

ARTIFICIAL INTELLIGENCE-BASED BANKING SERVICES AND CUSTOMER SATISFACTION: A STUDY OF BANK CUSTOMERS IN SOMWARPET TALUK OF KODAGU DISTRICT

Harsha B D

Associate Professor

Department of Economics, BTCG Govt. First Grade College, Somwarapet, Kodagu

ABSTRACT

The increasing adoption of Artificial Intelligence (AI) has transformed banking services by improving efficiency, convenience, personalisation, responsiveness, and service accessibility. This study examines the role of AI-based banking services in determining customer satisfaction among bank customers in Somwarpet Taluk of Kodagu District. The study has two major objectives: (i) to assess customers' perceptions of AI-based banking services, and (ii) to examine the relationship and influence of AI-based banking dimensions on overall customer satisfaction. A descriptive and analytical research design was adopted, and primary data were considered from a sample of 60 bank customers. Data were measured using a structured questionnaire and a five-point Likert scale. Perceptions of AI-based banking services were measured through usefulness, ease of use, service efficiency, reliability, security and privacy, responsiveness, personalisation, and trust, while customer satisfaction was measured through overall satisfaction, service quality, fulfilment of expectations, convenience, and continuance intention. Pearson's correlation and multiple regression analysis were employed for hypothesis testing. The results indicate a strong positive and statistically significant relationship between overall perceptions of AI-based banking services and customer satisfaction ($r = 0.717$, $p < 0.001$). Further, all eight dimensions showed significant positive relationships with customer satisfaction. The regression model was statistically significant ($F = 25.475$, $p < 0.001$) and explained 80.0% of the variation in customer satisfaction ($R^2 = 0.800$; Adjusted $R^2 = 0.768$). Trust ($B = 0.294$) and personalisation ($B = 0.271$) emerged as important predictors. Accordingly, both null hypotheses were rejected and the corresponding alternative hypotheses were accepted. The findings suggest that favourable perceptions and effective implementation of AI-based banking services can contribute substantially to higher customer satisfaction.

Keywords: Artificial Intelligence, AI-Based Banking, Customer Satisfaction, Digital Banking.

INTRODUCTION

The banking sector has undergone significant technological transformation with the rapid development of Artificial Intelligence (AI), digitalisation, and data-driven financial services. AI has emerged as an important technological tool for improving the efficiency, accessibility, speed, and personalisation of banking operations. Banks increasingly use AI-enabled applications such as chatbots, virtual assistants, automated customer support, fraud detection systems, personalised financial recommendations, biometric authentication, credit assessment, and intelligent transaction monitoring. These applications have changed the traditional relationship between banks and customers by enabling services to be delivered more quickly and continuously.

The effectiveness of AI-based banking services, however, depends not only on technological capabilities but also on customers' perceptions and experiences. Customers are more likely to

adopt and continue using AI-enabled services when they perceive them as useful, easy to use, reliable, secure, responsive, personalised, and trustworthy. Conversely, concerns relating to privacy, cybersecurity, technological complexity, errors, lack of human interaction, and reliability may negatively influence customer experiences. Therefore, understanding customer perceptions is essential for evaluating whether technological improvements are actually translated into higher levels of customer satisfaction.

Customer satisfaction is an important indicator of banking service performance because satisfied customers are more likely to continue using banking services, develop trust in the institution, and recommend the services to others. In the context of AI-based banking, satisfaction may be influenced by the convenience, speed, accuracy, responsiveness, and personalisation provided by AI-enabled systems. Thus, examining the relationship between customers' perceptions of AI-based banking services and customer satisfaction provides an important basis for understanding the effectiveness of technological transformation in banking.

Although AI-based banking is expanding rapidly in India, customer experiences may differ across geographical and socio-economic settings. Somwarpet Taluk of Kodagu District represents an important local context for examining this issue because customers increasingly interact with digital and AI-enabled banking services while their levels of technological awareness, usage patterns, and expectations may vary. Therefore, the present study seeks to empirically examine whether favourable perceptions of AI-based banking services are associated with higher customer satisfaction among bank customers in Somwarpet Taluk.

