

Consumer's Perspective towards Adoption of Artificial Intelligence: An Empirical Study among banking Companies

Dr Pratima Singh

I/C Principal,
Chandrabhan Sharma College of Arts,
Commerce & Science, Mumbai

Dr. Navita Roy

Assistant Professor,
Arka Jain University,
Jamshedpur, Jharkhand, India
[Http://orcid.org/0000-0002-6882-5397](http://orcid.org/0000-0002-6882-5397)

Dr Alka Singh Bhatt

Associate Professor,
Amity Business School,
Amity University Uttar Pradesh,
Lucknow Campus
f13alkab@iima.ac.in
Corresponding Author

Dr. Manoj Kumar Sadual

Associate Professor,
PG Department of Law,
Utkal University, Bhubaneswar, Odisha

Anumeha Sahai

Assistant Professor,
Amity University Noida

Abstract

Purpose: In this article authors intend to address the consumer perspective on adoption of artificial intelligence (AI) in private commercial banks of India. Its goal is to examine the variables responsible for the adoption of AI.

Methodology: In this research work convenience sampling method has been used. The primary data was collected from the customers of Indian commercial banks operating in Delhi. Various statistical tools like validity and reliability analysis, regression, and correlation (discriminant validity) used in this study to establish co-relation between exogeneous and endogenous factors with the help of software like SPSS, AMOS etc.

Findings: This study employed a quantitative research design and an exploratory technique to examine association between exogeneous and endogenous factors of AI adoption. The study found a significant positive association of various factors like Awareness about AI, Perceived usefulness, Consumer's Attitude and Subjective norms with intention banking customers to adopt AI.

Practical Implication: The banking companies will be benefited from this research by having a better understanding of the consumer's awareness, user's perception, trust factor, and norms regarding AI transformation.

Originality/Value: The use of AI in banking apps makes it easier for customers to keep track of their spending and goals. This report will help government to create awareness among customers of banking sector about effective use AI.

Keywords: Artificial intelligence, Adoption, Awareness, Attitude, Subjective norms, banking customers

Introduction:

The financial services sector and the global economy both have been benefited from artificial intelligence. Innovative and cutting-edge technologies have been employed by banks to remain competitive and

relevant (Ranganathan et. al., 2018). In recent years, the swift advancement of artificial intelligence technologies contributed to a decrease in data processing costs, increase in storage capacity, and faster connections. The efforts about AI-based financial inclusions have reduced bank's operating costs as well as demonstrated rapid transformation in banking industries (Consultants, 2022). In order to meet the economy's growing demand for financial products, banks have made significant investments in the development of AI infrastructures and creative financial solutions (Biswas et. al., 2020). Customers who are well-informed and regularly exposed to cutting-edge innovations need banks to provide seamless interactions. For operations such as computerized cash management, electronic banking, and real-world cash exchanges, Money Educate has expanded its mechanical scene to include retail, IT and telecom in order to meet these needs (Chatterjee et. al., 2021). AI systems are well-known for their ability to facilitate rapid engagement with customers through media platforms and flexible applications, leading to prior investigation agreements (Kumar & Gupta, 2023). Today, organizations are heavily relying on an AI-integrated Customer Relationship Management (CRM) framework for their trade requirements. In any case, management with information welcomes unique challenges, enumerating security and security gaps. Customers must be aware and need to be assured that their data will not be misused (Lin & Bhattacharjee, 2010; San-Martín et. al., 2016). They need to feel secure in the knowledge that their data will be kept private and secure. This facilitates customer trust and expedites bank operations (Danaci et al., 2020). The banking sector of today has to reacquaint customers with financial technologies, particularly about artificial intelligence's function. This study intends to address the consumer perspective on the adoption of AI in private commercial banks in Delhi, India. Its goal is to examine the variables responsible for the adoption of AI.

