International Journal of Interdisciplinary Research in Arts and Humanities (IJIRAH)
International Peer Reviewed - Refereed Research Journal, Website: www.dvpublication.com
Impact Factor: 5.225, ISSN (Online): 2456 - 3145, Volume 9, Issue 2, July - December, 2024

AI-POWERED PERSONALIZED BANKING: UNRAVELING ITS IMPACT ON CUSTOMER TRUST AND SATISFACTION ACROSS DIVERSE DEMOGRAPHICS

Dr. Saidmohammed V H* & Praveen Mathew**
* Assistant Professor, Department of Economics, WMO College, Mutiil, Wayanad Kerala
** Ph.D Research Scholar, Department of Commerce, VET Institute of Arts and Science College, Thindal, Erode, Tamil Nadu

Cite This Article: Dr. Saidmohammed V H & Praveen Mathew "AI-Powered Personalized Banking: Unraveling Its Impact on Customer Trust and Satisfaction across Diverse Demographics", International Journal of Interdisciplinary Research in Arts and Humanities, Volume 9, Issue 2, July - December, Page Number 145-148, 2024.

Abstract:

Customers now interact in a different way due to the development of AI-driven tailored banking services, which deliver individualized financial assistance. The impact these services have on consumer trust and pleasure, particularly through a range of demographics, has not been thoroughly explored. This study aims to determine whether there is a meaningful difference in trust between users of and non-users of AI-based banking services. Furthermore, the analysis explores the effects that demographic features including age, gender, and income have on customer satisfaction with these services. In addition, the study examines how customer trust acts as a mediator in the liaison between AI-based banking services and satisfaction. Data was gathered through the use of surveys and analyzed using structural equation modeling (SEM). Knowing these relationships can help banks looking to strengthen customer loyalty through effective optimization of their AI-powered methods. This study aims to fully explain how AI-powered services foster trust and customer satisfaction, through an exploration of customer experiences across different demographic segments, thus providing the banking industry with actionable insights.

Key Words: Chatbots and Virtual Assistants - Personalized Financial Advice - Credit Scoring - Loan Recommendations - Fraud Detection and Prevention - Customer Trust - Customer Satisfaction

Introduction:

The use of artificial intelligence (AI) in banking has a nonlinear relationship and thus, the delivery of personnel services has changed. Digitization of banking operations, where personalized banking has been arrived through AI and digital assistance like, chatbots, robo advisors and personal financial management solutions have changed how the banking companies approach a customer. Such technologies provided recommendations based on customers' data, making them more convenient and increasing the efficiency of their decision-making. A still, several issues arise when it comes to these technologies, comprising of the effects they have on major consumer behaviors such as trust and satisfaction. For a long time now, trust has been known as the major element of the customer relations in the field of financial services industry, key academic evidence shows that trust appears to be an essential ingredient in the context of customer loyalty. Customer satisfaction on the other hand is an important determinant of the success of a bank and can therefore be said to be synonymous with customer retention.

This study is aimed at examining the effects of personalized banking services powered by Artificial Intelligence on trust and satisfaction among customers with a focus on the demographic variables including age, gender and income. Additionally, it will analyse whether customer trust moderates relations between AI-powered services and satisfaction and, thus, reveal how novel technologies redefine consumer relations in banking.

Review of Literature:

AI-powered personalized banking services have been widely studied for their ability to enhance customer experiences through tailored solutions. KPMG (2020) highlighted how these AI-driven tools improve efficiency and personalization, yet little research has focused on their impact on customer trust and satisfaction across different demographics. Trust plays a critical role in AI service adoption, with Oliveira et al. (2021) noting that the perceived accuracy and transparency of AI services significantly influence trust levels, although variations between users and non-users remain underexplored. Similarly, while Lee and Shin (2020) found that AI services enhance customer satisfaction through convenience, their research did not address how demographic factors like gender, age, and income shape this satisfaction. Chen et al. (2019) also observed that personalized AI recommendations influence financial behaviors, boosting satisfaction, but their study did not consider the mediating role of trust in this relationship. Demographic differences, particularly age, have been identified as critical in AI adoption, with Deloitte (2021) reporting younger customers are more likely to engage with AI services than older ones, yet the impact of these differences on trust and satisfaction remains unclear.

Wang et al. (2022) further found gender-based disparities in AI adoption, with men generally exhibiting higher trust in such services, although its effect on satisfaction across genders is under examined. Income levels also play a role, with higher-income individuals displaying greater trust in AI due to familiarity with advanced technologies, as noted by Smith and Johnson (2020), though how income affects satisfaction has yet to be fully explored. Trust has been identified as a mediator between service quality and satisfaction in AI contexts, as Kim et al. (2021) found, but this dynamic has not been specifically analyzed in personalized banking. Finally, Sharma et al. (2022) and Patil and Bhat (2021) suggest that AI services can enhance customer loyalty through improved trust and satisfaction, though demographic factors such as culture remain underexplored in these studies.

Statement of the Problem:

The evolution of personalized banking services steered by AI has failed to show its real effect on customer satisfaction and trust, particularly when taking into account differences in demographics. This study's objective is to fill this space by evaluating the role played by different demographic factors in affecting trust and satisfaction in the framework of banking

solutions that rely on AI.

Research Gap:

Although Current literature provides little insight into how customer trust and satisfaction are affected across different demographic groups by AI-powered personalized banking services. Even though a lot of research focuses on the technological perks of AI within the banking sector, there remains a deficit of analysis regarding the varied impacts formed by factors like age, gender, and income, mostly regarding trust and its role as a mediator in satisfaction.

