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AI-POWERED LOAN SERVICES: A CUSTOMER-CENTRIC ANALYSIS

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Abstract

The infusion of Artificial Intelligence (AI) in the banking industry has transformed the service delivery, especially the process of loan disbursement. In this context, the present study intends to explore the customers' awareness, perception, and willingness to adopt AI-powered loan services. To fulfill the objectives, a descriptive cross-sectional research design was employed, and the required data was collected using a structured questionnaire from customers of commercial banks. The findings revealed a moderate level of awareness and positive perceptions among customers about AI-powered loan services. Both awareness and perception were found to have significant positive contributions towards their willingness to adopt AI-powered loan services. The findings also suggest various practical implications for banks and other financial service providers to ensure the successful implementation of technological advances in the banking sector.

Keywords: *AI-powered loan services, customer awareness, customer perception, and willingness to adopt AI*

Introduction

The financial services sector has undergone rapid and striking changes in recent years, propelled by innovations in digital technologies (Malini & Menon, 2017). Notably, Artificial Intelligence (AI) emerges as a defining element transforming traditional banking practices (Noreen et al., 2023). In commercial banking, AI is increasingly applied in customer service automation, credit risk assessment, fraud detection, etc., especially in the loan disbursement process (Pamarthi, 2024). With the aid of natural language processing, machine learning algorithms, and data analytics, AI aims to make the loan disbursement more accurate, efficient,

and accessible (Mary et al., 2024). Even so, the success of such advanced technological systems depends not just on their technological excellence but also on the customers' awareness, confidence, and trust in such advanced systems.

Loan disbursement is a vital, most sensitive, and critical function of any bank, as it has implications from the standpoint of credit availability, financial inclusion, and customer trust. Traditionally, the disbursement process involved face-to-face interactions, manual verification of documents, and personalized assessments, ultimately a human-centric function. With the advent of AI, this process has offered significant advantages, such as data-driven decision-making, quicker approvals, and scalable loan management (Alhaddad, 2018). But this transition also raises important concerns regarding transparency, data privacy, security, and customer acceptance (Pamarthi, 2024). So, an AI-powered system may fall short if the target customers lack adequate awareness, positive perception, and willingness to adopt such systems.

The customers' awareness of AI-powered loan services refers to the degree to which they are informed of the AI's application in loan disbursement. It consists of their familiarity with AI's usage in assessment of creditworthiness, document verification, assistance of AI chatbots, the potential benefits and concerns, etc., in loan processing. Inadequate awareness of a customer may result in reluctance to use such loan services, even if superior benefits are assured. Conversely, a well-informed customer will be more likely to engage in such loan services. The perception of a customer about AI-powered loan services includes the beliefs regarding comfort level in AI-powered systems, accuracy of automated decisions, concerns about data privacy and security, etc. Positive perception may drive adoption, and a negative one can hinder acceptance. A customer's willingness to adopt an AI-powered loan service conveys the behavioural intention to apply for AI-powered loan services soon. If the customers are well-informed and hold a positive perception about AI-powered loan services, they are more likely to adopt them (Noreen et al.,

2023). Conversely, inadequate awareness and doubts about its efficiency and effectiveness may hinder the adoption (Noreen et al., 2023).

In light of this, a customer-centric analysis of AI-powered loan disbursement will be crucial, as it aids in understanding its effectiveness and sustainability in the real world. Despite the growing application of AI in various facets of financial services, the academic research from a customer perspective, especially in the function of loan disbursement, remains limited. Most studies have focused on implementation challenges, techno logical architecture, or predictive accuracy from the organization's viewpoint. The customers' voice, their participation, and trust remain unexplored. Hence, this study intends to explore this gap by analysing the customers' awareness, perception, and willingness to adopt AI-powered loan services. Given this backdrop, this study aims to fulfill the following objectives:

1. To assess the customers' awareness of AI-powered loan services in commercial banks.
2. To examine the customer perception towards AI-powered loan services in commercial banks.
3. To analyse the influence of customer awareness and perception on the willingness to adopt AI-powered loan services.