Literature Review

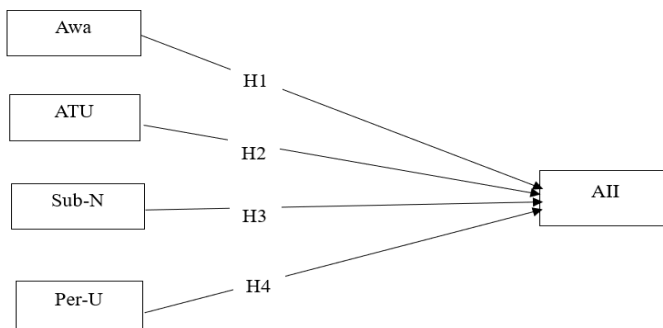
AI can best be described as its ability to learn from data, turn that knowledge into actionable insights, and use that actionable knowledge to shape behavior (Rodrigues et. al.,

2022). Rapid information processing is the foundation of artificial intelligence, which sets it apart from social intelligence. Numerous industries, including government payments, healthcare, e-commerce, logistics, finance, and others, have embraced artificial intelligence (Al-Araj et. al., 2022; Duan et al., 2019; Cho, 2024; Hai & Duong 2024; Min et al., 2024; Kumar et al., 2023; Rodríguez Pérez, 2023). AI can assist banks in managing their financial services and attracting clients by providing distinctive goods. Companies have been using AI technology progressively, evaluating data in light of ongoing international business dealings, accelerated strategic planning cycles, and rising customer expectations (Rabbani et. al., 2023) Manufactured Insights offers cutting-edge, innovative arrangements that are scalable and capable of automating processes for the benefit of customers' businesses. There are many applications of AI in the manufacturing and service sector and many ways in which it adds value to the industry. AI has the potential to improve credit scores, detect fraudulent transactions, automate data administration tasks, and more. By incorporating AI into the banking system, the processing of financial data has been accelerated. This has enabled the banking sector to reach a wider customer base via digital payments, chatbots, and apps (Ashta & Herrmann, 2021). In comparison to developed countries, India's AI banking system is in its infancy. AI is considered the banking industry's wave of the future as it enhances compliance, improves efficiency, and provides innovative financial solutions to prevent fraudulent financial transactions. Global banking innovation has resulted in a rapid transformation of the services that banks offer to their clients. This has resulted in more convenient and cost-effective channels (Ayllon, 2020). The key areas of AI in banking companies are chatbots, inexpensive, better customer experience, focus on sentiments analysis, finding misrepresentations and automation etc. In the modern banking world, customers have numerous ways to get in touch with the bank, including through phones, ATMs, online banking and mobile banking (Acharya et al., 2013). The acceptance and utilization of digital banking services are closely linked to the customer's perception of the bank's economic proposition (Inegbedion et al., 2020). Financial knowledge creates trust and confidence among customers

regarding the use of AI in banking activities. AI is revolutionizing the way financial services are delivered to customers as individual efficiency and data security are enhanced when transactions are processed over the Internet, increasing customer trust and acceptance of AI banking (Noonpakdee, 2020). According to a study by Safari et. al.(2020)attitudes of customers and Subjective norms are positively influencing the adoption of online banking services. Subjective norms may be defined as an individual's behaviour to support, commend or reject certain codes or behaviors (Safari et. al.,2020). Additionally, individuals with a positive perception of usefulness of AI services, seek to adopt AI in their banking activities. Thus, this study has focused on different factors like; Awareness about AI, Perceived usefulness, Consumer's Attitude and Subjective norms etc. that are influencing adoption of AI in banking industry.

Hypothesis Formulation &Hypothesized Model: The following research hypothesis and research model have been formulated by using literature review (Noreen et al., 2023; Mhlanga,2020)

Figure 1: Research Model



Source: Extensive review (Noreen et al., 2023; Mhlanga, 2020)

AII: AI adoption Intention; Awa: Awareness about AI; ATU: Attitude towards use of AI; Sub-N: Subjective norms; Per-U: Perceived usefulness of AI

The hypotheses formulated for the present study are:

H1:Awareness about AI has a significant positive relation with AI adoption intention in the banking sector of India

H2:Attitudes towards the use of AI have a significant positive relation with AI adoption intention in the banking sector of India

