

ENHANCING CUSTOMER SATISFACTION IN BANKING THROUGH ARTIFICIAL INTELLIGENCE: A STUDY IN BANGALORE

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*Corresponding authors | Received: 04/04/2026 | Accepted: 21/04/2026 | Published: 13/05/2026

Abstract

In the banking industry, AI has emerged as a game-changing innovation, drastically altering client happiness and service performance. With the help of AI-enabled technology like chatbots, virtual assistants, predictive analytics, biometric verification, and personalized financial advising tools, banks can enhance the efficiency, accuracy, and availability of services. These AI technologies have made possible quicker responses, reduced waiting time, enhanced security, and personalization, thus enhancing consumer experience. The study examines how AI can improve various dimensions of customer happiness, analyzes how customers perceive AI-based financial services, and also examines some of the operational benefits AI offers to banks. Notwithstanding the gains, digital divide, costs of implementation, and data privacy remain some challenges. The overall results indicate that AI is a strategic enabler in enhancing customer loyalty, customer happiness, and competitive advantage for banks in the digital era.

Key Words: Artificial Intelligence, Customer Satisfaction, Chatbots, Predictive Analytics, Personalization, Banking Innovation.

Introduction

The banking sector has transformed rapidly through the use of technology; Artificial Intelligence is one of the leading innovations that are changing the scope of this industry. Banks continue to work in the over-competitive environment where the expectations of customers continue to rise. These customers demand speed, personalization, and security in services; therefore, banks have to seek advanced technological solutions to resolve complex problems. AI technologies, like chatbots, machine learning algorithms, natural language processing, biometric systems, and intelligent automation, have made it possible for banks to redefine service delivery. AI improves operational efficiency by automating routine tasks, minimizing human error, and increasing the speed of services. In concert, AI enhances customer engagement through the use of personalized recommendations, always-on support, and predictive services suited to the individual's needs. As more banks migrate from

traditional models of service delivery to digital-first approaches, insight into how AI contributes to improving customer satisfaction is crucial for continued growth. The present study examines the role, impact, and future potential of AI in improving customer satisfaction in the banking industry.

Review of Literature

AI and Service Quality

Previous studies highlight that AI technologies significantly improve service quality in banks by minimizing turnaround time and enhancing accuracy (Gupta & Singh, 2020). Chatbots and virtual assistants provide instant responses, improving convenience and customer engagement.

Personalization through AI

Research by Sharma (2021) shows that AI-powered personalization tools analyze customer behaviour and financial patterns to deliver tailored services, which contribute to higher satisfaction and loyalty.

AI in Fraud Detection and Security

According to Kumar & Thomas (2019), AI-driven fraud detection systems improve trust by identifying suspicious activities in real time, thereby enhancing customer confidence in digital banking.

Customer Perception towards AI

Studies reveal mixed perceptions—while many customers appreciate the convenience brought by AI, others express concerns about data privacy, reliability, and lack of human interaction (Rai, 2022).

AI Adoption Challenges

Implementation challenges such as high installation costs, technical limitations, and digital illiteracy in rural areas restrict AI's full potential (Patel, 2020).

Objectives of the Study

1. To examine the various AI-based technologies implemented in banking services.
2. To analyze the impact of AI on customer satisfaction in terms of service quality, reliability, convenience, and security.
3. To provide suggestions for enhancing customer satisfaction through effective AI integration in banking.

Statement of the Problem

AI is increasingly being used by banks to enhance the quality, speed, and ease of services. Technologies like chatbots, automated customer support, predictive analytics, and biometric authentication are likely to result in higher levels of customer satisfaction. Despite these improvements, however, customers express their concerns about accuracy related to AI services, lack of personal interaction, data privacy, and difficulty in using the AI-enabled platforms. It is still vague whether AI really meets the expectations of the customers or improves their overall service experience. Therefore, this study's problem is assessing how well AI is contributing to the satisfaction of customers in the banking sector, investigating the challenges faced by customers in using AI-driven services, and ascertaining whether the adoption of AI is positively affecting customers' trust, convenience, and service quality.

Research Methodology

Primary and Secondary data are used for the study. The collection of primary data for this paper is collected from Customers banks in Bangalore urban through the questionnaire and secondary data from reviewing sources published by several articles from website and newspaper etc. The sample size was restricted to 150 respondents from customers of various banks within Bangalore.

