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167

A study of customer satisfaction in using banking services through Artificial Intelligence (AI) in India

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Abstract

Purpose – This article examines customer satisfaction in using banking services through Artificial Intelligence (AI) in India. It addresses two questions: first, will customers perceive AI technology as a reliable and efficient alternative to traditional banking practices; second, will AI save customers' time.

Design/methodology/approach – The quantitative research method based on regression analysis models was adopted for hypothesis testing, with data collected from a survey of 189 banking customers from four banks, i.e., State Bank of India, Axis Bank, Punjab National Bank, and HDFC Bank in India.

Findings – AI improves banking customers' experiences by making banking more accessible and enjoyable. Satisfied customers are quick to use cutting-edge AI tools. However, human service is more satisfying than digital service. AI has great potential but works alongside humans rather than replacing them. Even though AI's novel architecture is helpful, human bank tellers are still needed in enhancing customer satisfaction.

Originality/value – AI's integration in Indian banking, propelled by customer satisfaction, foresees a transformative landscape. This study uncovers AI's role in saving time and improving customer satisfaction. While AI revolutionizes financial processes, its harmonious coexistence with human expertise emphasizes personalized and efficient services. This study provides insights for optimal AI utilization in shaping the future of banking.

Keywords Artificial intelligence, Banking industry, Customer satisfaction, Customer behavior, Financial practice, India

Paper type Research paper

Introduction

The emergence of Artificial Intelligence (AI) marks a significant technological milestone, with its evolution reaching a point where AI has become a pivotal force in various sectors, particularly in the banking and financial technology domain. Contrary to being a novel concept, AI has a substantial history but has recently witnessed a transformative surge in technological advancements, amplifying its applications in the banking sector (De-Arteaga *et al.*, 2018; Kumar *et al.*, 2021).

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The focus of this paper is on India. The potential of AI extends beyond being a mere corporate productivity enhancer; if strategically applied, it can bolster India's economy and foster environmental improvements, thereby elevating the overall standard of living (Akter *et al.*, 2020). The transformative power of AI is particularly evident in its ability to reshape competitive advantages and enhance customer perceptions of industry dynamics. Specifically delving into the banking sector, India's most advanced industry (Harfouche *et al.*, 2019; Saba *et al.*, 2018), AI emerges as a game-changer. Rather than presenting a broad overview, the research underscores the nuanced impacts of AI on banking operations and customer experiences. The conventional approach of deploying AI for routine and exceptional tasks has revolutionized banking practices, shifting from traditional deposit promotions to personalized products and services (Bhalerao *et al.*, 2022).

Banks have embraced AI to streamline customer relationship management and enhance decision-making processes in technical markets. The precision offered by AI aids in identifying optimal replacement or substitute goods, fostering a forward-thinking approach to decision-making. In essence, AI has not only revolutionized manual tasks but has redefined the dynamics of the banking sector, emphasizing the critical role of satisfied and loyal customers in delivering superior goods and services.

AI systems leverage machine learning algorithms to continually adapt and enhance their capabilities. Although many solutions and concepts are still concealed, improved data handling and analysis suggest that the investment may be worthwhile. AI in finance uses complex algorithms and machine learning to perform human tasks. Banks use Natural Language Processing, predictive analytics to improve customer interactions, customize services, prevent fraud, and make better decisions. This banking industry investigation examines AI because it can personalize assistance, speed up business processes, and improve financial planning.

Banks need precision for many daily tasks. Trading stocks and bonds, managing finances, and maintaining properties are examples. Bedford *et al.* (2018) say AI solutions can accelerate business growth and impact. Companies can quickly customize solutions using strategic AI. Financial institutions use artificial neural networks to detect fraud, corruption, and questionable charges. Finance, accounting, stock investing, portfolio optimization, and property management have used AI. AI monitors user behavior for abnormalities to reduce fraud, corruption, and financial crimes. Customers increasingly need to carry debit cards and POS terminals instead of large amount of cash. This advanced technology has changed some financial habits.

AI-powered trading platforms predict supply and demand curves and values. Knowledge gaps are reduced by AI robots, which improves markets. AI will change bankers' careers. Banks need to communicate more with customers about credit decisions. AI evaluates online applications. Data-driven AI reviews potential borrowers faster, more accurately, cost-effectively, and thoroughly, improving education and specialized options. AI classifies low-credit borrowers as high- or low-risk. AI systems are impartial. Bias in computers is unlikely.