H3:Subjective norms have a significant positive relation with AI adoption intention in the banking sector of India

H4:Perceived usefulness of AI has a significant positive relation with AI adoption intention in the banking sector of India

Research Methodology

Sample Design and Data Collection

The study is organized descriptively. Both primary and secondary data were used in this study. original information gathered via survey questions. secondary data gathered from reports that have been published. For primary information survey questionnaire was prepared by using some existing studies (Al-Somali, Gholami & Clegg,2009;Rehman, Esichaikul& Kamal, 2012; Belanche, Casaló& Flavián, 2019). Likert scale was used for questionnaire formation. The questionnaire includes both demographic factors as well as factors affecting the intention to adopt AIfor banking activities. Demographic factors comprisevariables like educational level, age of respondents, marital status, gender, structure of employment commercial banks etc. The factors of AI adoption consisting Awareness about AI, Attitude towards the use of AI, Subjective norms and Perceived usefulness of AI.

Research Participants

In this research work convenience sampling method was used. The primary data was collected from the customers of Indian commercial banks operating in Delhi, India. Among commercial banks five private commercial banks were considered for the study i.e., HDFC, City Union Bank, ICICI Bank, IndusInd Bank and IDFC First Bank. These banks were selected for the study because they have a good net with a large customer base. The total number of research participants was923 but responses of only 811 customers were complete in all sense and considered for the final analysis. The demographic profile (Table 1)of customers comprising-gender (Male 62.88% and female 37.11%), marital status (married-60.54%; unmarried-39.45%) and

education level (Undergraduates-41.18%, postgraduates-24.29% and diploma/certificate holder 34.52%). Further, customers of HDFC bank were more willing to participate (29.71%) than other banks (City Union Bank-13.07%,

ICICI Bank-25.77%, IndusInd Bank-20.96%, IDFC First Bank-10.48%). Among employment structures all types of customers included in the study like employees (53.88%), self-employed (26.38%) and professionals 19.72%).

Table 1- Participant's demographic characteristics

Variable	Category	N	Percentage (%)
Marital status	Married	491	60.54
	Not married	320	39.45
Bank Customers	HDFC	241	29.71
	City Union Bank	106	13.07
	ICICI Bank	209	25.77
	IndusInd Bank	170	20.96
	IDFC First Bank	85	10.48
Gender	Male	510	62.88
	Female	301	37.11
Age (years)	19-25	171	21.08
	26-33	262	32.29
	34-42	232	28.60
	43-55	146	18.00
Education	Undergraduate degree	334	41.18
	Master Degree	197	24.29
	Certificate/Diploma	280	34.52
Annual Income	Below 2.5 lakh	197	24.29
	2.5-6 Lakh	298	36.74
	7-11 Lakh	204	25.15
	Above 11 lakh	112	13.81
Employment Structure	Employee	437	53.88
	Self-Employed	214	26.38
	Profession	160	19.72

Source: Author's own

Research Tool: The statistical analysis tools used for this study were Validity and reliability using CFA (confirmatory factor analysis), discriminant validity (co-relation analysis), regression using SEM (Structural equation Modelling). The software used for this study were SPSS V-20 and AMOS V-20.

Results:

Reliability and Validity analysis

For each item in the questionnaire (Table 2), the reliability was assessed using Cronbach's Alpha (CA), composite reliability (CR), and AVE (average variance extracted).

When the composite reliability, AVE, and Cronbach alpha values are all more than 0.6, the variable is considered reliable and is used for additional analysis (Ruvio et. al., 2008; Chin, 1998; Fornell & Larcker, 1981). Table 3 shows the results of a correlation analysis used to assess the validity of discriminants. The degree to which one variable is differentiated or separated from another is known as discriminant validity. Table 3 illustrates that the discriminant validity of this model is appropriate for every variable. Each variable is describing itself more than 50% (i.e., Awa:0.801, ATU: 0.762, Sub-N: 0.812, Per-U: 0.798, AII: 0.782) as well as explaining other variables up-to an extent.