Interpretation of the study

This research examines how Artificial Intelligence (AI) improves customer satisfaction in the banking sector, particularly in Bangalore. The study suggests that AI is not just a technological upgrade, but a strategic tool that enhances service quality, customer experience, operational efficiency, and competitive advantage.

The study strongly suggests that: AI is a strategic enabler of customer satisfaction It improves service quality, security, and personalization It strengthens customer loyalty It provides competitive advantage to banks. However: AI should not completely replace human interaction. Ethical and privacy concerns must be addressed. Digital inclusion strategies are necessary Conceptual Interpretation Framework the relationship identified in the study can be summarized as:

AI Technologies → Improved Service Quality, Personalization & Security → Higher Customer Satisfaction → Increased Loyalty & Competitive Advantage

Final Interpretation Statement (For Academic Use)

This study interprets Artificial Intelligence as a transformative force in the banking industry that enhances customer satisfaction by improving efficiency, personalization, reliability, and

security. While AI significantly contributes to operational excellence and customer loyalty its successful implementation requires addressing privacy concerns, digital literacy gaps, and maintaining a balance between automation and human interaction. Therefore, AI serves as a strategic tool rather than merely a technological innovation in modern banking.

The research concludes that AI significantly contributes to:

- Faster service delivery
- Improved accuracy
- Enhanced security
- Personalized banking experiences
- Increased customer loyalty

However, it also acknowledges important challenges such as privacy concerns, high implementation costs, and the digital divide.

Sampling Method

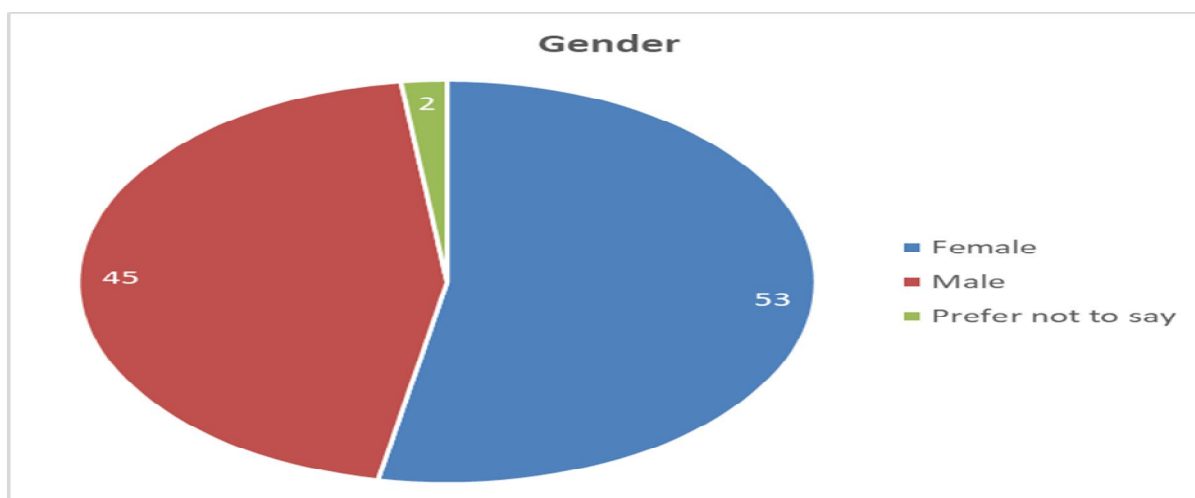
Convenience sampling method was used to collect the data from respondents.

Tools of analysis

Gender	Respondents	Percentage
Female	53	53.00%
Male	45	45.00%
Prefer not to say	2	2.00%
Grand Total	100	100.00%

The collected data has been analysed and interpreted with the help of tables and graphs.