Chatbots simplify customer service and reduce contact center stress. They show bank account balances, upcoming payments, and transaction history. Several AI apps offer customized financial advice (Kumar *et al.*, 2023). The sophisticated tools track income, vital spending, and personal budgets to provide a personalized financial strategy and intelligent direction. Instead of bank tellers, automation tools can answer our questions and guide us. To reduce the number of bank tellers, Bank of America, Chase, and Wells Fargo have mobile apps that remind customers of upcoming payments, help them budget, and facilitate other direct bank interactions (Kauflin, 2019). The job market creates and eliminates jobs. Hi-tech, value-generating AI can automate mundane tasks (Mallah Boustani, 2020).

Technologists seem to earn more than mathematicians. Financial technology and AI require skilled IT staff from the bank. AI reduces bank employee-customer interactions,

requiring more tech and digital workers. Robots are automating financial firms' jobs to cut costs, increase output, and improve customer service. AI makes banking automation easier because robots work tirelessly. Intelligent character recognition automates thousands of tasks, saving time and money. Applications, agreements, and software can verify, report, analyze, extract paper, and process data. High-volume automation reduces human error and frees financial institution resources. To compete and thrive in a more competitive market, banks will become more competent, operate at lower costs, and offer more specialized, personalized services. AI projects give banks a competitive edge and improve trading standards. These features are not new, but cheap data storage and administration tools have made them more accessible.

It is imperative to recognize that while AI is not a novel concept, its recent technological advancements and profound impact on the banking sector warrant focused attention. In the evolving landscape of Indian banking, customer loyalty to traditional institutions remains resilient amidst new trends. This article delves into financial entities' strategic integration of AI, aiming to fortify their competitive edge and usher in a transformative era focused on enhancing customer experiences. As banks strategically navigate the complexities of AI adoption, this research scrutinizes the challenges and opportunities that arise, primarily focusing on understanding how AI positively impacts customer satisfaction. The article offers an exploration of the intricate dynamics, shedding light on the transformative journey undertaken by clients as they experience the benefits of AI integration in banking services.

In light of India's recent adoption of AI tools in banking, a noticeable shift in customer behavior towards traditional banking services over fintech alternatives has emerged. This study examines the ongoing paradigm shift in Indian banking, where several banks are considering integrating AI to enhance operational quality and maintain industry leadership. Specifically, this study evaluates how AI influences customer behavior and relationships in the Indian banking sector.

Literature review

This literature review discusses the impact of AI on customer satisfaction in the Indian banking sector. It begins by examining customer behavior and customer engagement in financial services, highlighting the role of traditional marketing and personalized services in fostering lasting relationships with customers. It then delves into the importance of trust and the human touch in banking services, emphasizing the need to balance tradition and innovation in the ever-evolving economic landscape.

Customer insights

In financial services, customers often find comfort in the familiar features of a product, leading to a somewhat passive and repetitive approach. This tendency is akin to revisiting well-known vendors or opting for standard product types, a phenomenon observed by Fornell *et al.* (1996) and Brown (1952) in exploring market and social conditions influencing routine behavior. Surprisingly, as per Dabholkar *et al.* (1996), these customers and contractual parties may not always act strictly logically. The inertia to explore new options and change routines, as revealed by research is influenced by a lack of motivation to seek alternatives. While reducing the perceived "cost" of purchases, this status-quo purchasing behavior may expose customers to unforeseen losses, highlighting the need for a more strategic and proactive approach.

From a more human-centered perspective, it becomes apparent that customer engagement thrives on control, participation, and interaction (Kumar *et al.*, 2024). Contrary to mainstream economic theories, the authors argue that customers do not always possess the freedom,

information, and incentives to make optimal decisions. The context of choice and the type of goods being considered play a pivotal role in shaping decision-making processes, as suggested by Etzioni (1988). In this dynamic landscape, customers may opt for what Macneil (1978, 1980) terms "discrete" agreements – agreements with a clear beginning, short duration, and end. These agreements allow for optional or desired communication after the sale, fostering a collaborative relationship. Guided by rational behavior, customers strategically choose arrangements that best align with the service or product, maximizing agency and minimizing transaction fees. However, not all customers are ready to engage in financial transactions. Some may not resonate with the product, need a better understanding, or feel uneasy about purchasing. Traditional marketing, rooted in education and inspiration, is crucial in reaching out to these individuals, encouraging them to explore alternatives, and recognizing the value offered.

