

EMPOWERING BANKING THROUGH AI: ANALYZING CUSTOMER PERSPECTIVES AND ADOPTION DRIVERS IN INDIA

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Abstract

Background: The future of an economy is largely dependent on the functioning of its banking sector. Artificial Intelligence (AI) has turned up as a dynamic force exerting a significant influence over the banking industry functions. This research looks at the role of AI in banking from a customer perspective. **Methods:** Primary sources of data collection were used and data was gathered from 250 respondents using a well-structured questionnaire. Analysis was conducted deploying various statistical techniques like descriptive statistics and inferential statistics including correlation analysis, regression analysis and ANOVA. The study proposes a framework to measure the intention to adopt AI in Indian banking system and the factors influencing the adoption decisions. **Results:** The findings show that intention to adopt AI in banking is influenced by awareness, attitude towards AI, subjective norms, perceived risk, perceived usefulness, and knowledge of AI technology. It yields a positive perception and intention towards AI adoption with perceived usefulness and perceived risk having strong correlation with adoption intention. Recommendations are given to accelerate AI in banking by investing in AI integration, customer trust building and tailored marketing strategies. Concludingly, embracing AI can drive banking innovation, deliver better services, build deeper customer relationships and be competitive in the market.

Keywords: Artificial Intelligence, Adoption Intentions, Indian Banking System, Innovation

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INTRODUCTION

Indian banking is undergoing a major transition through the purview of the rapid inducement and deployment of AI. India's banking industry is fast evolving in stance of digital innovation due to the country's dynamic, and incremental population. In light of this, integrating AI into banking operations has become essential with the motive to increase productivity, reduce risk, and provide customers a customized experience in a market that is extremely competitive.

AI in banking is bringing diverseness in the way financial services are perceived, provided, and viewed. Banks are changing look of traditional banking. Given the obligation to serve a broad clientele, banks leverage vast databases to learn about the preferences, activities, and financial requirements of their consumers. Additionally, it will enable banks to provide services in real-time, which tends to boost consumer engagement and retention rates. It will also assist in detecting fraud and strengthening banking security. AI-powered financial advisors will

be able to help customers make informed financial and investment decisions. AI-enabled wealth managers will give their customers guidance and useful data to enable them to manage their finances more skillfully.

AI is rapidly gaining traction in the banking sector whilst driving technological innovation across the industry. Financial planning tools stand superior to minimal levels of personalization and customization. AI holds complete potential to enable banks stay ahead of the competition, whilst the ability to build stronger relationships, and deliver better services. As AI develops, banking driven relationships will be highly impacted, which will induce changes and reshape the financial industry.

SUMMARY OF LITERATURE REVIEW

AI in Indian banking has emerged as an intensely discussed and highly promising area of research, holding a potential to challenge traditional banking. This summary of review of literature looks at the present state of AI usage in Indian banking.

- AI in Indian banking holds significant capabilities and capacities to enhance operational efficiency and personalized customer service given the functioning produced by AI.
- AI technology in Indian banks has changed the way risk management is viewed and operated given the use and conduct of real time analytics which contribute towards improved decision making and reduced financial risks.
- According to research, AI technologies such as chatbots and virtual assistants have transformed client interactions in Indian banks, enabling 24-hour help and increasing overall customer happiness.
- Using anomaly detection and predictive analytics to protect client assets, the use of AI-driven fraud detection systems in Indian banks has shown to be essential in combating against financial crime.
- Research highlights that data driven insights from AI driven predictive analytics models have improved credit score and loan approval process in Indian banks.
- AI powered robotic process automation has worked immensely and contributed to a simplified back-office tasks in Indian banking operations, saving incremental costs and improving departmental productivity manifold.
- Indian banks can now precisely assess the attitudes and preferences of their customers with the presence of AI-driven sentiment analysis technologies, which enable customized financial advice and focused marketing efforts.
- AI powered predictive maintenance has reduced downtime and improved system uptime in Indian banking IT infrastructure, ensuring continuous operability and functionality.
- Ethical implications of AI in Indian banking highlight the importance of data privacy laws and algorithmic decision making to be transparent to maintain customer trust and comply with regulations.
- The ways that AI technologies are changing the dynamics of the workforce in Indian banks highlight the necessity of strategic workforce planning and upskilling programs in order to fully use AI's promise and mitigate the risk of job displacement.