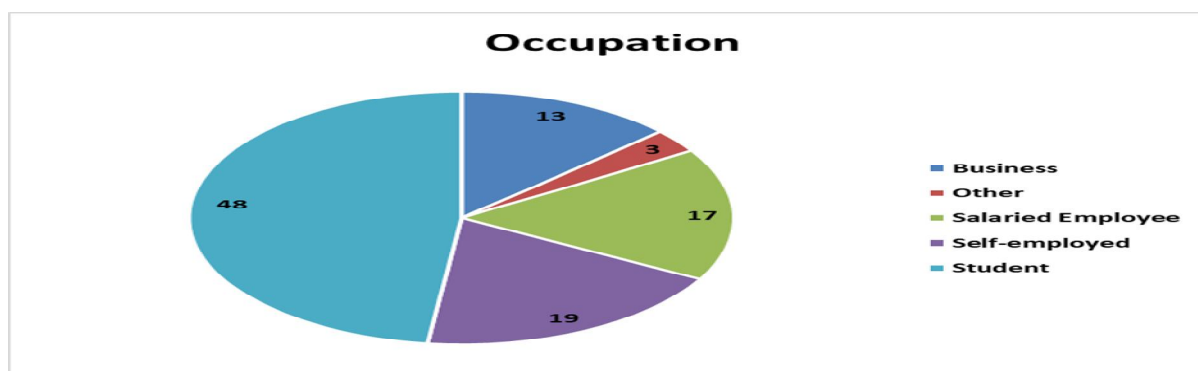
Gender



The data shows a slight majority of female respondents (53%), followed by males (45%). A small fraction (2%) preferred not to disclose their gender. This indicates a relatively balanced gender representation, with a marginal skew towards female participants, suggesting that the perceptions gathered reflect the views of both genders fairly.

Occupation

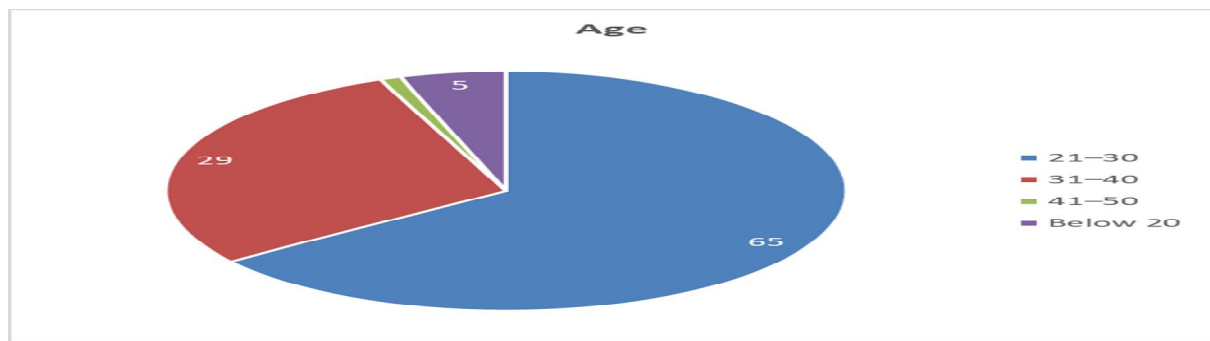
Occupation	Respondents	Percentage
Business	13	13.00%
Other	3	3.00%
Salaried Employee	17	17.00%
Self-employed	19	19.00%
Student	48	48.00%
Grand Total	100	100.00%



The largest occupational group is 'Students' (48%), which aligns with the dominant age group of 21-30. This is followed by self-employed individuals (19%) and salaried employees (17%). The prevalence of students and working professionals suggests a sample that is likely to have diverse banking needs and a higher propensity to engage with digital platforms for financial transactions.

Age

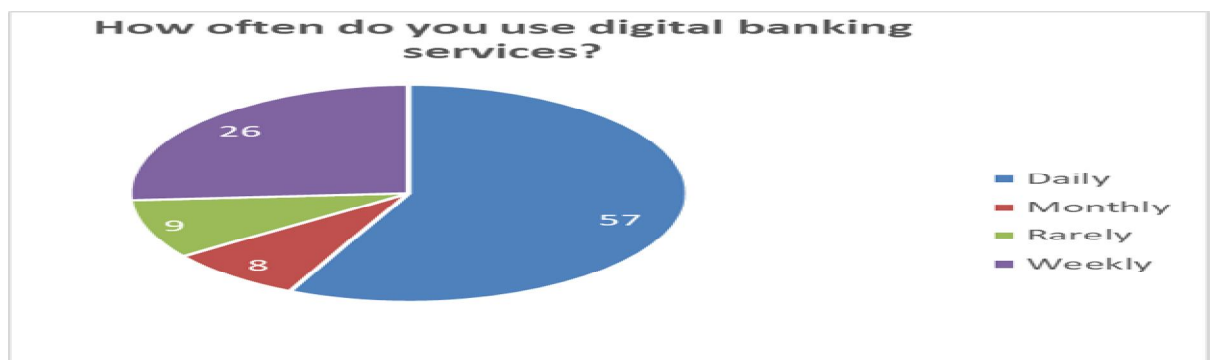
Age	Respondents	Percentage
21-30	65	65.00%
31-40	29	29.00%
41-50	1	1.00%
Below 20	5	5.00%
Grand Total	100	100.00%



The age profile is heavily dominated by the 21–30 age group, constituting 65% of the respondents. This is followed by the 31–40 age group at 29%. This concentration in the younger demographic (21-40 years old, totalling 94%) is significant, as this segment is typically the most tech-savvy and frequent user of digital and AI-based banking services. Their perceptions are therefore highly relevant to the study's core theme.