Complexity and unpredictability in specific financial products may make customers dependent on bankers for guidance. This dependency, while reducing uncertainty, can lead to a decrease in service trust. Macneil (1978) and Williamson (1975, 1985) note that different types of contracts – active, rational, or repetitive-passive – do not structure commerce uniformly. In navigating this complexity, customers often rely on heuristics when faced with ambiguity, emphasizing the importance of trustworthy information to inform decisions. The human touch in banking services and recognizing individual needs and preferences remains crucial in fostering lasting and meaningful relationships between customers and financial institutions. This partnership, built on trust, seeks to protect customers from unscrupulous service providers, ensuring a balance between tradition and innovation in the ever-evolving economic landscape.

Innovation in financial practice

The value generation in today's landscape unfolds by transforming a concept or technology into a commercial reality. True innovation lies in the ability to recreate an idea at an affordable cost while meeting genuine market demands.

In the realm of financial technology, new investment tools require a set of skills that go beyond traditional economic practices. Financial engineers now need expertise in planning, optimization, and modeling to navigate the complexities of modern finance. Unlike conventional approaches, the evolution of economic dynamics becomes a crucial aspect that demands recognition and learning. Verghese (1990) emphasizes the need to scrutinize modern finance's fundamental elements, evaluating its outcomes and costs impartially. Drawing insights from the Indian financial landscape, his study underscores the significance of understanding and adapting to economic changes.

The interplay of risk and organizational factors, both internal and external, is a driving force in modern finance, as highlighted by Marshall and Bansal (1992). Their exploration delves into how banking changes and evolving risks contribute to the acceleration of contemporary finance. Miller (1992) delves into the intricacies of modern finance and banking, shedding light on the essential roles played by these practices in fostering economic development and business processes. His research focuses on innovative financing methods that not only lower capital costs and mitigate financial risk but also enhance the efficiency of financial intermediaries, ultimately contributing to an improved quality of life.

Levine (1997) adds that most empirical studies indicate a positive correlation between financial development and economic growth. In the context of developing countries, economic growth and corporate reorganization necessitate advancements in financial practices. Tufano's (2003) analysis of financial innovator profits underscores the impact of recent releases, indicating that pioneering financial institutions from 1974 to 1986 could only

increase prices after introducing replicable products. This approach reduces long-term costs compared to competitors and addresses market inefficiencies. The potential benefits extend to market risk-sharing and offer advantages for agencies.

In the era of modern technology in financial practice, the focus remains on achieving progress to meet financial goals. Integrating cutting-edge tools and methods enhances efficiency and allows for creative solutions to longstanding challenges. The avoidance of taxes and banking reforms, as facilitated by modern finance, adds another layer to the transformative impact of technology in reshaping financial landscapes. Ultimately, customer appreciation for progress becomes a driving force in achieving financial objectives in this technologically advanced era.

The rationale of the study

The impetus for this research is the revolutionary potential of modern technology, specifically AI in banking, and the necessity for a thorough knowledge of how this change affects customer satisfaction in the banking industry.

This research aims to bridge the gap between AI technological advances and their real-world effects on customers and understand the complex financial sector changes by investigating the variables shown in Table 1. It recognizes that AI can change customer-bank interactions and industry skills beyond efficiency. This study addresses the need to understand and address the broader effects of AI deployment in banking.

The theoretical framework will name and classify the critical situational factors that contribute to the stated issue. It provides a reasonable explanation of the relationships between the dependent and independent variables. The framework consists of schematic diagrams based on the literature on concepts and problem statements.

Research methodology

This study explored several issues or problems from the conceptual perspective outlined. The hypotheses focused on testing the assumptions regarding the relationships between banking and banking customers in the age of AI, specifically examining the influence and causal effects.

According to post-service feedback and Net Promoter Scores (NPS) (Al-Araj *et al.*, 2022; Indriasari *et al.*, 2019), using AI technology in banking led to a substantial 15 percent increase in customer satisfaction. It has been shown through a well-structured customer survey that customers of financial institutions are typically satisfied with both the digital and human help they receive (Indriasari *et al.*, 2019; Al-Araj *et al.*, 2022). It is predicted that customers' transaction times will improve by an average of 25 percent due to the adoption of AI in financial institutions. A comprehensive measurement of the average time spent on typical banking operations before and after the incorporation of AI is needed to back this up (Lee, 2001; Cao, 2020; Lee and Chen, 2022). Predictive investment suggestions and individualized financial planning are just two examples of AI-enabled financial innovations expected to spark a notable 20 percent increase in client engagement with cutting-edge banking services.