RESEARCH GAP

There is a visible gap in the literature regarding the AI adoption dynamics in India's banking sector. Most of the existing literature is generic and lacks the applicability to the Indian context. The focal extension of this study is rectifying this shortcoming by examining the factors influencing AI adoption intentions in the Indian banking sector. The key factors include awareness, attitudes towards AI, subjective norms, perceived risk, and perceived usefulness. The study tends to provide useful suggestions to banking firms and policy makers to successfully integrate AI. This research focuses on the Indian scenario, providing deeper insights into the AI-driven banking revolution and essential directions for banking innovation and competitiveness. Hence, this study attempts to successfully fill the existing gap by contributing holistic insights from the AI adoption perspective in India's banking sector.

MATERIALS AND METHODS

The scope of this study is relatively extensive in nature. This research studies the impact of AI technology on banking sector in India with an objective to examine the influencing factors on AI adoption intentions. A cross-sectional study and structured questionnaire is proposed to measure the directed intentions based on statistical techniques such as descriptive analysis, inferential analysis, etc. Awareness, attitude towards AI, subjective norms, perceived risk, perceived usefulness, and AI technology knowledge are the key factors to be examined in the study. The recommendations of the study emphasize speeding up the adoption of AI, building customer trust and confidence, bank-specific and customer-oriented marketing mix.

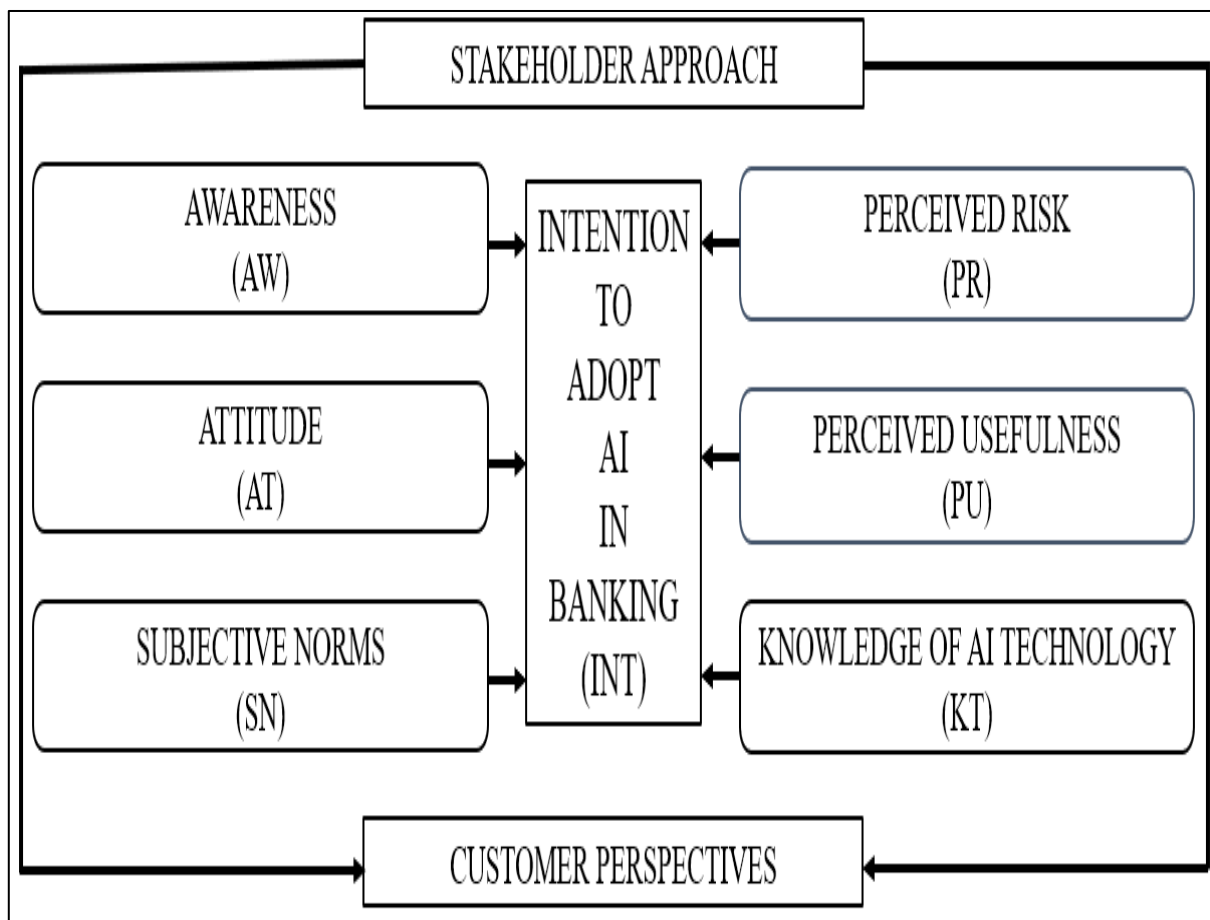
The presented research was undertaken given the undermentioned objectives:

1. To propose a framework that measures intentions to adopt AI in the Indian Banking System.
2. To analyze the factors that influence intentions to adopt AI in banking.
3. To provide strategic insights for enhancing AI adoption in banking.