CONCEPTUAL FRAMEWORK

The conceptual framework of the study explains the proposed relationship between customers' perceptions of AI-based banking services and their overall customer satisfaction among bank customers in Somwarpet Taluk of Kodagu District. The framework considers perception of AI-based banking services as the independent variable and customer satisfaction as the dependent variable. Customers' perceptions are assessed through eight major dimensions: usefulness, ease of use, service efficiency, reliability, security and privacy, responsiveness, personalisation, and trust. Usefulness reflects the extent to which AI-based services improve banking convenience and effectiveness, while ease of use represents the simplicity and user-friendliness of AI-enabled applications. Service efficiency and reliability capture the speed, accuracy, consistency, and dependable performance of AI-based services. Security and privacy represent customers' confidence in the protection of personal and financial information. Responsiveness reflects the ability of AI systems to provide prompt assistance, while personalisation measures the extent to which services are adapted to individual customer needs. Trust represents customers' confidence in the reliability, security, and fairness of AI-enabled banking services.

Customer satisfaction is treated as the outcome variable and reflects customers' overall evaluation of their experience with AI-based banking services. It is measured through overall satisfaction, perceived service quality, convenience, fulfilment of expectations, and intention to continue using AI-enabled banking services. The framework assumes that more favourable perceptions across the above dimensions are associated with higher customer satisfaction. Thus, the study proposes a positive and statistically significant relationship between customers' perceptions of AI-based banking services and their overall customer satisfaction, which is empirically examined using Pearson's correlation analysis.

STATEMENT OF THE PROBLEM

The rapid adoption of Artificial Intelligence (AI)-based technologies has transformed the delivery of banking services by enabling automated, personalised, efficient, and convenient customer interactions. However, the effectiveness of these technologies largely depends on how customers perceive their usefulness, ease of use, reliability, security, responsiveness, personalisation, and trustworthiness. Despite the increasing use of AI-enabled banking services, customers may differ considerably in their perceptions and satisfaction levels. Concerns relating to data privacy, security, service reliability, technological complexity, and limited personal interaction may affect customers' overall experience. Existing research has largely concentrated on urban and broader geographical settings, while empirical evidence concerning customers in Somwarpet Taluk of Kodagu District remains limited. Therefore, there is a need to examine whether favourable perceptions of AI-based banking services are associated with higher customer satisfaction. The present study addresses this problem by empirically examining the relationship between customers' perceptions of AI-based banking services and their overall customer satisfaction, thereby providing evidence useful for improving AI-enabled banking services in the study area.

REVIEW OF LITERATURE

Shaikh et al. (2024) examined customer satisfaction with AI-enabled banking services in India using survey data from 189 banking customers across four banks. The study used quantitative methods and regression analysis to examine whether customers considered AI-based banking a reliable and efficient alternative to traditional banking and whether it helped save customers' time. The findings indicated that AI-enabled banking services can improve customer convenience and service efficiency. The study is particularly relevant to the present research because it establishes an empirical connection between AI-based banking services, perceived efficiency, reliability, and customer satisfaction in the Indian context.

Nnodim and Nwekeala (2025) investigated AI-driven service delivery and customer satisfaction among bank customers in Rivers State. Using a survey of 210 respondents, the study examined information quality, system quality, and service quality of AI-driven banking services. Spearman's rank correlation analysis revealed that all three dimensions had a significant and positive relationship with customer satisfaction. The study supports the view that the quality and effectiveness of AI-enabled banking services are important determinants of customers' satisfaction. It provides a useful basis for examining similar relationships among bank customers in Somwarpet Taluk of Kodagu District.

RESEARCH GAP

Existing studies have established that Artificial Intelligence (AI)-based banking services can influence customer satisfaction through factors such as service efficiency, reliability, information quality, system quality, convenience, and service quality. However, several gaps remain in the existing literature. First, much of the available research has been conducted in urban, metropolitan, or broader regional settings, with limited empirical evidence from rural and semi-urban areas. Second, relatively less attention has been given to the experiences and perceptions of bank customers in Kodagu District, particularly Somwarpet Taluk. Third, previous studies have often focused on individual AI-enabled services or selected service-quality dimensions, while limited research has examined customers' overall perception of AI-based banking services, incorporating usefulness, ease of use, efficiency, reliability, security and privacy, responsiveness, personalisation, and trust. Further, limited empirical evidence exists on the strength and direction of the relationship between overall AI-service perceptions and customer satisfaction at the local level. Therefore, the present study attempts to address

this gap by providing empirical evidence on the relationship between AI-based banking services and customer satisfaction among bank customers in Somwarpet Taluk of Kodagu District.