Independent Variables	Dependent Variables
Amalgamation of financial processes through Artificial Intelligence	Acceptance by customers Degree of customer satisfaction Enhancing customer's time efficiency

Source: By authors

Table 1.
Variables in this study

Careful study of workforce data from before and after the introduction of AI will be used to gauge the success of this change (Al-Araj *et al.*, 2022; Indriasari *et al.*, 2019).

Hypotheses

H1. The use of AI technology in banking will increase customer satisfaction.

H2. Customers of financial institutions are equally satisfied with both digital and personal customer support.

H3. Artificial Intelligence (AI) in financial institutions saves clients' time.

Primary data collected by the researchers consisted of numerical information since this was deemed necessary for evaluating the relevant hypotheses. A random sample of the bank's clientele was assumed to possess a certain level of expertise in AI, which served as the foundation for the methodology. It is not uncommon for individuals to have some familiarity with AI principles without even realizing it. It deems necessary to have a comprehensive understanding to ensure an appropriate approach to addressing the queries.

Data collection and methods

The study applied surveys to address the research objectives aimed at customers of banks. The authors developed the survey using a Likert scale and randomly selected participants. The participants' identities as bank customers have been verified to ensure accurate attribution.

Sample size justification: One hundred eighty-nine bank customers from four banks, i.e., State Bank of India, Axis Bank, Punjab National Bank, and HDFC Bank, were chosen based on statistical power, practicality, and representativeness. The survey was designed to gather insights into customers' perceptions of AI in banking and its impact on customer satisfaction. Questions were structured using a Likert scale, ranging from "strongly disagree" to "strongly agree", to assess participants' attitudes and opinions. Sample questions included: "To what extent do you believe AI technology has improved your banking experience?" and "How satisfied are you with the level of personalized service offered by AI-powered banking solutions?"

Sampling process: Random sampling was employed to ensure a representative sample of bank customers. Participants were randomly selected from the customer databases of the State Bank of India, Axis Bank, Punjab National Bank, and HDFC Bank. Inclusion criteria included being a current customer of one of the selected banks and having experience with AI-powered banking services. Exclusion criteria included individuals who did not meet the inclusion criteria or could not participate due to language barriers or cognitive limitations.

Participants: Bank customers were selected from those having personal or business ties to financial institutions. This method represented customer experiences across banks, age groupings, and socioeconomic backgrounds. The banks were selected based on the number of branches, customers, financial turnover, and technology adoption, i.e., State Bank of India, Axis Bank, Punjab National Bank, and HDFC Bank.

Participants' expertise: Participants were asked to rate their understanding of AI technology on a scale from "novice" to "expert" as part of the survey. This information was used to segment the data and analyze differences in responses based on expertise level. Specifically, responses were grouped into categories such as "novice", "intermediate", and "expert"; and analyses were conducted to compare responses across these groups.

Established scales to validate the constructs: Established scales such as the SERVQUAL Scale (Parasuraman *et al.*, 1988); Customer Satisfaction Index (CSI) (Fornell *et al.*, 1996);