This study presents an analysis completely dominated by primary data. The data needed for this study was obtained through a well-structured questionnaire. The questionnaire is comprised of two major sections, demographic profile of the respondents, and their perception on various grounds to analyse their willingness to embrace the adoption of AI in Banking. The presented research is based on Convenience Sampling Method along with Purposive Sampling Method. A total number of 250 respondents formed the sample for the undertaken study, which was obtained via a well-structured questionnaire; the analysis techniques involve Descriptive Statistics, Inferential Statistics, Correlation Analysis, Regression Analysis, and ANOVA. Further, graphical representation is accommodated.

The study is cross-sectional in nature. Conducted at one-point time frame in 2024.

THEORETICAL FRAMEWORK DRIVING THE INTENT

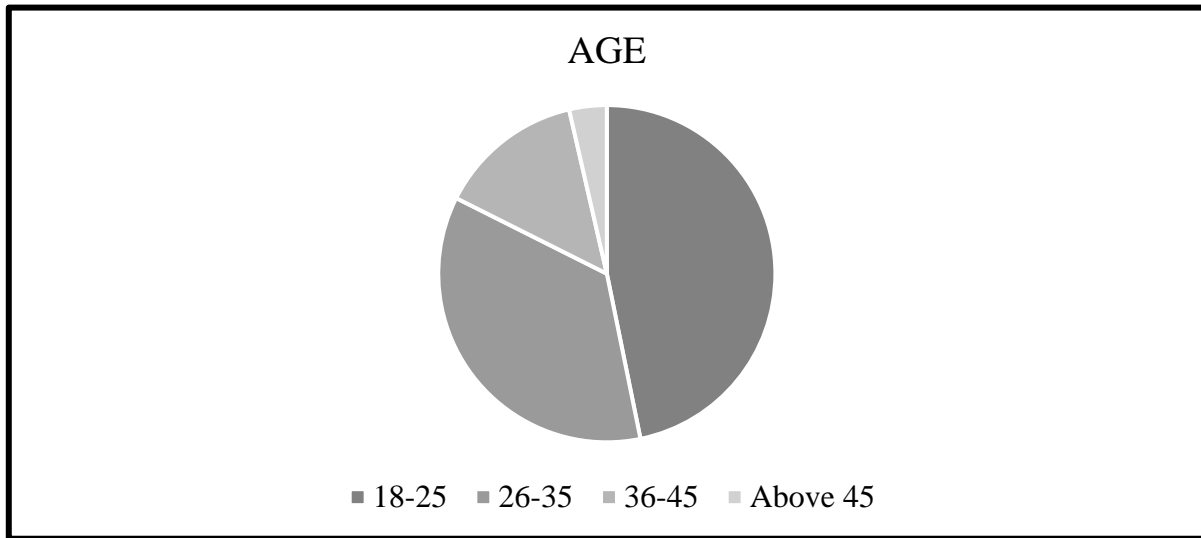


Source: Authors own proposition for framework

- Customer awareness and understanding customer’s capacity to comprehend and utilize AI-based financial services. This trait has a positive influence on customer’s adoption of digital banking services.
- Attitudes towards AI banking services represent moods and emotions towards innovative financial services. Customer information and banking services image enhancement may promote adoption intentions in AI-based financial services.
- Subjective norms influenced by important others’ behavior have a significant impact on AI adoption.
- Perceived risk is related to AI-based financial services and affect adoption intentions. Higher the perceived risk, lower the adoption intentions. Hence, customer’s trust and consistency in results can lower the perceived risk.
- Perceived usefulness of AI in banking services, performance and security enhancement has a positive relationship with customer trust and adoption intentions. Technology intervention and autonomy-based banking operations lead to higher customer adoption.
- Knowledge of artificial technology determines the AI adoption intentions in banks. Information technology and financial operations understanding fosters customer trust and adoption tendency. This showcases the e-service adoption nature and banking operations relationship among customers.