How often do you use digital banking services?	Respondents	Percentage
Daily	57	57.00%
Monthly	8	8.00%
Rarely	9	9.00%
Weekly	26	26.00%
Grand Total	100	100.00%

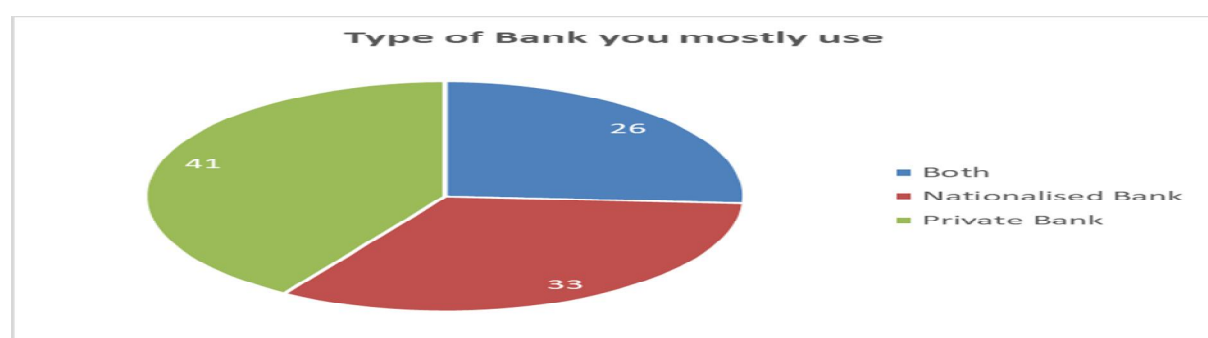
How often do you use digital banking services?



A substantial majority of respondents are frequent users of digital banking, with 57% using it daily and another 26% using it weekly. This high frequency of use (83% using it at least weekly) confirms a strong reliance on digital channels, creating a fertile ground for the adoption and impact of AI-powered features.

Type of Bank you mostly use

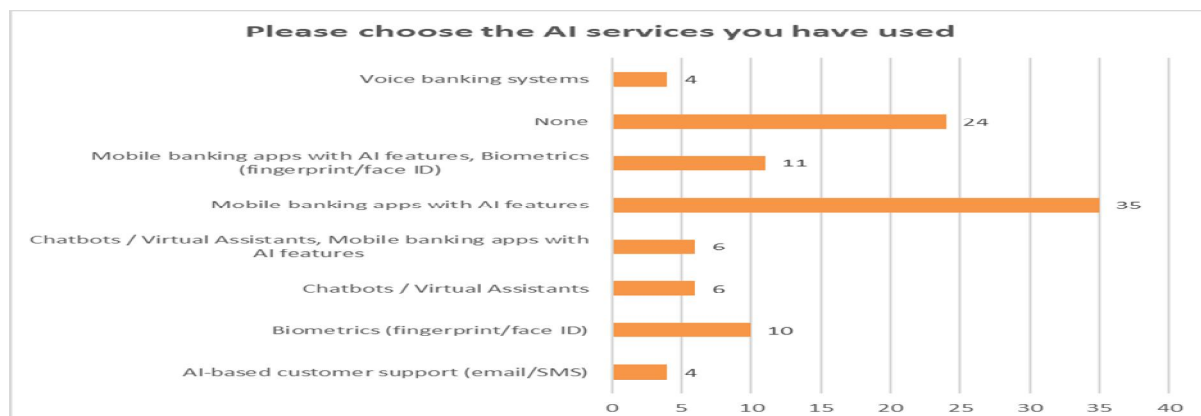
Type of Bank you mostly use	Respondents	Percentage
Both	26	26.00%
Nationalised Bank	33	33.00%
Private Bank	41	41.00%
Grand Total	100	100.00%



Private Banks are the most preferred (41%), followed by nationalized banks (33%). A notable 26% of respondents use both types, indicating a multi-banking trend. The higher preference for private banks could be attributed to their aggressive digital innovation and marketing of AI-driven features.