Table 2: CFA Results (Presenting CA, CR and AVE)

Variables	Cronbach's Alpha	Composite reliability	AVE
Awa	.825	.816	.701
ATU	.806	.813	.686
Sub-N	.801	.805	.699
Per-U	.811	.826	.753
AII	.819	.817	.763

Source: Author's calculation

Table 3: Correlation Results (Discriminant Validity)

Constructs	Awa	ATU	Sub-N	Per-U	AII
Awa	0.801	–	–	–	–
ATU	0.402	0.762	–	–	–
Sub-N	0.399	0.402	0.812	–	–
Per-U	0.311	0.389	0.224	0.798	–
AII	0.203	0.213	0.207	0.216	0.782

Source: Author's calculation

Hypotheses Testing: SEM Results

In order to validate this hypothesis, a path analysis was performed. Table 4 shows the results of this path analysis. This table presented the regression weight test (Path Coefficient), critical ratio test (T-Value) and p-values. It is evident that factors i.e., Awareness about AI, Attitude towards use of AI, Subjective norms and Perceived usefulness are strongly associated with intention to adopt

AI in Indian commercial banks. As p-values of all formulated hypothesis are less than 0.05 advocates the acceptance of all hypothesis. Hence, hypothesis H1(PC: 0.118, t-value: 2.602, $p < 0.05$), H2 (PC: 0.131, t-value: 1.797, $p < 0.05$), H3 (PC: 0.088, t-value: 1.401, $p < 0.05$) & H4 (PC: 0.278, t-value: 4.937, $p < 0.05$) are supported by the findings of this research.

Table 4: Structural Modelling Results

Route	Path Coefficient (PC)	T-Value	p-Value (significant value)	Results
AII <--- Awa	.118	2.602	.009**	Supported
AII <---ATU	.131	1.797	.010**	Supported
AII <---Sub-N	.088	1.401	.000**	Supported
AII <--- Per-U	.278	4.937	.001**	Supported

Source: Author's calculation

Discussion:

This study was undertaken by the researchers to address the consumer perspective on adoption of artificial intelligence (AI) in private commercial banks of India. It also seeks to examine the variables responsible for the adoption of AI.

Both primary and secondary data were used in this study and primary data was collected from the customers of some private commercial banks of India. The private commercial banks considered for the study were HDFC, City Union Bank, ICICI Bank, IndusInd Bank and IDFC First Bank and the factors of AI adoption included; Awareness about AI,

Attitude towards the use of AI, Subjective norms and Perceived usefulness of AI. To check the effect of all the above factors on intention to adopt AI in banking sector, SEM approach was used. This approach is a wonderful predictive technique which shows the regression weight of different independent variables on dependent variable. The $AVE > 0.5$ and $CR > 0.7$, indicating the appropriate validity and reliability of all the constructs. Further co-relation among all variables found to be appropriate as it was less than 50%. (shown in discriminant validity table). The p-values of all formulated hypothesis were found less than 0.05 supports the acceptance of all hypothesis. Further researchers found perceived usefulness (Per-U) as the strong predictor of intention to adopt AI because it has highest regression weight (PC: .278 & t-value: 4.937). It means, if customers are seeking usefulness of AI only then they will adopt it.

Conclusion:

AI has been explained as the ability of firms to learn from data, turn that knowledge into actionable insights, and then use those insights to make better decisions. This study aimed to examine the factors that influence customers to adopt AI in banking sector of India. For this purpose, this study employed a quantitative research design and an exploratory technique to examine the association between exogenous and endogenous factors. By collecting data from five different banks (HDFC, City Union Bank, ICICI, IndusInd, IDFC First Bank), this study adds to the existing literature on AI. The conclusion indicated that there is a significant association of Awareness about AI, Perceived usefulness, Consumer's Attitude and Subjective norms with intention to adopt AI in banking sector from customer's perspective. The results of this study are also supported by results of Noreen et. al., 2023. The findings are useful for bank management in developing strategies that include artificial intelligence algorithms to collect and analyses consumer data, deliver appropriate product recommendations which have already been accepted as well as personalized advice on finances. The use of AI in banking apps makes it easier for customers to keep track of their spending and goals. The banking industry benefits from this consumer research by having a better

understanding of the consumer's awareness, user's perception, trust factor, and norms regarding AI transformation.