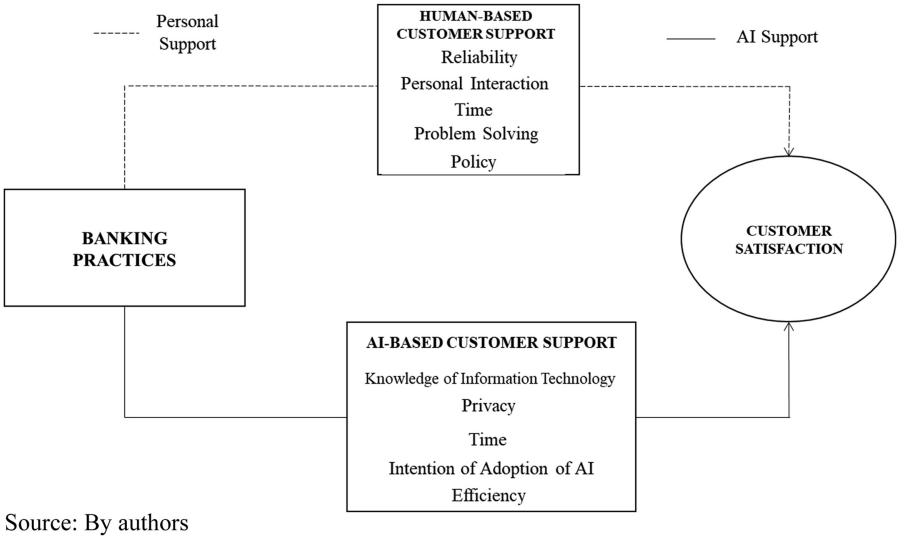
E-S-QUAL Scale (Parasuraman *et al.*, 2005); Customer Support Satisfaction Scale (Millan and Esteban, 2004); Retail Service Quality Scale (Dabholkar *et al.*, 1996) were adapted for use in this study. Modifications were made to ensure relevance to the banking sector and the specific context of AI technology. For example, questions from the SERVQUAL Scale related to service quality were adapted to assess the quality of AI-powered banking services, while questions from the CSI were modified to measure customer satisfaction with AI technology in banking.

Analysis techniques

The analysis presented in this study is based on data derived from survey conducted among customers engaging with both "Human-Based Customer Support" and "AI-Based Customer Support" within the banking sector. The data collection involved a Likert scale ranging from 1 to 5, where 1 represents low satisfaction and 5 represents high satisfaction. The study encompasses various dimensions, including reliability, personal interaction, time efficiency, problem-solving, policy, knowledge of information technology, privacy, intention to adopt AI, efficiency, banking practices, and overall customer satisfaction.

As per the above model for testing presented in Figure 1, the analysis is carried out and shown in the tables below, where the analysis shows customer satisfaction across various customer service interactions. This analysis examines "Human-Based Customer" interactions, which include traditional customer support, and "AI-Based Customer Support", which shows the growing role of AI in customer service. This study aims to identify strengths and weaknesses in these interactions. This will be achieved using mean values to measure satisfaction in each dimension.

The analysis illuminates client satisfaction with various interactions in Table 2. Reliability has a mean value of 3.13 in "Human-Based Customer", indicating moderate satisfaction. The mean personal interaction score of 3.77 shows primarily positive comments. The mean "time" is 3.69, indicating high efficiency. The mean value of "Problem Solving" is 3.23, indicating moderate pleasure. Policy-related components show significant discontent, with a mean score of 3.11. Knowledge of Information Technology scores 3.47 in "AI-Based Customer Support",



Source: By authors

Figure 1.
Model of the study

Items	Variables	Mean	Median	Mode	Standard Deviation	Minimum	Maximum
HUMAN-BASED CUSTOMER SUPPORT	Reliability	3.13	3.21	4	0.33	1.25	4.25
	Personal Interaction	3.77	3.6	4	0.61	1.75	5
	Time	3.69	3.5	3	0.23	1	5
	Problem Solving	3.23	3.33	3	0.37	1.75	5
	Policy	3.11	3.65	3	0.66	1.25	5
AI-BASED CUSTOMER SUPPORT	Knowledge of Information Technology	3.47	3.87	3	0.57	1	5
	Privacy	3.59	3.55	4	0.66	1	5
	Time	3.67	3.89	4	0.81	1	5
	Intention of Adoption of AI	3.21	3.48	4	0.33	1	5
	Efficiency	3.33	3.5	4	0.67	1	5
BANKING PRACTICES	-	3.66	3.66	4	0.78	1.25	5
CUSTOMER SATISFACTION	-	3.34	3.25	4	0.65	1.25	5

Table 2.
Descriptive statistics

Source: By authors

indicating moderate satisfaction. Privacy is well-rated, averaging 3.59. Time has a slightly higher mean score of 3.67 and diverse responses. The mean score of 3.21 indicates reasonable interest in AI technology adoption. AI technology is efficient, scoring 3.33 on average. Banking practices are moderately satisfying at 3.66. Customer satisfaction is modest across all variables, averaging 3.34.

Within this section, the authors present the outcomes of the reliability analysis that was carried out on the diverse items and variables employed within the research study. The table displays the Cronbach's alpha coefficients for each set of items and variables utilized, offering insights into the reliability of the measurement instruments.