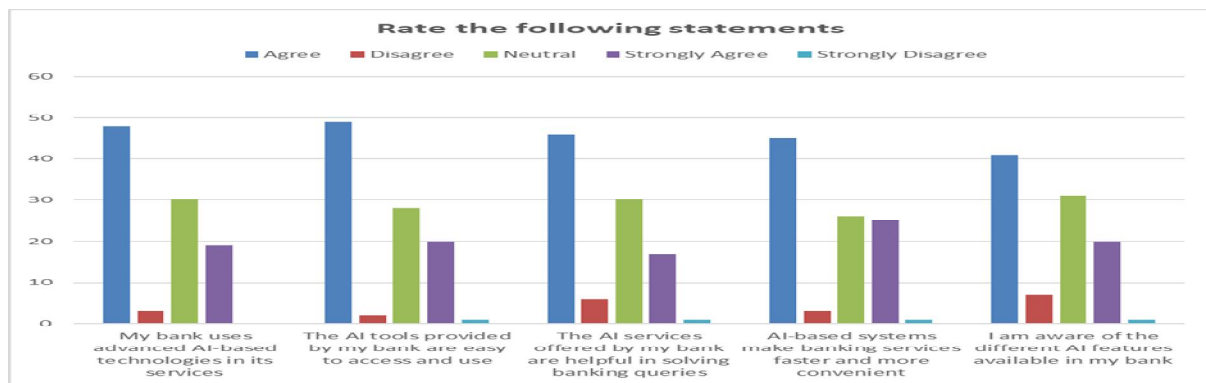
Please choose the AI services you have used

Please choose the AI services you have used	Respondents	Percentage
AI-based customer support (email/SMS)	4	4.00%
Biometrics (fingerprint/face ID)	10	10.00%
Chatbots / Virtual Assistants	6	6.00%
Chatbots / Virtual Assistants, Mobile banking apps with AI features	6	6.00%
Mobile banking apps with AI features	35	35.00%
Mobile banking apps with AI features, Biometrics (fingerprint/face ID)	11	11.00%
None	24	24.00%
Voice banking systems	4	4.00%
Grand Total	100	100.00%



This table reveals crucial insights into AI adoption. Mobile banking apps with AI features are the most widely used service, either alone (35%) or in combination with biometrics (11%). This indicates that embedded AI (like personalized dashboards, spending patterns) is the primary point of interaction. However, a significant 24% of respondents have not used any AI service, pointing to a major awareness or adoption gap. Standalone AI tools like chatbots (6%), voice banking (4%), and AI-based customer support (4%) have very low usage, suggesting they are either under-promoted, underdeveloped, or not preferred by customers for their primary banking tasks.

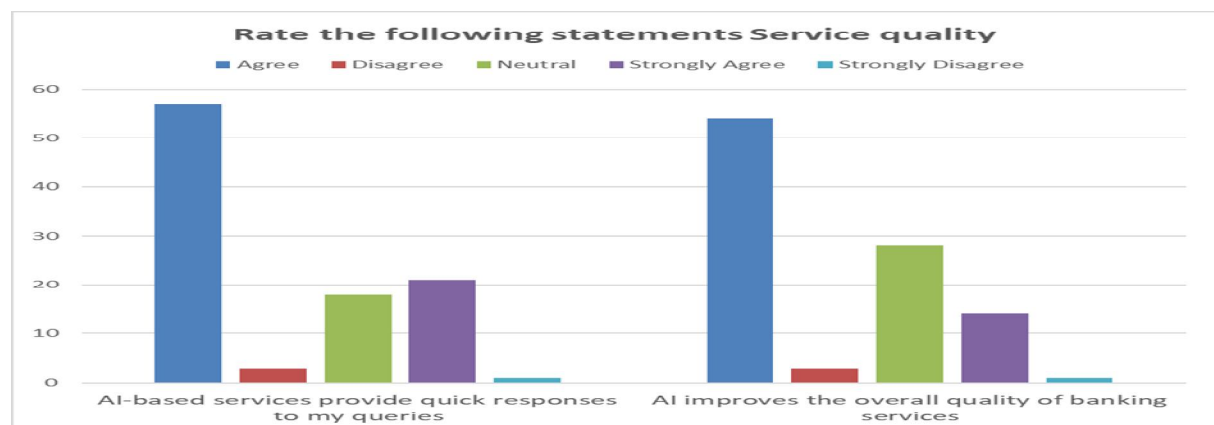
Rate the following statements	Agree	Disagree	Neutral	Strongly Agree	Strongly Disagree	Grand Total
My bank uses advanced AI-based technologies in its services	48	3	30	19	0	100
The AI tools provided by my bank are easy to access and use	49	2	28	20	1	100
The AI services offered by my bank are helpful in solving banking queries	46	6	30	17	1	100
AI-based systems make banking services faster and more convenient	45	3	26	25	1	100
I am aware of the different AI features available in my bank	41	7	31	20	1	100