By examining the given objectives, this study adopts a comprehensive perspective on the role of customers in enabling AI's adoption in commercial banking. The findings of this study will aid banks and other financial service providers in optimizing their AI initiatives. In addition, this study contributes to the literature on AI's adoption in banking services and guides future researchers in this discipline.

Review of Literature

Artificial intelligence, or AI, is not a recent concept; it has its origin in ancient Egyptian and Greek myths (Mouneswari, 2024). AI plays a vital role in transforming today's world into a more innovative and efficient one. During the last few years, advancements in AI have transformed the role of traditional service

providers, including the banking sector (Liu et al., 2025). The revolution put forward by AI altered the banking sector in a novel way (Alhaddad, 2018). One of such advancement is the AI-powered loan services (Liu et al., 2025). Banks are using AI-enabled loan recommendation services (AI-LRS) in loan processing (Liu et al., 2025). AI-LRS analyses borrowers' information, such as their loan amount, credit history, repayment plan, and other relevant information, and processes it through automated algorithms to suggest personalized loan offers for each (Liu et al., 2025). Alhaddad (2018) provides an understanding that AI transformed the banking sector by elevating fraud detection, automating document processing, & streamlining credit management. They highlight the ability of AI to detect fraud patterns with higher levels of accuracy, speed, and flexibility, surpassing the traditional methods by analysing a vast volume of data. AI enables banks to identify the borrower risk, automate the loan pricing and underwriting, and ensure credit access to the overlooked population. By integrating Natural Language Processing (NLP), Optical Character Recognition (OCR), and Robotic Process Automation (RPA), AI facilitates intelligent document processing. Mary et al. (2024) opined that AI is considered a promising tool for microfinance institutions to improve their decision-making process by leveraging big data analytics, advanced algorithms, and machine learning models. Rehman et al., (2025) shows that AI has heightened the first-time approvals for borrowers, enhanced loan access to women, and elevated the disbursement of microloans in rural areas. Singh & Sinha (2024) identified the role of AI-based chatbots in enhancing the customer experience. AI-based chatbots act as a financial advisor, offering financial guidance tailored to the customers' financial history, assisting with queries on loans, debt management, credit scores, and investments, and offering alerts regarding important financial dates. Rao (2022) says that AI enables banks to secure an increasing market share, enhance profit levels, and serve a wide volume of customers, and it is becoming critical to success. AI ensures additional value for customers, partners, and the bank as it gives a clear competitive edge for the banks

through its implementation at a mass scale (Rao, 2022). Nowadays, leading banks, including HDFC, ICICI, AXIS Bank, SBI, and HSBC, have adopted AI to enhance their operational efficiency and customer service (Mouneswari, 2024).

In short, the AI-based future of banking ensures reduced transaction costs, enables efficient customer service, customizes, personalizes, and expands financial product offerings, provides better investment insights, ensures credit access to the underserved, facilitates efficient decision-making, and increases banks' productivity and profitability (Alhaddad, 2018). Even so, there exist some challenges such as data privacy and security matters, ethical and regulatory concerns, algorithmic biases, difficulties for institutions with resource constraints, and last but not least, customers' hesitation to adopt AI-powered loan services (Rehman et al., 2025). Despite the increasing interest and adoption of AI in banking services, a very few studies have undertaken a customer centric analysis of AI-powered loan services in commercial banks. Hence, this study intends to fill this gap.

Hypotheses

Ho1: Awareness of AI-powered loan services positively influences the willingness to adopt them.

Ho2: Perception of AI-powered loan services positively influences the willingness to adopt them.