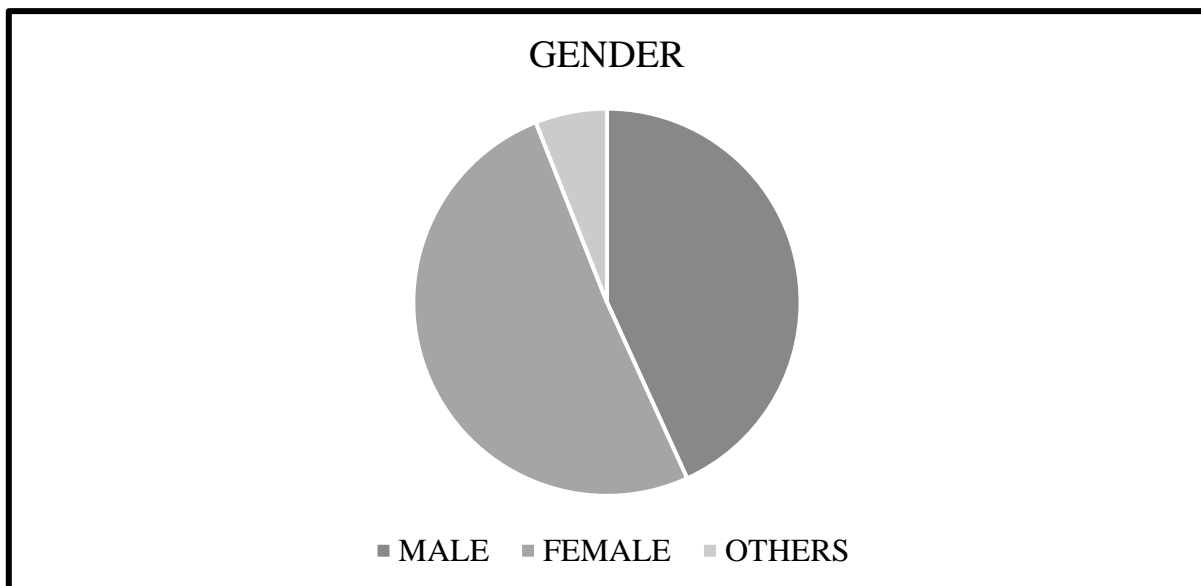
ANALYSIS AND DISCUSSION

➤ DEMOGRAPHIC PROFILE OF RESPONDENTS



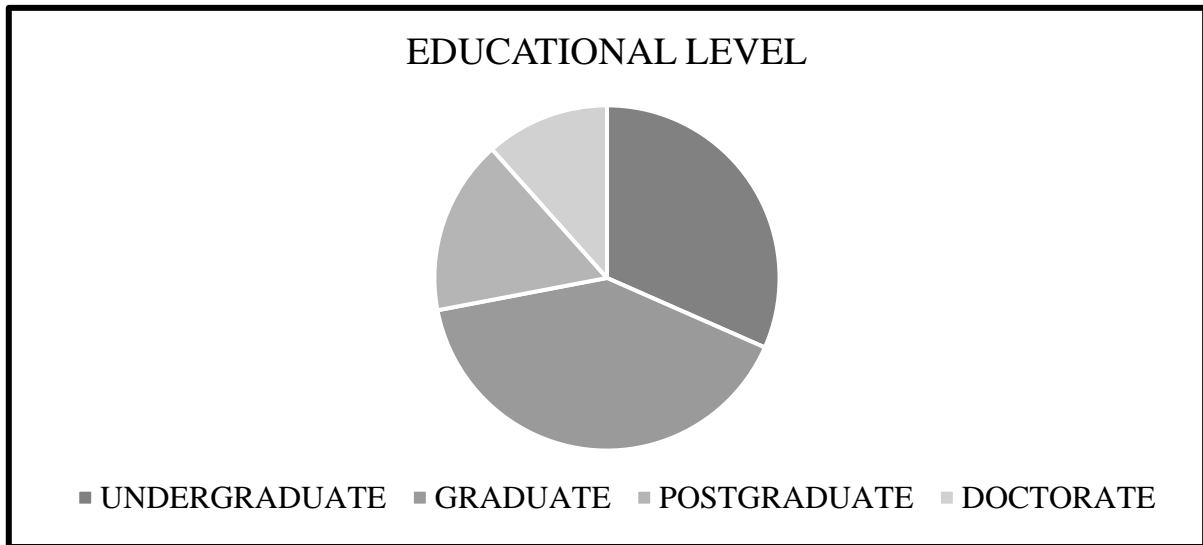
Source: Author’s own computation

The age distribution shows that there is a large proportion of young people, with those aged between 18-25 making up the majority of the sample at 46.8%, followed by those aged 26-35 at 35.6%. This over-representation of younger age groups could be due to the fact that the youth are more interested or engaged in banking. On the other hand, the percentage of older people decreases, with those aged 45 and above at only 3.6% of the sample. This difference in age distribution compared to the wider population could mean that banking preferences, use of technology and financial behavior varies greatly between age groups. Therefore, it is important for banks to consider the different strategies to attract and retain customers from various age groups.