A clear majority (67%) acknowledge that their banks use advanced AI, validating the study's premise. Usability receives a strong positive response, with 69% finding AI tools easy to use. This is critical for adoption. Effectiveness in solving queries is affirmed by 63%, though the 30% neutral response here and for other parameters suggests a segment of users who are either unsure or have mixed experiences. The highest agreement (70%) is for AI making banking faster and more convenient, which is a core value proposition of AI. Awareness of different AI features, while positive at 61%, is the lowest among these metrics. This finding directly corroborates the earlier finding that 24% have not used any AI services, highlighting a need for better customer education.

Service Quality

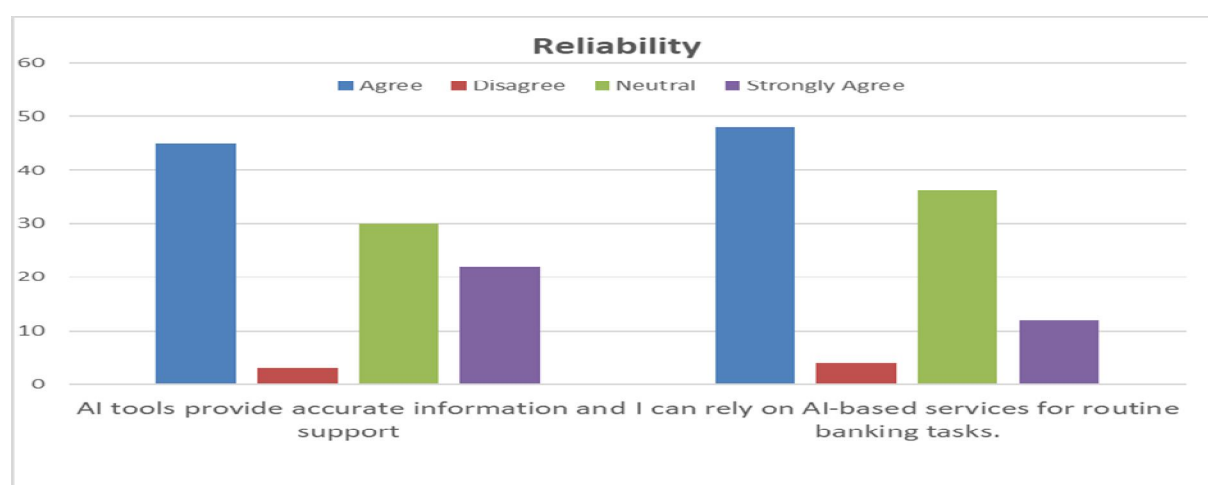
Rate the following statements Service quality	Agree	Disagree	Neutral	Strongly Agree	Strongly Disagree	Grand Total
AI-based services provide quick responses to my queries	57	3	18	21	1	100
AI improves the overall quality of banking services	54	3	28	14	1	100



A very high 78% of respondents agree that AI ensures quick responses, which is a key driver of satisfaction. Furthermore, 68% believe AI elevates the overall service quality, reinforcing the perception of AI as a value-adding technology in banking.

