Cloud Banking
- Core Banking
- Cloud Migrations
- Hypersonalizations in the banking industry
- AI Personalization
- Wearable Technology
- Banking Technology Trends
- Account holder Management
- Block Chain
- Open Banking
- Quantum Computing

8. Sample Design

The required primary data were collected through a well-structured questionnaire. The researcher has selected 240 respondents out of 20 branches of HDFC with ATM facility. Twelve respondents were selected from each 20 HDFC branches and data was collected by adopting Convenience Sampling technique. The researcher has visited so many HDFC Branches nearby Madurai city.

9. Methodology and Data Collection

The present study is based on the questionnaire method. A structured questionnaire was used to collect information. This study is descriptive and analytical in nature and are based on primary and secondary data. The primary data collected directly from 240 respondents in Madurai Cities. The secondary data for the study were collected from books, lending journals annual report of HDFC Bank, official reported and records and its related websites.

10. Findings of the study

The analysis of the demographic profile of HDFC Bank account holders' awareness towards AI technology in Madurai City reveals several key insights. Firstly, it was found that the majority of account holders belong to the age group of 20-40 years, with a significant representation of both genders. Additionally, a higher level of education and income tends to correlate with greater awareness of AI technology among the account holders.

Moreover, professionals and individuals with a higher income level demonstrate a more positive attitude towards adopting AI-based banking services.

Table 1.2
Adoption And Use Of AI in Bank

1.	Chat Bots	40	17
2.	Robotic System	32	13
3.	Machine Learning and Algorithm	36	15
4.	HDFC Mobile APP	112	47
5.	Digital Documentation	20	8
S.No	USER FRIENDLY AI FEATURE	NO. OF RESPONDENTS	PERCENTAGE
1.	Secure Login	56	23
2.	Money Transfer	48	20
3.	Simplified Dashboard	16	7
4.	Easy Terminology	44	18
5.	All Your Cards in One Place	12	5
6.	Bill Pay and Recharge	64	27
S.No	OPTIMAL AI SERVICES	NO. OF RESPONDENTS	PERCENTAGE
1.	Data Entry by Human Operators	60	25
2.	Real Time Fraud Detection	120	50
3.	Manual Transaction Audit	44	18
4.	Physical Branch Expansions	16	7
S.No	RISK MANAGEMENT TOOLS	NO. OF RESPONDENTS	PERCENTAGE
1	Data Analysis	64	27
2	Real Time Monitoring	48	20
3	Fraud Detection	56	23
4	Compliance and Regulation Requirements	20	8
5	Predictive Analytics	52	22

Out of the 240 respondents, 72 per cent family constitutes between 4 to 6 family members and 37 per cent of respondents are living in urban areas, 33 Per cent of respondents are living in rural and 30 per cent of respondents are living in semi urban areas.

It is found that out of 240 respondents, 57 per cent respondents are having their saving account, 10 per cent of them have current account and fixed deposit account respectively, 8 per cent have their DEMAT account, 7 per cent have salary account, 5 per cent of respondents have NRI account and remaining 3 per cent of respondents were other types of account.

Out of the 240 sample respondents, the researcher calculated the chi square test and the Gender and the Level of Satisfaction towards the AI Based Services. The degrees of freedom is 2, table value is 5.99 at 5 percent of significance. The calculated value is 2.9686. The calculate value 2.9686 is less than the table value 5.99. So, the **Null Hypothesis was accepted**. There is no significant relationship between gender and the level of satisfaction towards the AI based services.

It is revealed from the above Table 1.2 that, 47% of the respondents use HDFC Mobile App, 27% of them use it for bill payment and recharge as they are user friendly AI feature, 50% of them Real Time Fraud Detection and 27% of them uses it for Data analysis.

The Asset turnover ratio 2024–2025, the ratio dipped again to 0.125, though it remained higher than the earlier years and finally 7.06 in 2024–2025 indicating a shift towards slightly more equity based financing. The auto correlation test indicates that ROE does not follow a predictable pattern over time, hence future financial performance cannot be reliably forecasted. Hence, a strategic approach focusing on enhancing each component of ROE i.e., profit margin, asset turnover and leverage will be essential for sustaining long term financial growth, value creation.

11. Suggestions of the Study

1. To implement AI-powered chatbots for improved account holder service, providing instant responses to queries and assisting with routine transactions.
2. To utilize AI algorithms to analyze account holder data and offer personalized product recommendations based on individual financial goals and spending patterns. Deploy AI-powered systems for real-time fraud innovation and prevention, enhancing security for the bank and its account holders.
3. To analyze Use AI algorithms for more accurate credit risk consideration by analyzing various data points, enabling better-informed lending decisions.
4. Invest in AI-driven cyber security solutions to detect and respond to cyber threats effectively, safeguarding sensitive Account holder information and maintaining trust in the bank's services.
5. To updated with the latest advancements in AI technology and continuously innovate to adapt to changing Account holder needs and market dynamics, ensuring HDFC Bank remains competitive in the financial industry.
6. To use AI to analyze account holder feedback, social media interactions and transaction data to gain valuable insights into Account holder preferences, behavior and satisfaction levels, enabling the bank to tailor its services more effectively.

7. Implement AI-powered systems for automated document processing, including loan applications, financial statements, and regulatory agreement documents, to simplify document management processes and improve accuracy.
8. Utilize AI algorithms to implement dynamic pricing models for banking products and services, adjusting prices based on demand, market conditions, and Account holder profiles to optimize revenue and competitiveness.
9. Apply AI-driven sentiment analysis techniques to understand Account holder sentiment and identify areas for improvement in products, services, and Account holder experiences, enabling the bank to enhance Account holder satisfaction and loyalty.
10. Integrate AI into risk management processes to identify emerging risks, assess their potential impact, and develop proactive risk mitigation strategies, thereby enhancing the bank's resilience to market uncertainties and regulatory changes.
11. To observe successes and milestones achieved in raising knowledge and promoting adoption of AI-driven banking services among HDFC Bank account holders in Madurai city, and recognize the contributions of employees, partners and Account holders who have supported these Initiatives.
12. Implement AI-powered behavioral biometrics solutions to analyze unique patterns in user behavior, such as typing speed, mouse movements, and touch screen gestures, for enhanced authentication and fraud prevention in digital banking channels.
13. In Offer AI-driven wealth management solutions that leverage machine learning algorithms to optimize asset allocation, portfolio rebalancing, and investment strategies based on changing market conditions and individual investor preferences.
14. Utilize AI technologies for regulatory compliance monitoring and reporting, automating compliance checks, identifying potential violations and ensuring adherence to evolving regulatory requirements in a cost-effective manner.

12. Conclusion

Innovation Technology is being used by financial institutions to increase customer happiness. Researcher study on HDFC Bank account holders' awareness towards AI technology in Madurai city presents an opportunity to gain valuable insights on account holders' perception, expectations & readiness for AI-driven banking services. Followings suggestions help HDFC banks to gather comprehensive data, analyze it well, derive actionable recommendations to enhance awareness & promote adoption of AI technology among its account holder base in Madurai city. This study not only helps HDFC banks to understand their account holder's needs & preferences but also enables the bank to design targeted communication strategies, develop innovative AI driven banking solutions & foster a culture of continuous learning and innovation. By prioritizing account holder engagement, transparency and accountability, HDFC Bank can position itself as a leader in leveraging AI technology to deliver personalised, efficient & secure banking experiences to its account holders in Madurai city.

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