In Table 3, Cronbach's alpha values indicate the study's measurement scales' internal consistency reliability. This study's Cronbach's alpha coefficients range from 0.827 to 0.911,

Items	Variables	Cronbach's Alpha
HUMAN-BASED CUSTOMER	Reliability	0.869
	Personal Interaction	0.883
	Time	0.837
	Problem Solving	0.881
	Policy	0.827
AI-BASED CUSTOMER SUPPORT	Knowledge of Information Technology	0.907
	Privacy	0.911
	Time	0.893
	Intention of Adoption of AI	0.907
	Efficiency	0.886
BANKING PRACTICES	-	0.907
CUSTOMER SATISFACTION	-	0.902

Table 3.
Test of reliability

Source: By authors

exceeding the 0.7 threshold generally considered satisfactory. The observed values show a consistent measurement of "Human-Based Customer", "AI-Based Customer Support", "Banking Practices", and "Customer Satisfaction". This implies that the variables within each construct are reliable and provide a solid foundation for drawing significant conclusions from the study's data.

This analysis compares "Human-Based Support" as model 1 and "AI-Based Support" as model 2 on "Customer Satisfaction". Linear regression models were used to examine how these support methods affect customer satisfaction. This study shows the coefficients and statistical significance of observed relationships in tables. These findings will help us understand how human- and AI-based customer support systems improve customer satisfaction.

Interpretation for Model 1:
Linear regression analysis shows how "Human-Based Support" affects "Customer Satisfaction" in Table 4. The intercept (constant) value of 0.317 predicts satisfaction without "Human-Based Support". To increase "Human-Based Support", one unit must increase "Customer Satisfaction". A standardized coefficient (Beta) of 0.779 indicates a strong positive effect. The t-value of 379.224 ($p < 0.001$) shows that "Human-Based Support" significantly improves customer satisfaction.

Interpretation for Model 2:
"Customer Satisfaction" analysis yields valuable insights in Table 5. The constant (intercept) of 0.408 indicates customer satisfaction without "AI-Based Support". The predictor variable "AI-Based Support" has a significant unstandardized coefficient (B) of 0.891, meaning that one unit of AI support increases customer satisfaction by 0.891 units. The standardized coefficient (Beta) of 0.837 shows AI support's positive impact. Statistical significance (t-value $= 442.81$; $p < 0.001$) highlights the importance of AI-Based support in enhancing customer satisfaction.

In summary, the linear regression models show that "Human-Based Support" and "AI-Based Support" improve "Customer Satisfaction". The highly significant t-values indicate statistical robustness, while the standardized coefficients (Beta) indicate relationship magnitude.

Findings and results

Table 6 assesses the reliability of customers' schemes, confirming its measurement consistency and reliability.

Table 6 evaluates customers. The Customers' scheme has 22 items. When assessing customer aspects, these items' high Cronbach's alpha coefficient of 0.904 suggests strong

• Dependent Variable: Customer Satisfaction

Predictor Variable	Unstandardized Coefficients (B)	Standard Error (Std. Error)	Standardized Coefficient (Beta)	t-Value	Significance (Sig.)
(Constant)	0.317	0.027		6.778	
Human Based Support	0.793	0.003	0.779	379.224	0.000

Source: By authors

Table 4. Model 1: Human-Based Support: A linear regression analysis

internal consistency and reliability. This study shows that higher alpha values indicate measurement consistency, making the scheme reliable.

Hypothesis 1: Using AI technology in banking will increase customer satisfaction. Customers are more likely to welcome the arrival of novel AI technologies if they are entirely comfortable with and pleased with the technology already available.

Table 7 shows the degree to which customers are satisfied with the technological means by which banks provide financial services (ATMs, online applications). Therefore, most technology users are pleased with their experiences as the scale ranges from 1 to 5, and the average obtained is 4.03 > 3.5. This shows they are open to integrating AI technology that can improve the efficiency of their financial dealings.

Hypothesis 2: Customers of financial institutions are equally satisfied with digital and personal customer support. Initially, the authors tested the hypothesis mentioned above to determine whether modern AI technology installed at a bank could resolve client issues as effectively as the involvement of a human customer support manager. Table 8 shows that the calculated mean is 2.22 < 3.5. Thus, we agree with the null hypothesis and discard the alternative that AI cannot substitute customer support agents. AI excels in structuring data and improving the efficiency of digital operations. However, a moderate positive correlation (0.387) between the two support methods suggests that there may be some correlation.