Limitation & Future Scope:

This study demonstrates only following factors of intention to adopt AI in banking sector: Awareness about AI, Attitude towards use of AI, Subjective norms and Perceived usefulness. Future research can concentrate on other potential factors also like security & risk, cost associated with AI, time saving etc. The sample included customers of private commercial banks only whereas perception of customers public sector banks could differ. Further, sample comprises residents of Delhi only while it is possible to broaden the sample by including residents of other major cities, such as Pune, Mumbai, Jaipur, Bangalore etc. The results of this study might not be applicable to other industries, such as pharma sector, FMCG etc., because it is restricted to the banking sector. In subsequent studies, authors can examine issues pertaining to artificial intelligence in other sectors also.

Practical Implication:

The results of this study are useful for bank's administrative staff for making strategies to create awareness among customers and employees for AI Adoption. It is also fruitful for educationalists to educate people about importance of technology in banking as well as other sectors of economy. Government can also use these results to give instructions to banks for efficient implementation of customer base AI tools.

References:

- Acharya, A. S., Prakash, A., Saxena, P., & Nigam, A. (2013). Sampling: Why and how of it. *Indian Journal of Medical Specialties*, 4(2), 330-333.
- Al-Araj, R. E. E. M., Haddad, H. O. S. S. A. M., Shehadeh, M. A. H. A., Hasan, E., & Nawaiseh, M. Y. (2022). The effect of artificial intelligence on service quality and customer satisfaction in Jordanian banking sector. *WSEAS Transactions on Business and Economics*, 19(12), 1929-1947.
- Al-Somali, S. A., Gholami, R., & Clegg, B. (2009). An

- investigation into the acceptance of online banking in Saudi Arabia. *Technovation*, 29(2), 130-141.
- Ashta, A., & Herrmann, H. (2021). Artificial intelligence and fintech: An overview of opportunities and risks for banking, investments, and microfinance. *Strategic Change*, 30(3), 211-222.
 - Ayllon, T. W. I. (2020). *Digital transformation in the banking sector and its impact on financial inclusion: BIM Peru case study* (Doctoral dissertation).
 - Belanche, D., Casaló, L. V., & Flavián, C. (2019). Artificial Intelligence in FinTech: understanding robo-advisors adoption among customers. *Industrial Management & Data Systems*, 119(7), 1411-1430.
 - Biswas, A., Bhattacharjee, U., Chakrabarti, A. K., Tewari, D. N., Banu, H., & Dutta, S. (2020). Emergence of Novel Coronavirus and COVID-19: whether to stay or die out?. *Critical reviews in microbiology*, 46(2), 182-193.
 - Chatterjee, S., Ghosh, S. K., Chaudhuri, R., & Chaudhuri, S. (2021). Adoption of AI-integrated CRM system by Indian industry: from security and privacy perspective. *Information & Computer Security*, 29(1), 1-24.
 - Cho, O.H. (2024). An Evaluation of Various Machine Learning Approaches for Detecting Leaf Diseases in Agriculture. *Legume Research*. 47(4), 619-627. <https://doi.org/10.18805/LRF-787>
 - Chin, W. W. (1998). Commentary: Issues and opinion on structural equation modeling. *MIS quarterly*, vii-xvi.
 - Consultants, M. (2022). Benefits of Artificial Intelligence in the Banking Sector. *Millinium Consultants: Kuala Lumpur, Malaysia*.
 - Danaci, E., Alkaya, A. F., & Gültekin, O. G. (2020). An empirical analysis of swarm intelligence techniques on atm cash withdrawal forecasting. In *Intelligent and Fuzzy Techniques in Big Data Analytics and Decision Making: Proceedings of the INFUS 2019 Conference, Istanbul, Turkey, July 23-25, 2019* (pp. 1235-1242). Springer International Publishing.
 - Duan, Y., Edwards, J. S., & Dwivedi, Y. K. (2019). Artificial intelligence for decision making in the era of Big Data—evolution, challenges and research agenda. *International journal of information management*, 48, 63-71.
 - Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of marketing research*, 18(1), 39-50.
 - Hai, N. T. & Duong, N. T. (2024). An Improved Environmental Management Model for Assuring Energy and Economic Prosperity. *Acta Innovations*, 52, 9–18. <https://doi.org/10.62441/ActaInnovations.52.2>
 - Inegbedion, H., Inegbedion, E. E., Osifo, S. J., Eze, S. C., Ayeni, A., & Akintimehin, O. (2020). Exposure to and usage of e-banking channels: Implications for bank customers' awareness and attitude to e-banking in Nigeria. *Journal of Science and Technology Policy Management*, 11(2), 133-148.
 - Kumar, J., & Gupta, S. S. (2023). Impact of Artificial Intelligence towards customer relationship in Indian banking industry. *Gyan Management Journal*, 17(1), 105-115.
 - Kumar, V., Chaturvedi, V., Lal, B., & Alam, S. (2023). Application of Machine Learning in Analyzing the Psychological Well Being amongst the Employees in the Private Sector. An Analysis of Work-Life Balance in the Healthcare Industry. *Pacific Business Review (International)*, 16(1), 124-131.
 - Lin, C. P., & Bhattacharjee, A. (2010). Extending technology usage models to interactive hedonic technologies: a theoretical model and empirical test. *Information systems journal*, 20(2), 163-181.
 - 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.
 - Min, P.K., Mito, K. and Kim, T.H. (2024). The Evolving Landscape of Artificial Intelligence Applications in Animal Health. *Indian Journal of Animal Research*. <https://doi.org/10.18805/IJAR.BF-1742>
 - Noonpakdee, W. (2020, February). The adoption of