Research Methodology

The present study adopted a descriptive and cross-sectional research design to analyse the customer perspective on AI-powered loan disbursement in commercial banks in Malappuram district, Kerala. The data required for the study were collected from both primary and secondary sources. The primary data was obtained by employing a structured, self-developed scale. All the scale items used to measure awareness, perception, and willingness to adopt AI-powered loan services secured a Cronbach's alpha value greater than 0.7, ensuring internal consistency (Hair et al., 2019). Further to ensure the construct validity, an exploratory factor analysis was performed. All the scales secured the Kaiser-Meyer-Olkin (KMO) measure

above 0.90 and a significant Bartlett's Test of Sphericity ($p<0.001$), ensuring excellent sampling adequacy and suitability for factor analysis. All the scale items exhibited factor loadings above 0.70 and formed a single-factor structure, explaining over 70% of total variance. Hence, confirming the construct validity and unidimension ality of all the scales. In addition to the primary data, secondary data were obtained from various scholarly articles, books, reports, and websites. The collected data was analysed by using IBM SPSS Statistics.

Results and Discussions

Table 1. Socio-Demographic Profile of Respondents

Variable	Category	Frequency	%
Age	Below 25 years	41	41
	25-35 years	38	38
	35-45 years	13	13
	45-55 years	5	5
	Above 55 years	3	3
Gender	Male	43	43
	Female	57	57
Educational qualification	Up to SSLC	9	9
	Plus two	11	11
	UG	34	34
	PG	30	30
	Others	16	16
Occupation	Student	42	42
	Salaried employee	34	34
	Self employed	12	12
	Retired	5	5
	Others	7	7
Monthly income	Less than Rs. 20000	59	59
	Rs.20000-Rs. 40000	16	16
	Rs.40000-Rs. 60000	13	13
	Rs.60000-Rs. 80000	5	5
	Above Rs. 80000	7	7
Area of residence	Urban	30	30
	Semi urban	34	34
	Rural	36	36

Source: Author's compilation from primary data

Table 1 depicts the respondents' socio-demographic profile. The majority of the respondents are young, with 41% falling in the age group of below 25 years, 38% in 25-35 years, 13% in 35-45 years, 5% in 45-55 years, and the remaining 3% in the above 55 years. Regarding the gender of respondents, a slightly higher majority is constituted by females (57%), compared to males (43%). Concerning educational qualification, 34% secured an undergraduate degree, 30% a postgraduate degree, and the remaining up to SSLC (9%), plus two (11%), and others (16%), suggesting a well-educated respondent profile. Occupationally, the majority are students (42%) and salaried employees (34%) and the remaining are self-employed (12%), retired (5%), and other categories (7%). The monthly income shows a majority (59%) being in the less than Rs.20000 category, followed by 25% above Rs.40000 and 16% Rs.20000-Rs.40000, indicating the early career stage of respondents. The area of residence indicated a well-balanced geographical representation of 30% from urban areas, 34% from semi-urban areas, and the remaining 36% from rural areas.

Table 2. Awareness of AI-Powered Loan Services

Statement	Mean	SD
Some of the banks use AI-powered systems in their loan disbursement.	3.75	1.234
The information regarding AI-powered loan services is received through customer service representatives, advertisements, banks' websites, friends, etc.	3.79	1.233
AI can be used to assess the creditworthiness and risk for loan disbursement.	3.74	1.330
AI can aid the document verification in loan processing.	3.73	1.270
AI can detect the risk elements and fraud in loan applications.	3.61	1.363

In loan approval and denial, AI can make wiser decisions.	3.65	1.274
AI-powered systems can deliver personalized loan offers.	3.70	1.227
AI chatbots can assist in loan-related enquiries.	3.58	1.304
AI-powered loan services have the potential benefits such as efficiency and speed.	3.61	1.363
AI-powered loan services have concerns regarding data privacy and security.	3.60	1.287

Source: Author's compilation from primary data

Table 2 presents the data regarding respondents' awareness of AI-powered loan services. The results indicate a good level of awareness of AI-powered loan services, with mean values above average. The respondents were found to have the highest awareness regarding the receipt of information from various sources, such as banks' websites, service representatives, and advertisements (mean=3.79). A reasonable level of awareness was secured regarding the use of AI in the assessment of credit worthiness (mean=3.74), document verification (mean=3.73), personalized loan offers (mean=3.70), and loan disbursement (mean=3.75). Even so, in comparison to the above result, respondents indicated a lower awareness regarding the assistance of AI chatbots in loan-related inquiries (mean=3.58), AI's role in fraud detection (mean=3.61), and potential concerns in privacy and security (mean=3.60). The reported standard deviations across the statements, ranging from 1.23 to 1.36, indicate a moderate variation in responses. Overall, the respondents were found to be aware of AI-powered loan services.