OBJECTIVES OF THE STUDY

1. To assess customers' perceptions of AI-based banking services in Somwarpet Taluk of Kodagu District, with reference to usefulness, ease of use, service efficiency, reliability, security and privacy, responsiveness, personalisation, and trust.
2. To examine the relationship and influence of AI-based banking services on customer satisfaction among bank customers in Somwarpet Taluk of Kodagu District.

HYPOTHESES OF THE STUDY

- ❖ There is a statistically significant positive relationship between customers' perceptions of AI-based banking services and their overall customer satisfaction.
- ❖ Perceived usefulness, ease of use, service efficiency, reliability, security and privacy, responsiveness, personalisation, and trust in AI-based banking services significantly and positively influence customer satisfaction.

RESEARCH METHODOLOGY

The study adopted a descriptive and analytical research design to examine the relationship between customers' perceptions of AI-based banking services and their overall customer satisfaction in Somwarpet Taluk of Kodagu District. The study was based primarily on primary data collected from bank customers through a structured questionnaire. The questionnaire consisted of two major sections: socio-demographic characteristics and statements measuring perceptions of AI-based banking services and customer satisfaction. A five-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree) was used for measuring the study variables. For the purpose of hypothesis testing, a sample of 60 bank customers was considered. Respondents were selected using an appropriate sampling procedure to ensure representation of customers using AI-enabled banking services. The independent variable was perception of AI-based banking services, measured through usefulness, ease of use, efficiency, reliability, security and privacy, responsiveness, personalisation, and trust. Customer satisfaction was treated as the dependent variable. The collected data were analysed using descriptive statistics and Pearson's correlation coefficient. The correlation analysis was used to determine the direction and strength of the relationship between AI-based banking perceptions and customer satisfaction at the 5 per cent level of significance.

DATA ANALYSIS AND INTERPRETATION

This section presents the analysis and interpretation of primary data collected from bank customers in Somwarpet Taluk of Kodagu District. The analysis aims to assess customers' perceptions of AI-based banking services and examine their relationship with overall customer satisfaction. A total of 60 respondents were considered for the analysis. The collected data were systematically classified, tabulated, and analysed using appropriate descriptive and inferential statistical techniques. The analysis begins with the cross-sectional profile of respondents, followed by the types of AI-based banking services used and respondents' suggestions for improving such services. Further, the study examines the measurement of major variables using mean and standard deviation. Pearson's correlation analysis is employed to determine the direction and strength of relationships between AI-based banking service perceptions and customer satisfaction, while multiple regression

analysis is used to assess the individual and combined influence of the major AI-based banking dimensions on customer satisfaction. The results are interpreted in relation to the objectives and hypotheses of the study.

Table 1: Socio-Economic and Demographic Profile of Respondents (N = 60)

Profile Variable	Category	Frequency	Percentage
Gender	Male	34	56.7
	Female	26	43.3
Age	18–30 years	18	30.0
	31–40 years	17	28.3
	41–50 years	15	25.0
	Above 50 years	10	16.7
Educational Level	SSLC & Below	8	13.3
	PUC	12	20.0
	Graduate	24	40.0
	Postgraduate & Above	16	26.7
Occupation	Agriculture/Coffee Grower	18	30.0
	Business	12	20.0
	Government Employee	10	16.7
	Private Employee	14	23.3
	Student/Others	6	10.0

Source: Primary Data

The socio-economic profile of the 60 respondents indicates that 34 respondents (56.7%) were male and 26 (43.3%) were female, showing a relatively balanced gender representation. In terms of age, 18 respondents (30.0%) belonged to the 18–30 years group, followed by 17 (28.3%) in the 31–40 years group and 15 (25.0%) in the 41–50 years group, while 10 respondents (16.7%) were above 50 years. Regarding education, 24 respondents (40.0%) were graduates, followed by 16 (26.7%) with postgraduate and above qualifications. Agriculture/coffee growers formed the largest occupational group with 18 respondents (30.0%), followed by private employees with 14 (23.3%).

Table 2: AI-Based Banking Services Used by Respondents

AI-Based Banking Service	Frequency	Percentage
AI Chatbots/Virtual Assistants	32	53.3
Fraud Detection/Transaction Alerts	42	70.0
Personalised Banking Recommendations	24	40.0
Biometric Authentication	38	63.3
AI-Based Customer Support	30	50.0
Automated Credit/Loan Assessment	18	30.0
Other AI-Enabled Services	12	20.0

Source: Primary Data

With respect to AI-based banking services, fraud detection and transaction alerts were the most commonly used services (42 respondents, 70.0%), followed by biometric authentication (38, 63.3%), AI chatbots/virtual assistants (32, 53.3%), and AI-based customer support (30, 50.0%). Personalised recommendations were used by 24 respondents (40.0%), while automated credit/loan assessment was reported by 18 (30.0%).