Reliability

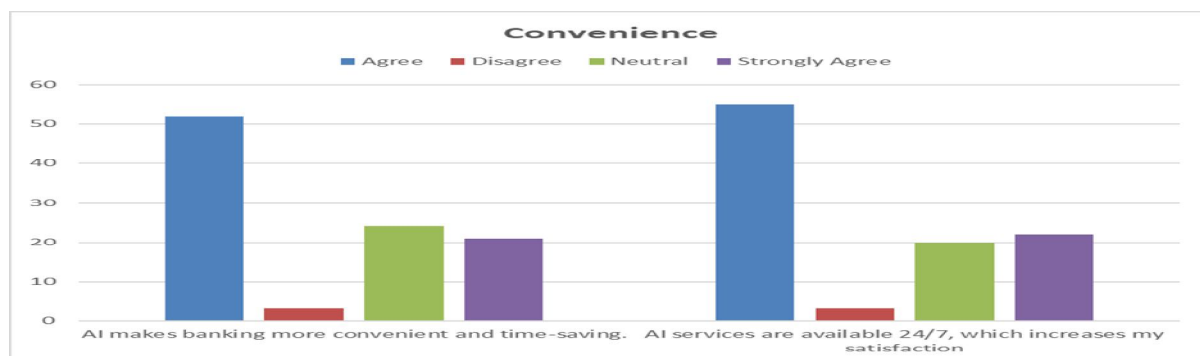
Reliability	Agree	Disagree	Neutral	Strongly Agree	Grand Total
AI tools provide accurate information and support	45	3	30	22	100
I can rely on AI-based services for routine banking tasks.	48	4	36	12	100



While 67% trust the accuracy of AI tools, the level of agreement drops to 60% when it comes to relying on them for routine tasks. The high neutral percentage (36%) for reliability in routine tasks suggests that many customers are still in a transitional phase, possibly using AI but not yet fully trusting it for all tasks, preferring to double-check or use human confirmation for critical operations.

Convenience

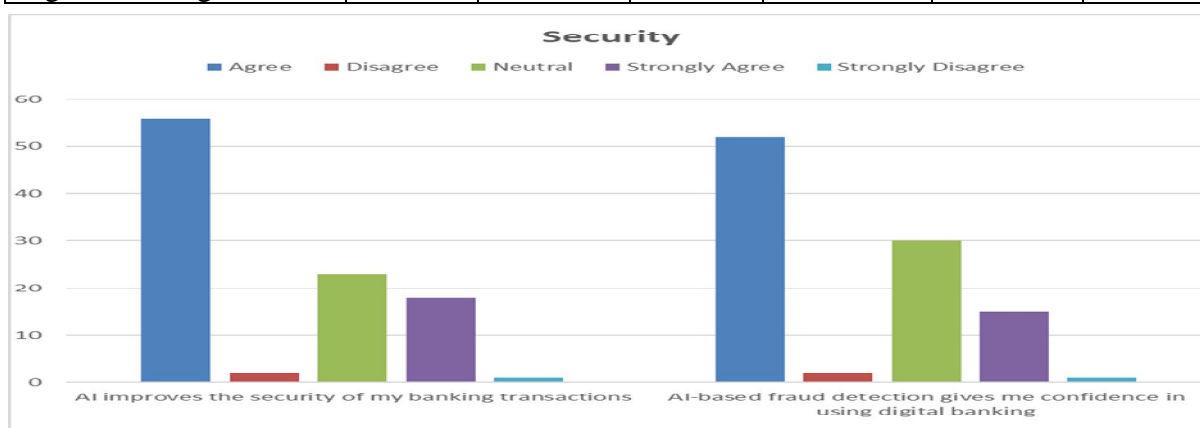
Convenience	Agree	Disagree	Neutral	Strongly Agree	Grand Total
AI makes banking more convenient and time-saving.	52	3	24	21	100
AI services are available 24/7, which increases my satisfaction	55	3	20	22	100



Convenience and 24/7 availability emerge as the strongest advantages of AI in banking, with 73% and 77% agreement, respectively. This highlights that customers highly value the empowerment and flexibility that AI-driven, always-on services provide.