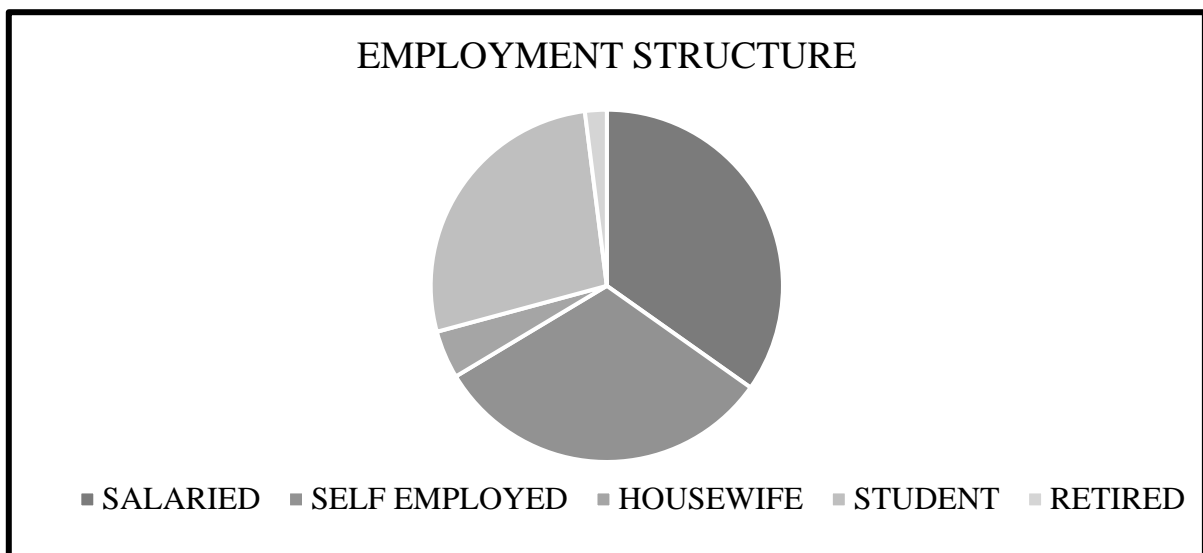
Source: Author’s own computation

The gender distribution shows that there is a slight majority of female respondents at 50.8%, followed by males at 43.2%. A small percentage of 6.0% of the sample identified themselves as “Others”. This is important when considering whether there is a significant representation of each gender. However, as this percentage is greater than both the lower and upper end of the spectrum, it could be that females are more interested in banking or participating in banking related research. Also, the ‘Others’ category suggests that those who identify as transgender or non-binary are also included, which is important for showing that the sample is inclusive of all identity groups. Overall, the demographic makeup of gender is important for banks to understand as not all solutions will be suitable for all gender identities and that access to banking services should be considered fair for all.



Source: Author's own computation

The education distribution shows the proportion of respondents in each educational tier. There is a good representation of all levels of education in the sample. The majority of respondents hold a graduate degree at 40.4%, followed by those who are undergraduates at 31.6%. In addition, postgraduates make up 16.4% of the sample and those with doctorates 11.6%. This suggests that there is a good mixture of respondents with various levels of education, providing different perspectives and experiences. However, the high percentage of graduate and undergraduate degrees suggests that a large portion of the sample has some form of tertiary education and therefore, may have a better grasp on financial concepts. This variety in education level demonstrates that not everyone will have the same level of financial knowledge and so, banks should consider this when designing services and communicating with customers.



Source: Author's own computation

The employment distribution shows the proportion of respondents in each employment category. There is a good mixture of all types of occupation in the sample. Salaried employees make up the most frequent group at 34.8%, followed by a closely by those who are self-employed at 31.6%. A large percentage of the sample are students at 27.2%, which could suggest that they are more engaged in banking related research. Housewives make up a smaller percentage at 4.4%, while the retired are the least represented at 2%. This variety in employment status highlights the importance of considering different structures when designing banking services. Each category has different financial priorities and preferences; thus, services should be designed to be inclusive of all types of occupation. Otherwise, some customers may be left unserved.