- artificial intelligence for financial investment service. In *2020 22nd International Conference on Advanced Communication Technology (ICACT)* (pp. 396-400). IEEE.
- Noreen, U., Shafique, A., Ahmed, Z., & Ashfaq, M. (2023). Banking 4.0: Artificial intelligence (AI) in banking industry & consumer's perspective. *Sustainability*, *15*(4), 3682.
 - Rabbani, M. R., Lutfi, A., Ashraf, M. A., Nawaz, N., & Ahmad Watto, W. (2023). Role of artificial intelligence in moderating the innovative financial process of the banking sector: a research based on structural equation modeling. *Frontiers in Environmental Science*, *10*, 2083.
 - Ranganathan, S., Nakai, K., & Schonbach, C. (2018). *Encyclopedia of bioinformatics and computational biology: ABC of bioinformatics*. Elsevier.
 - Rehman, M., Esichaikul, V., & Kamal, M. (2012). Factors influencing e-government adoption in Pakistan. *Transforming Government: People, Process and Policy*, *6*(3), 258-282.
 - Rodrigues, A. R. D., Ferreira, F. A., Teixeira, F. J., & Zopounidis, C. (2022). Artificial intelligence, digital transformation and cybersecurity in the banking sector: A multi-stakeholder cognition-driven framework. *Research in International Business and Finance*, *60*, 101616.
 - Rodríguez Pérez, J. (2023). Cienciaficción y cine español. Fonseca, Journal of Communication, *27*, 339–342. <https://doi.org/10.48047/fjc.27.01.21>
 - Ruvio, A., Shoham, A., & Breni, M. M. (2008). Consumers' need for uniqueness: short-form scale development and cross-cultural validation. *International Marketing Review*, *25*(1), 33-53.
 - Safari, K.; Bisimwa, A.; Armel, M.B. Attitudes and intentions toward internet banking in an under developed financial sector. *PSU Res. Rev.* **2020**, *6*, 39–58.
 - San-Martín, S., Jiménez, N. H., & López-Catalán, B. (2016). The firms benefits of mobile CRM from the relationship marketing approach and the TOE model. *Spanish journal of marketing-ESIC*, *20*(1), 18-29.