Table 3. Perception of AI-Powered Loan Services

Statement	Mean	SD
AI can make the loan disbursement process efficient and faster.	3.95	1.067

AI can aid the loan disbursement process with unbiased decisions.	3.89	1.072
It is comfortable to share personal financial information with AI-powered loan applications.	3.60	1.239
AI facilitated advanced and cost-effective access to loan services.	3.77	1.127
AI-powered loan services can be preferred over human-assisted loan services.	3.65	1.192
Concern should be given to data privacy in AI-powered loan applications.	3.63	1.244
AI-powered systems are very optimistic regarding loan disbursement.	3.67	1.155

Source: Author's compilation from primary data

Table 3 shows the respondents' perception of AI-powered loan services, and it was found to be positive. Respondents perceived AI as a system that is capable of enhancing the efficiency and speed of loan disbursements (mean=3.95) and making unbiased decisions (mean=3.89). Respondents agreed that AI has enhanced loan accessibility (mean=3.77) and hold an optimistic view regarding loan disbursement (mean=3.67). While the respondents agreed on the preference of AI-powered loan services over human-assisted services (mean=3.65) and were comfortable in sharing personal financial information with AI-powered systems (mean=3.60), they also had concerns about data privacy (mean=3.63). The standard deviations ranging from 1.06 to 1.24 reported a moderate level of variation in the responses. Overall, the findings supported a favourable attitude of respondents toward the AI-powered loan services even amid the privacy concerns.

Table 4. Willingness to Adopt AI-Powered Loan Services

Statement	Mean	SD
My confidence in applying for a loan has improved with the arrival of AI-powered loan services.	4.19	1.051
I am willing to apply for a loan through AI-powered systems in the future.	4.11	1.081
I think it is better to go for an AI-powered loan service than a traditional loan service.	4.11	1.053
If the banks offer flexible payment systems and structured interest rates, I am likely to go for AI-powered loan services.	4.11	1.118
If the banks offer an assurance of their reliability and security, I would feel much comfortable in AI-powered systems.	4.03	1.096
I prefer AI-powered systems because of the reduced paperwork in loan disbursement.	3.98	1.128
If I had a positive experience with AI-powered loan services, I would surely recommend them to others.	3.86	1.189
AI-powered loan services are encouraging me to try new and innovative financial products.	3.91	1.164
I believe that AI-powered loan services will get a wide adoption in the banking sector shortly.	3.98	1.189

Source: Author's compilation from primary data

Table 4 shows the data relating to respondents' willingness to adopt AI-powered loan services. The respondents exhibited a positive and favourable approach towards its adoption. The statement "My confidence in applying for a loan has improved with the arrival of AI-powered loan services," with the highest mean value (4.19), indicates that AI has enhanced customer confidence in loan applications. A strong conditional willingness towards AI adoption in loan disbursement is exhibited through statements such as "If the banks offer flexible payment systems and structured interest rates, I am likely to go for AI-powered loan

services" (mean=4.11), "If the banks offer an assurance of their reliability and security, I would feel much more comfortable in AI-powered systems" (mean=4.03), and "I prefer AI-powered systems because of the reduced paperwork in loan disbursement" (mean=3.98). The statement regarding respondents' openness to recommending the AI-powered loan services to others exhibits the role of actual experience in advocacy (mean = 3.86). Similarly, the trend of growing acceptance of AI-powered loan services is exhibited through the statements regarding the belief of AI's wide adoption in banking (mean=3.98) and encouragement to try innovative financial products (mean=3.61). The standard deviations for all these statements, ranging between 1.05 and 1.18, indicate a moderate variability in respondents' opinions. Overall, the findings supported the respondents' strong inclination to adopt AI-powered loan services.