➤ DESCRIPTIVE STATISTICS

VARIABLES	MEAN	MEDIAN	MODE	STANDARD DEVIATION	MINIMUM	MAXIMUM
AW	3.14	3.12	3.12	0.49	1.75	4.37
AT	3.51	3.50	4	0.66	1.25	5
SN	3.18	3.25	3	0.43	1.25	5
PR	3.36	3.50	4	0.54	1	5
PU	3.51	3.66	4	0.41	1	5
KT	3.45	3.50	4	0.52	1	5
INT	3.39	3.33	3	0.62	1	5

Source: Author's own computation

Descriptive statistics provide a summary of the mean, median, mode, minimum and maximum, and standard deviation for each of the variables in the study. As shown in the tables above, there appears to be a pattern across the variables indicating positive perceptions and intentions related to the adoptance of AI in the Indian banking sector. The mean scores of most of the variables fall in the moderate to high-range indicating overall positive perception towards AI driven banking services. The mean scores of awareness (3.85), attitude (4.02), subjective norms (4.08), perceived risk (2.79), perceived usefulness (4.16) and knowledge of artificial technology (3.85) all fall in the positive range indicating overall positive perception towards AI driven banking services. The standard deviations for each of these variables also fall in the moderate to high-range indicating the variability around the mean score. The median and mode values for all the variables except attitude and knowledge of artificial technology also fall in the moderate to high range. While the distribution of awareness about AI seems to be moderately variable, the distribution of attitude towards AI driven banking services seems to be highly variable, possibly indicating differing views from various individuals or possibly even the differing views of the same individuals who may have been affected by some rare event or experience. Overall, it appears that there is considerable awareness about AI, a positive attitude and perceived usefulness of AI technology, and perceived low barriers to adoption in the Indian banking sector. All these together point to a bright future for AI adoption in the Indian banking sector.

➤ CORRELATION ANALYSIS

	AW	AT	SN	PR	PU	KT	INT
AW	1						
AT	0.463582	1					
SN	0.368457	0.412921	1				
PR	0.518430	0.520749	0.324181	1			
PU	0.606091	0.641237	0.681254	0.785210	1		
KT	0.489145	0.651132	0.585894	0.536540	0.641780	1	
INT	0.663210	0.65528	0.458962	0.772316	0.765423	0.678921	1

Source: Author's own computation

The correlation matrix of the variables indicates that the intention to use AI technology is positively correlated with the independent factors. The correlations seem to be especially strong with perceived usefulness (0.765), and perceived risk (0.772). This implies that the stronger the belief that AI technology is useful, and adoption of AI is not a risky affair, the higher the intention to use. Moderate positive correlations are seen with awareness (0.663), attitude (0.655) and knowledge of AI technology (0.679). This indicates that these factors also influence intentions to adopt AI, though to a lesser extent than perceived usefulness and perceived risk. The weakest positive correlation is seen in case of Subjective norms (0.459).

➤ REGRESSION ANALYSIS

VARIABLES	COEFFICIENT	STANDARD ERROR	t - STATISTIC	P - VALUE	STATUS	RELATION WITH INT
AW	0.179224	0.047158	3.800507	0.0002	Significant	POSITIVE
AT	0.339769	0.032782	10.36395	0.0000	Significant	POSITIVE
SN	0.153697	0.036396	4.222868	0.0000	Significant	POSITIVE

PR	-0.044788	0.029748	-2.505600	0.0003	Significant	NEGATIVE
PU	0.224927	0.031342	7.716467	0.0000	Significant	POSITIVE
KT	0.131906	0.032490	4.059865	0.0001	Significant	POSITIVE
R-SQUARED	0.511954	MEAN DEPENDENT VAR		3.397547		
ADJUSTED R- SQUARED	0.397424	S.D. DEPENDENT VAR		0.822959		
F – STATISTIC	88.71891	DURBIN-WATSON STAT		2.166865		
P- VALUE (F – STATISTIC)	0.000000					