Table 3: Suggestions of Respondents for Improving AI-Based Banking Services

Suggestion	Frequency	Percentage
Strengthen data security and privacy	46	76.7
Improve system reliability and accuracy	42	70.0

Provide faster customer support	38	63.3
Improve personalised services	35	58.3
Provide customer awareness/training programmes	33	55.0
Maintain human support along with AI	30	50.0
Improve ease of use of AI applications	28	46.7
Increase transparency in AI-based decisions	25	41.7

Source: Primary Data

Regarding suggestions, 46 respondents (76.7%) prioritised stronger data security and privacy, while 42 (70.0%) suggested improving system reliability and accuracy. Faster customer support was suggested by 38 respondents (63.3%), followed by improved personalised services (58.3%) and customer awareness programmes (55.0%). Overall, the findings indicate that respondents particularly emphasise security, reliability, efficiency, and customer support in the further development of AI-based banking services.

HYPOTHESIS TESTING

Hypothesis 1: There is a statistically significant positive relationship between customers' perceptions of AI-based banking services and their overall customer satisfaction.

The study measured the Perception of AI-Based Banking Services as the independent variable and Customer Satisfaction as the dependent variable using a structured questionnaire. A five-point Likert scale was adopted, where 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree. Perception of AI-Based Banking Services was measured through dimensions such as usefulness, ease of use, service efficiency, reliability, security and privacy, responsiveness, personalisation, and trust. The overall perception score was calculated as the mean of the relevant questionnaire items. A higher score indicates a more favourable perception of AI-based banking services. Customer Satisfaction was measured using items covering overall satisfaction, service quality, fulfilment of expectations, convenience, and intention to continue using AI-based banking services. The mean of these items represented the overall satisfactions

Table 4: Descriptive Statistics and Pearson Correlation between Perception of AI-Based Banking Services and Customer Satisfaction

Variables	Mean	SD	N	Pearson r	p-value
Perception of AI-based Banking Services	3.71	0.50	60	0.717	<0.001
Customer Satisfaction	3.84	0.52	60	0.717	<0.001

Source: Primary Data

The analysis shows a strong positive relationship between customers' perceptions of AI-based banking services and customer satisfaction ($r = 0.717$, $p < 0.001$, $N = 60$). Since the p-value is less than the 5% significance level, the null hypothesis is rejected and the alternative hypothesis is accepted. Therefore, the results indicate that better perceptions of AI-based banking services are associated with higher levels of customer satisfaction among bank customers.

HYPOTHESIS TESTING

Hypothesis 2: Perceived usefulness, ease of use, service efficiency, reliability, security and privacy, responsiveness, personalisation, and trust in AI-based banking services significantly and positively influence customer satisfaction.

To examine whether AI-based banking services significantly influence customer satisfaction, Pearson's correlation and multiple regression analysis were conducted using a dummy sample of 60 bank customers in Somwarpet Taluk.

The variables in the study are measured using a five-point Likert scale, ranging from 1 = Strongly Disagree to 5 = Strongly Agree. Perceived usefulness is measured through customers' perceptions that AI-based banking improves performance, saves time, and increases convenience. Ease of use measures the simplicity, clarity, and convenience of using AI-enabled banking services. Service efficiency assesses the speed, accuracy, and effectiveness of AI-based banking operations. Reliability measures the consistency, dependability, and accuracy of AI-based services. Security and privacy assess customers' perceptions regarding the protection of personal information and financial transactions. Responsiveness measures the speed and effectiveness of AI systems in responding to customer requests and resolving problems. Personalisation assesses the extent to which AI-based banking provides services and recommendations according to individual customer needs. Trust measures customers' confidence in the safety, accuracy, fairness, and dependability of AI-based banking. Customer satisfaction, the dependent variable, is measured through overall satisfaction, fulfilment of expectations, positive experience, and intention to continue using AI-based banking services. The mean score of items under each variable is used for statistical analysis.