Table 5. Results of Correlation and Regression between Awareness, Perception, and Willingness to Adopt AI-Powered Loan Services

No.	Hypotheses	Test statistic	P value	Inference	Test used
H1	Awareness → Willingness to adopt	0.412	0.000	Significant	Correlation
		0.230	0.024	Significant	Regression
H2	Perception → Willingness to adopt	0.478	0.000	Significant	Correlation
		0.362	0.000	Significant	Regression

Source: Author's compilation from primary data

The relationship between respondents' awareness, perception, and willingness to adopt AI-powered loan services was studied by performing correlation and regression. The results of the same are arranged in Table 5. The results of correlation indicated a significant positive relationship between respondents' awareness and willingness to adopt AI-powered loan services (r=0.412, p value=0.000) and their perception and willingness to adopt AI-powered loan services (r=0.478, p value=0.000). This is

further reinforced by the results of regression, revealing a significant positive contribution from respondents' awareness to willingness to adopt (β=0.230, p value=0.024) and from their perception to willingness to adopt (β=0.362, p value=0.000). Hence, accepting hypotheses H1 and H2 indicates the positive influence of both awareness and perception of AI-powered loan services on respondents' willingness to adopt AI-powered loan services.

Findings of the Study

This study sought to examine the awareness, perception, and willingness to adopt AI-powered loan services among customers in commercial banks. The respondents were found to be aware of AI-powered loan services. They were well-informed about the AI's application in the assessment of creditworthiness, document verification, and the associated benefits, such as increased efficiency and speed. They have received the information regarding AI-powered loan systems from the banks' websites, advertisements, and customer service representatives. Even so, their awareness about the assistance of AI chatbots in clarifying loan-related inquiries and the potential risks of data privacy and security was slightly lower. In terms of perception, the respondents viewed the AI-powered loan services in a positive sense. They highlighted the role of AI in enhancing the speed and efficiency of loan processing and the potential to make unbiased decisions. Despite these, concerns are there regarding data privacy. The respondents also agreed that they are willing to adopt AI-powered loan services. Respondents exhibited a high level of willingness to use AI-powered loans over traditional loan services when combined with the practical benefits, such as reduced paperwork, flexible payment systems, and structured interest rates. The results of correlation and regression verified the contribution of respondents' awareness and perception of AI-powered loan services in enhancing their willingness to adopt AI-powered loan services. This highlights the critical role of customers' knowledge and attitude in enabling the AI adoption in loan services.

Conclusion

In light of the findings, this study concludes that the customers demonstrate a favourable stance towards the AI-powered loan services in commercial banks. The results reinforce that higher awareness and positive perception of AI-powered loan services are the critical drivers ensuring customers' willingness to adopt AI-powered loan services. The customers value the speed and efficiency enhanced by the AI-powered systems and are concerned about the data and privacy issues in AI-powered loan services. They opined that if banks ensure the reliability and security of AI-powered systems and offer flexible payment systems and structured interest rates, their adoption rate will increase. Hence, confirming the growing inclination towards the adoption of AI-powered loan services.

These findings suggest various practical implications for banks and other financial service providers. The banks must improve their communication strategies to well inform their customers regarding the operational aspects and potential benefits of AI-powered loan services. Awareness campaigns to highlight the security features of AI-powered systems in banking can also be organised to improve the adoption rate. In addition, the banks should also try to build trust by ensuring transparency in how AI-powered systems function and handle customer data securely. These actions will not only improve the users' confidence in AI-powered systems but also ensure the implementation of technological advancements in banking.

Limitations and Scope for Further Research

Despite the valuable findings, the study has some limitations. This study was conducted within the specific geographical area of Malappuram district, Kerala, hence limiting the generalizability of the findings. In addition, the data collected through the self-administered questionnaire is subject to response bias. This study has adopted a cross-sectional research design; hence, it may not fully capture the evolving opinions of customers as AI continues to develop day by day. Future researchers could explore these limitations and conduct longitudinal

studies focusing on AI-powered systems awareness, perception, and willingness to adopt the same over time. Moreover, significant mediating and moderating variables can also be incorporated within this model, such as digital literacy, trust in technology, etc.

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