Significant at $p < 0.01$

Source: Author's own computation

The regression output provides insight into the factors that significantly influence the intention to use AI technology. The coefficients column shows the direction and magnitude of the linear relationship between each predictor variable and the dependent variable (INT). The awareness (AW), attitude (AT), subjective norms (SN), perceived usefulness (PU) and knowledge of artificial technology (KT) all have statistically significant positive coefficients indicating that the adoption intentions increase as these factors increase. The attitude (AT) towards AI banking services has the highest coefficient indicating that the strongest influence on the intention to adopt AI is a positive attitude. The perceived risk (PR) has a statistically significant negative coefficient indicating that the adoption intentions decrease as the perceived risk increases. The F value of the overall regression equation is significant ($F = 41.819$, $df = 5,86$, $p < 0.01$) explaining around 51.2% of the variance in the dependent variable ($R = 0.512$). This implies that the predictive variable used in the study explain 51% of the variance in the intention to adopt AI among the respondents indicating a moderately strong relationship. Thus, it can be concluded from the above analysis that the factors included in the study together play an important role in explaining the variation in intention to adopt AI among the respondents. The Durbin-Watson statistic of 2.167 is less than the critical value indicating that there is no significant autocorrelation in the residuals. Thus, it can be concluded that the regression model appears to be sound with no extreme outliers or influential observations that could affect the validity of the findings. Overall, the study suggests that measures should be taken to influence the factors such as attitude, awareness, perceived usefulness, and perceived risk to enhance AI adoption in the Indian banking sector. Besides, banks should also try to reduce the perceived risks to enhance the adoption intentions.

➤ ANOVA ANALYSIS

VARIABLE	MEAN SQAURE	F - VALUE	Pr > F
EDUCATION	3.02	3.02	0.0105
EMPLOYMENT	3.15	3.15	0.0207

Source: Author's own computation

VARIABLE	GRAND MEAN
UNDERGRADUATE	3.23596819
GRADUATE	3.31105351
POSTGRADUATE	3.12933670
DOCTORATE	3.08036760

Source: Author's own computation

VARIABLE	GRAND MEAN
SALARIED	3.11235701
SELF EMPLOYED	3.45710303
HOUSEWIFE	3.87642322
STUDENT	3.07770060
RETIRED	3.20236489

Source: Author's own computation

The ANOVA analysis offers interesting information on the impact of education and employment on perception and intention of the people in Indian banking sector towards AI. The table clearly highlights that education and employment as independent variables have significant impact on the dependent variables (perception and intention towards AI based banking service) as represented by mean values. For education, F-value is 3.02 and p-value is 0.0105 which is less than 0.05. Hence, it can be transparently stated that the difference in intention and perception of AI adoption among the categories of education is significant. Similarly, for employment it is 3.15 and p-value is 0.0207 which is again less than 0.05. This means, there is a significant difference in perception and intention towards AI adoption among the categories of employment. In case of grand means, a distinct pattern is visible in both the cases. For education, the grand mean for post graduate is the highest and that of graduate is the lowest. This implies that among the categories of education, graduate and above have more positive intention and perception towards AI adoption than others. For employment, the grand mean for self-employed is the highest and that for salaried is the second highest. This means, among the categories of employment, self-employed and salaried have more positive intention and perception towards AI adoption than others. In both cases, the ANOVA results should be interpreted along with the actual values of mean as shown in the tables above. From the above analysis, it is understood that education and employment have a significant impact on the perception and intention of the people in Indian banking sector towards AI. Bankers and insurance companies in India must take these factors into consideration while framing strategies for promoting AI adoption in the country. There are people with varied educational qualifications and employment status in every category and they all need to be persuaded to adapt to AI. The above results hint that one size may not fit all. Strategies must be formulated keeping in mind the diverse needs of the population.

FINDINGS

- Age distribution of the subjects in this study is good especially for younger age groups and 18-25 age group has the highest percentage. This shows that younger people are more interested in banking services.
- Gender distribution shows that there is almost equal participation of both genders in this study with slightly more female subjects. This may show that more female gender is inclined to get involved in any research in this respect or probably more females made use of any of the banking services in respect of which this study was carried out.
- Education level and employment types of subjects involved in this study are in diversity. This shows that banking services and products provided should be in varieties to suit the demographic characteristics of the people involved.
- Adoption intention (dependent variable) in this study shows that attitudes, customer awareness, subjective norms, perceived risk, perceived usefulness of AI and artificial technology knowledge are the major factors that influence AI adoption intention.
- Correlation analysis shows that perceived usefulness and perceived risk have the highest correlation coefficient (r) in respect of adoption intention. This calls for special attention to these factors in order to accelerate AI adoption in banks. While, attitudes and subjective norm have the lowest correlation coefficient. This implies that people with negative attitudes and those who do not believe that others like him/her use AI services are less likely to adopt.
- Mean scores of all the variables in respect of both correlation and regression are generally high to medium. This implies that generally respondents have positive perception and adoption intention towards AI.
- Standard deviations are generally low which implies that there is relatively low heterogeneity in respect of the variables.
- Perceived usefulness and perceived risk of AI adoption also have positive relationship with adoption intention. This means people are more likely to adopt AI if they find it useful and if they think that adopting AI will not expose them to risks.
- Awareness, attitude, and knowledge of AI technology also have moderate positive correlation with adoption intention.
- Attitudes, awareness, subjective norm, perceived usefulness and knowledge of AI technology have positive effect on adoption intention while perceived risk has negative effect.
- The adjusted R square is 0.510 which implies that the model explains approximately 51% of the variance in dependent variable (intention to adopt AI). Thus, the predictive power of the model is moderately strong.
- There are significant differences in mean scores of perceived variables in respect of AI adoption intention based on education and employment. This implies that there are differences in attitudes towards adoption of AI based on demographic characteristics of customers.