Table 5.
Model 2: AI-Based Support: a linear regression analysis

• Dependent Variable: Satisfaction					
Predictor Variable	Unstandardized Coefficients (B)	Standard Error (Std. Error)	Standardized Coefficient (Beta)	t-Value	Significance (Sig.)
(Constant)	0.408	0.039		7.937	
AI-Based Support	0.891	0.011	0.837	442.81	0.000

Source: By authors

Table 6.
A test of reliability for the schemes

Schematic	No. of items	Cronbach's alpha
Customers	22	0.904

Source: By authors

Table 7.
One-sample t-test of AI technology and customer satisfaction

	N	Mean	Std. Deviation	Std. Error Mean
customer satisfaction	262	4.03	1.067	0.11972

	Test Value = 3.5					
					95% Confidence Interval of the Difference	
	t	df	Sig. (2-tailed)	Mean Difference	Lower	Upper
customer satisfaction	4.427	261	0.000	0.5300	0.0223	1.0377

Source: By authors

		Mean	N	Std. Deviation	Std. Error Mean	Correlation
Pair 1	AI-Based	4.227	260	1.0379	0.2214	0.387*
	Human-Based	2.007	260	1.2273	0.3554	

	Paired Differences					t	df	Sig. (2 tailed test)
				95% Confidence Interval of the Difference				
	Mean	Std. Deviation	Std. Error Mean	Lower	Upper			
AI-Based & Human-Based	2.22	0.9978	0.01687	1.459	2.981	131.5945	259	0.227

Note: * level of significance at 5%
Source: By authors

Table 8. Two-sample t-test of AI-Based and Human-Based support

Hypothesis 3: Artificial Intelligence (AI) in financial institutions saves time. Using AI in financial institutions can help save a significant amount of time. Table 9 shows the mean score was 4.03, higher than 3.5 and indicates statistical significance ($p < 0.05$). Hence, the authors reject the null hypothesis and accept the alternative. Financing operations might speed up significantly with the help of AI technology.

Figure 2 illustrates the comprehensive flow chart for AI and human-based Support for Customer Retention and Loyalty. This flow chart delineates the orchestrated interaction between AI and human interventions in the context of customer retention and loyalty strategies.