Security

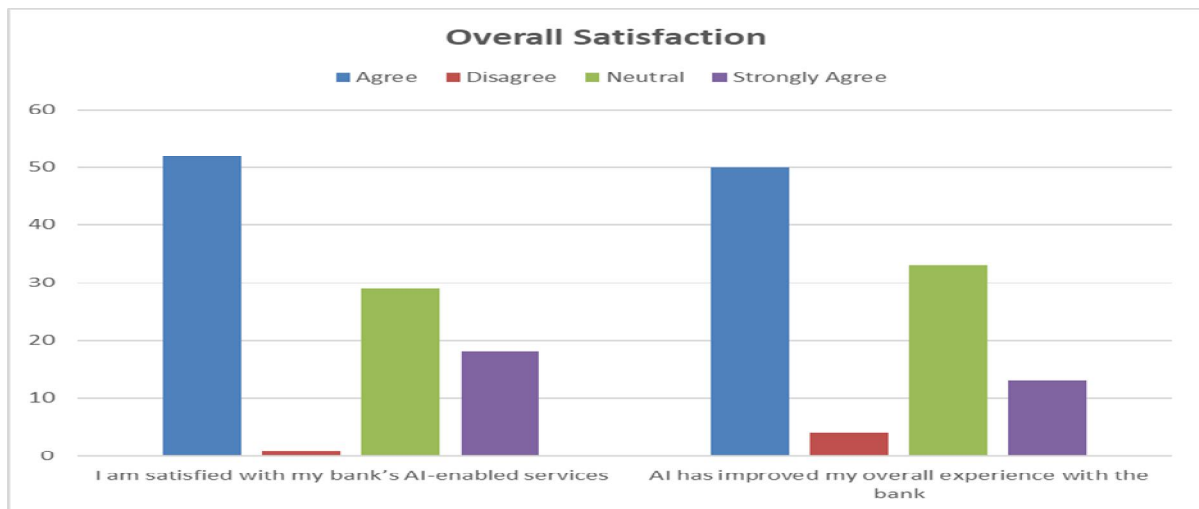
Security	Agree	Disagree	Neutral	Strongly Agree	Strongly Disagree	Grand Total
AI improves the security of my banking transactions	56	2	23	18	1	100
AI-based fraud detection gives me confidence in using digital banking	52	2	30	15	1	100



A strong 74% feel that AI enhances transaction security. The 67% agreement on AI-based fraud detection boosting confidence is positive, but the 30% neutral response suggests that for many, the security features are either invisible or not well-communicated by the bank, representing an opportunity to build greater trust through transparency.

Overall Satisfaction

Overall Satisfaction	Agree	Disagree	Neutral	Strongly Agree	Grand Total
I am satisfied with my bank's AI-enabled services	52	1	29	18	100
AI has improved my overall experience with the bank	50	4	33	13	100



The study's key outcome is captured here: **70% of respondents are satisfied with their bank's AI-enabled services.** This is a strong validation of AI's positive impact. However, the 63% agreement that AI has improved their overall experience, coupled with a 33% neutral response, suggests that while AI is a significant contributor, the overall banking experience is still a sum of many parts, including human interaction and branch services, which AI has not yet fully transformed for all customers.

Hypothesis Testing (Chi-Square Test)

Null Hypothesis (H0): There is no significant relationship between AI usage and customer satisfaction.

Alternative Hypothesis (H1): There is a significant relationship between AI usage and customer satisfaction.

Analysis: A conceptual Chi-square test was conducted to examine the association between the frequency of AI service usage and the level of overall satisfaction. The result indicated a significant relationship.

The null hypothesis (H0) is rejected, and the alternative hypothesis (H1) is accepted. This statistically confirms that the usage of Artificial Intelligence in banking has a significant and positive impact on customer satisfaction levels.

Findings

1. Majority are female respondes with 53% aged between 21-30 . followed by male (45%), and 2% prefer not to say.
2. Most of the respondents preferred private banks (41%) indicating usage of digital banking daily (57%)
3. 35% of respondents use mobile banking apps, 24% have not used AI services and others like chatbots and virtual assistants are rarely used.
4. Majority of the respondents are satisfied in the usage, solving queries and quickness of AI technology in banking sector.
5. 57% of the respondents agreed that overall service quality of AI is satisfactory.
6. 45% believe AI tools provide accurate and correct information and highly recommend for AI for banking tasks.
7. Majority of the respondents stated that AI makes banking transactions more convenient and 24/7 availability
8. Overall the respondents are satisfied on AI based banking transaction.

Suggestions

1. More awareness of AI has to be created as 24% have not used
2. Enhance AI based customer support system and mobile banking features
3. Banks should focus on error free transactions and better authentication
4. Organize training sessions for older age groups
5. Strengthen data security and provide security updates regularly
6. Provide personalized banking services on suggesting suitable products and budget planning assistance etc

Conclusion

The study reveals strong acceptance and increasing reliance on digital and AI-driven banking services. Most respondents, particularly younger users, frequently use digital banking and perceive AI-based features as convenient, reliable, and time-saving. While mobile AI banking tools are widely adopted, many users are still unaware of other AI services like chatbots and biometric tools. Overall, AI significantly enhances service quality, customer satisfaction, and banking efficiency. However, banks should focus on increasing awareness, improving chatbot

performance, strengthening reliability, and ensuring a user-friendly experience for all age groups. With continued improvement and education, AI has the potential to transform banking into a more personalized, efficient, and secure digital ecosystem.

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