RECOMMENDATION

The understated are practical recommendation to accelerate the infusion of AI in Banking given customer insights and perspectives:

- Investment in AI Integration: Make AI integration investments for various bank functions like core banking, operational performance, and customer service that can enhance data insights, product recommendations, and even personalized financial advice for customers.
- Customer Trust and Security Measures: Strong security and protection features to secure customer data and transactions. Clear communication with customers to allay their fears and help them embrace AI-driven capabilities.

- Tailored Marketing Strategies: Banks need to tackle the issue of heterogeneity among customers and devise ways to address this. Understanding the AI adoption patterns in their region and among different demographic groups can help banks launch region and age-specific marketing campaigns promoting AI-enabled features and ease of use of the new banking solutions. They should keep monitoring the evolving customer preferences and advancements in AI in banking domain to tweak and personalize their marketing strategies from time to time.

CONCLUSION

AI has become an essential instrument in banking sector innovation. The advantages of applying AI in banking sector are too numerous to ignore. AI in banking offers personalized experience, proactive customer support, improved security, fraud detection, chatbots, financial planning tools and many more. AI has transformed banking business and has empowered banks to offer top-notch services to customers. On a prior front, bankers must focus on building trust among customers as it is the most crucial factor in building long term relationships with customers. In fact, in banking sector, more than any other industry, customer trust must be given utmost importance. Banks must invest in adequate security and ensure transparency at all levels to gain customer confidence. Otherwise, customers may resist or reject AI based banking services. Also, marketing must be customized to explain the advantages of AI to customers. Proper messaging can remove any misconceptions or misunderstanding among customers about AI and its advantages must be communicated explicitly. Finally, adoption of AI is required not just to keep pace with others in the industry, but to offer better service and experience to customers. AI in banking sector helps to know customers better, to know their needs and to serve them in a seamless and personalized way which ultimately strengthens the bond with customers. AI based banking will surely provide differentiation which is much needed in today's competitive environment. AI is evolving and so is its impact on banking sector in the coming years and beyond. With AI driven banking business and customer centric strategies, banks can be future ready to face the challenges and competition in the digital era.

REFERENCES

- 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. <https://doi.org/10.1002/jsc.2404>
- Chauhan, S., Akhtar, A., & Gupta, A. (2022). Customer experience in digital banking: A review and future research directions. *International Journal of Quality and Service Sciences*, 14(2), 311-348.
- Fares, O. H., Butt, I., & Lee, S. H. M. (2022). Utilization of artificial intelligence in the banking sector: a systematic literature review. *Journal of Financial Services Marketing*, 28(4), 835–852. <https://doi.org/10.1057/s41264-022-00176-7>
- Goyal, S., Chawla, D., & Bhatia, A. (2016). Innovation: Key to improve business growth of banking industry. *International Journal of Advances in Engineering & Technology*, 9(3), 331.
- Karim, S., Rabbani, M. R., & Bawazir, H. (2022). Applications of blockchain technology in the finance and banking industry beyond digital currencies. In *Blockchain Technology and Computational Excellence for Society 5.0* (pp. 216-238). IGI Global.
- Manser Payne, E. H., Peltier, J., & Barger, V. A. (2021). Enhancing the value co-creation process: artificial intelligence and mobile banking service platforms. *Journal of Research in Interactive Marketing*, 15(1), 68-85.
- Rabbani, M. R., Lutfi, A., Ashraf, M. A., Nawaz, N., & Watto, W. A. (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. <https://doi.org/10.3389/fenvs.2022.978691>