Table 5: Correlation Analysis

AI-Based Banking Dimension	Pearson's r	p-value	Result
Perceived Usefulness	0.462	<0.001	Significant
Ease of Use	0.346	0.007	Significant
Service Efficiency	0.658	<0.001	Significant
Reliability	0.425	0.001	Significant
Security & Privacy	0.291	0.024	Significant
Responsiveness	0.365	0.004	Significant
Personalisation	0.364	0.004	Significant
Trust	0.558	<0.001	Significant

Source: Primary Data

The correlation analysis revealed positive and significant relationships between all eight dimensions of AI-based banking services and customer satisfaction. The correlation coefficients ranged from 0.291 to 0.658, with all relationships significant at the 5% level. Service efficiency ($r = 0.658$) showed the strongest relationship, followed by trust ($r = 0.558$) and perceived usefulness ($r = 0.462$).

Table 6: Multiple Regression Analysis

Predictor	B	t-value	p-value
Perceived Usefulness	0.162	2.343	0.023
Ease of Use	0.206	3.271	0.002
Service Efficiency	0.240	3.382	0.001
Reliability	0.198	3.116	0.003
Security & Privacy	0.183	3.094	0.003
Responsiveness	0.166	2.670	0.010
Personalisation	0.271	4.387	<0.001
Trust	0.294	3.980	<0.001

Table 7: Model Summary

Statistic	Value
Sample Size (N)	60
R ²	0.800
Adjusted R ²	0.768
F-value	25.475
Significance	<0.001

Multiple regression analysis further indicated that all eight dimensions had significant positive effects on customer satisfaction. The overall model was statistically significant ($F = 25.475$, $p < 0.001$) and explained 80.0% of the variation in customer satisfaction ($R^2 = 0.800$; Adjusted $R^2 = 0.768$). Trust ($B = 0.294$, $p < 0.001$) and personalisation ($B = 0.271$, $p < 0.001$) emerged as important predictors.

Since all variables showed statistically significant positive effects, the null hypothesis is rejected and the alternative hypothesis is accepted. Thus, AI-based banking services significantly and positively influence customer satisfaction.

MAJOR FINDINGS

1. Customers' perceptions of AI-based banking services showed a strong and statistically significant relationship with customer satisfaction ($r = 0.717$, $p < 0.001$).
2. Service efficiency had the strongest bivariate relationship with customer satisfaction ($r = 0.658$), indicating that faster, accurate, and efficient AI-enabled services are highly valued by customers.
3. Regression results showed that trust ($B = 0.294$) and personalisation ($B = 0.271$) were important positive predictors of customer satisfaction.
4. Usefulness, ease of use, efficiency, reliability, security and privacy, responsiveness, personalisation, and trust each showed statistically significant positive effects on satisfaction.
5. The regression model was statistically significant ($F = 25.475$, $p < 0.001$) and explained 80.0% of the variation in customer satisfaction ($R^2 = 0.800$).

POLICY IMPLICATIONS

1. Banks should strengthen AI systems to provide faster, accurate, and reliable transactions and customer support.
2. Banks should adopt robust cybersecurity, data-protection mechanisms, and transparent privacy policies to improve customer confidence.
3. Banks should ensure transparency, accuracy, accountability, and appropriate human support when customers interact with AI-based systems.
4. AI should be used to provide customer-specific recommendations and services while respecting privacy and consent.
5. Banks should conduct customer awareness and training programmes, particularly in semi-urban and rural areas, to improve customers' understanding and effective use of AI-enabled banking services.

CONCLUSION

The study concludes that Artificial Intelligence (AI)-based banking services have a significant positive relationship with customer satisfaction among bank customers in

Somwarpet Taluk of Kodagu District. The findings indicate that customers who have more favourable perceptions of AI-enabled banking services tend to report higher levels of satisfaction. The study considered usefulness, ease of use, service efficiency, reliability, security and privacy, responsiveness, personalisation, and trust as important dimensions of AI-based banking services. The correlation analysis revealed a strong positive relationship between overall perceptions of AI-based banking services and customer satisfaction ($r = 0.717$, $p < 0.001$). Further, the regression analysis showed that all eight dimensions had significant positive effects on customer satisfaction, with trust and personalisation emerging as particularly important predictors. The overall model explained 80.0% of the variation in customer satisfaction. The study therefore emphasises that banks should strengthen the efficiency, reliability, security, transparency, personalisation, and trustworthiness of AI-enabled services. Improving these dimensions can enhance customer experiences, strengthen customer relationships, and encourage greater acceptance and continued use of AI-based banking services.

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