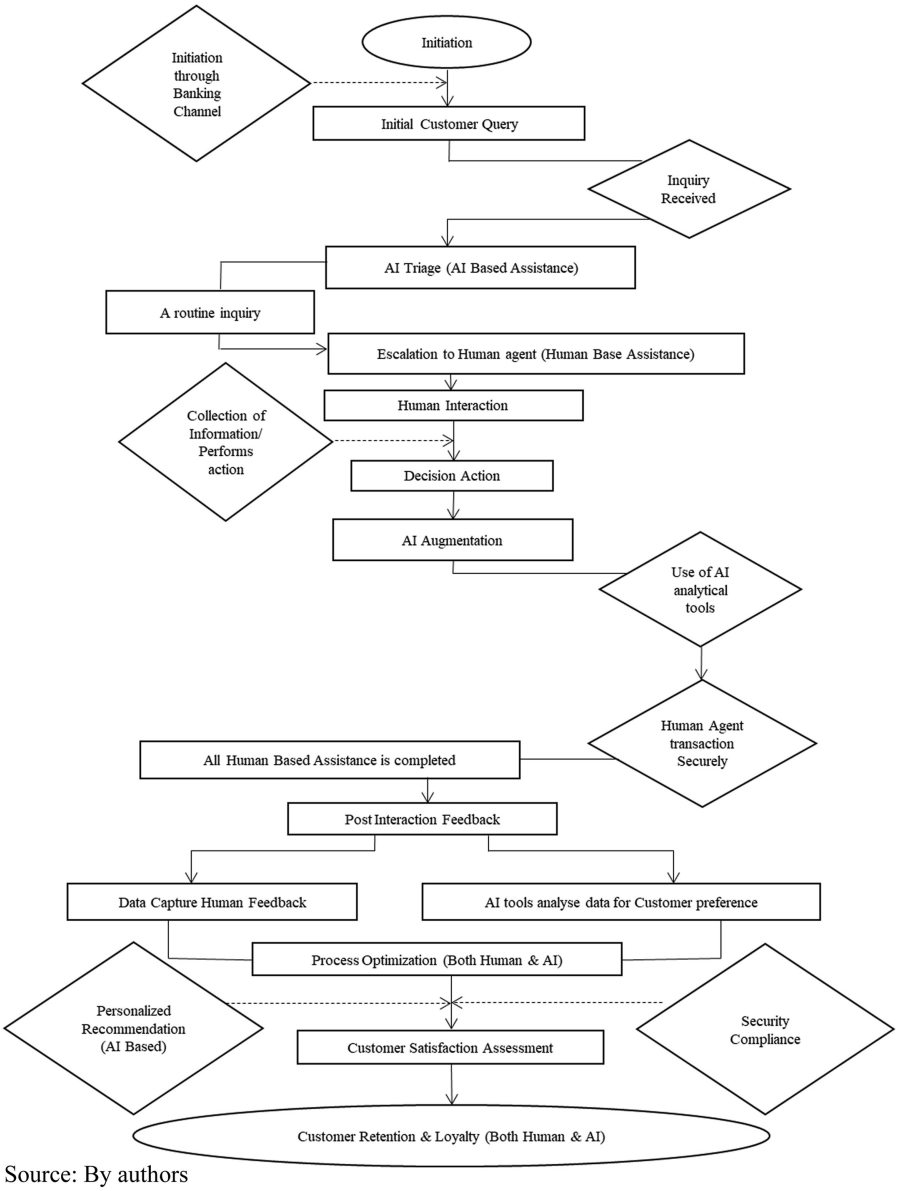
The significance of this flow chart lies in its ability to elucidate the symbiotic relationship between advanced AI technologies and human expertise in fostering lasting customer relationships. By seamlessly integrating the precision of AI-driven analytics and the nuanced understanding of human interactions, the devised approach aims to enhance customer satisfaction, tailor personalized experiences, and ultimately contribute to sustained loyalty. This collaborative strategy acknowledges the strengths of AI and human elements, underscoring the importance of a synergistic approach in today's dynamic and customer-centric business landscape.

	N	Mean	Std. Deviation	Std. Error Mean
Time	262	4.03	1.1173	0.1973

	Test Value = 3.5					
					95% Confidence Interval of the Difference	
	t	df	Sig. (2-tailed)	Mean Difference	Lower	Upper
Time	2.6862	261	0.000	0.5300	0.0303	1.0297

Source: By authors

Table 9. One-sample t-test of AI technology and time savings



Source: By authors

Figure 2.
Flow chart for AI & Human-Based Support for customer retention and loyalty

Conclusion

AI technology in banking improves customer satisfaction. Familiarity, contentment, and AI acceptance are linked. Satisfied customers are more open to new AI technologies. On the contrary, digital and human customer services are not equally satisfying. AI's strength is in

organizing data and improving digital processes. Supporting evidence showing AI cannot replace human customer care workers. However, it can be confirmed that AI in banking sectors saves time. The research shows that AI accelerates financial processes with a mean score over the threshold and a statistically significant p-value. In addition, AI advancements will revolutionize banking activities. The observed average surpassing the threshold and low p-value support the idea that AI technology would eliminate arduous chores and improve efficiency.

AI is transforming India's banking sector, which has vast growth potential. While AI presents opportunities in fraud detection, claims management, pricing, risk management, and customer relations, there is a critical emphasis on minimizing risks associated with its development. The Indian banking sector is leveraging AI to improve customer satisfaction, reduce costs, and enhance efficiency. AI is viewed as a technical assistant rather than a replacement for human expertise. The focus is on providing high-quality, personalized services efficiently. Despite technological advancements, human roles remain indispensable in building relationships, shaping strategies, leading staff, and fostering development. However, financial institutions are still exploring optimal ways to apply AI effectively. It is crucial for the banks to balance AI's efficiency with customers' need for human interaction.

While this study is focusing on India, more research is suggested to be conducted in other countries for comparison. Future studies may also introduce a SERVQ model as a third scheme, combining hard and soft instruments to evaluate AI adoption. Comparisons between smaller and larger banks in the same developing country may shed light on the adoption of AI by different institutions. The authors propose to investigate the relationship between the customers' willingness to embrace AI solutions and the types of banks, for example, whether the impact of AI differs across large and small banks, and whether AI benefits individual and corporate customers alike.

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