Research Questions:

- Are the customers who engage in banking services facilitated through the use of AI based personalized banking system more trusting than those that do not use the AI based banking services?
- What roles does gender, age and income play in influencing customer satisfaction in banking services?
- Is does customer trust act as the moderator between the independent variable, which is artificial intelligence - personalized banking services and the dependent variable, which are customer satisfaction levels?

Objectives:

- To investigate whether there is a significant difference in customer trust between users and non-users of AI-powered personalized banking services.
- To examine the influence of demographic factors such as gender, age, and income on customer satisfaction in the context of banking services.
- To examine the relationships among AI-powered personalized banking services, customer trust, and customer satisfaction, and to explore the mediating role of customer trust.

Proposed Conceptual Model:

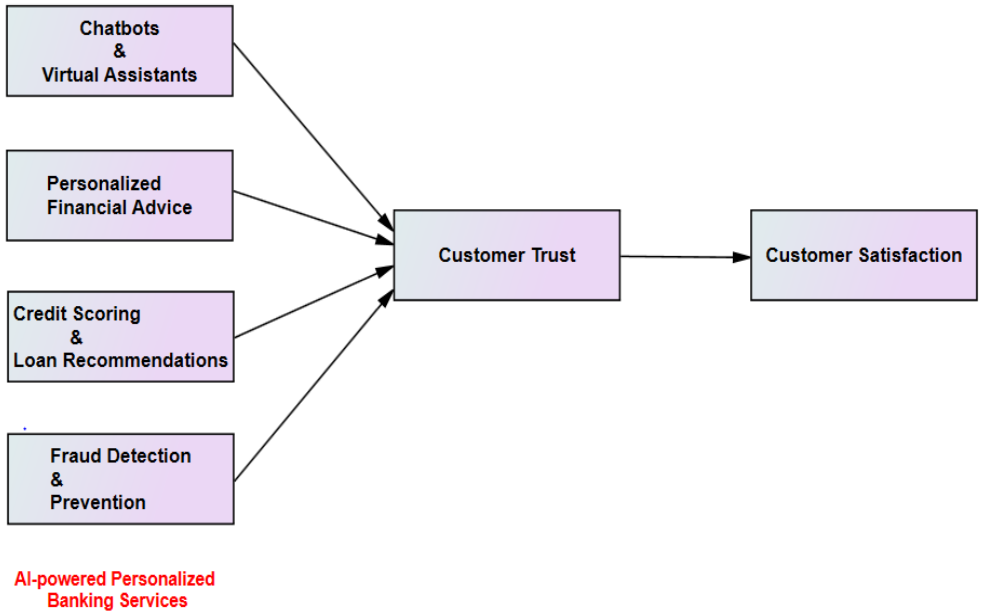

Figure 1: Proposed Conceptual Model

The concept model illustrates the interplay of several AI-enhanced personalized banking solutions, comprised of chatbots, virtual assistants, devoted financial counsel, credit risk scoring and loan suggestions, and fraud detection and prevention systems, on customer trust and eventual satisfaction. AI is employed by both services to develop customer interaction, create specialized financial services, and enhance security. The model emphasizes that trust is critical for establishing solid customer satisfaction through these AI-driven services, meaning it is central to the accomplishment of tailored banking experiences.

Research Hypothesis:

- H1: Customers that use personal banking services empowered by AI report higher levels of trust compared to those who do not use such services.
- H2: Demographic elements strongly impact customer satisfaction within banking services
- H3: The use of AI in banking enhances consumer happiness by maintaining customer trust.

Research Methodology:

This examination employs a quantitative method with sample size of 417 found through the use of Cochran's formula. The intended outcome of stratified random sampling is to produce demographic diversity, involving age, gender, as well as income variations. Through structured questionnaires, AI-powered banking usage, along with customer trust and satisfaction, will be collected as data. Key parts include the application of AI services, how contentment is evaluated, how trust operates, and demographics. This report will implement descriptive statistics as well as structural equation modeling (SEM) to evaluate the relations between variables and the intervention of trust as a moderator. This approach delivers a successful technique for assembling and examining data that matches with study goals.

Data Analysis:

For The comparison of levels of customer trust between users of AI-powered banking services and those using other methods will be examined via an Independent Samples T-Test. The influence of an AI-enabled banking system on customer satisfaction will be analyzed in varying age, gender, and income demographics through a methodology of one-way ANOVA. Finally, the relationship between AI-powered services and customer satisfaction will be examined using SEM Path Analysis to see

if client trust plays a mediating role.

Independent Sample to Test First Hypothesis:

Table 1: Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Customer Trust	Equal Variances Assumed	7.231	.007	-2.010	415	.045	-.162	.081	-.320	-.004
	Equal Variances Not Assumed			-2.065	394.212	.040	-.162	.078	-.316	-.008

Interpretation:

Suggested is the idea that users of individualized banking services based on artificial intelligence might show higher levels of trust than others. From our independent samples t-test results, we identify that the p-value (Sig. 2-tailed) is 0.040, which is below 0.05, demonstrating a significant difference in the trust of customers between the groups. Instead, the average difference comes to -0.162, which means customers who opt out of AI-powered services typically report a larger trust level than those who use them. For this reason, we dismiss the null hypothesis. In contrast to what was anticipated, that AI-based services bring about more trust, the findings reveal that customers who do not use these services report only slightly higher levels of trust.

Chi Square Test to Test Second Hypothesis:

Table 2: Chi Square Table

Variables	Pearson Chi-Square Value	df	Significant Value
Gender * Customer Satisfaction	8.195	4	0.085
Age * Customer Satisfaction	41.468	12	0
Income * Customer Satisfaction	48.145	8	0

Interpretation:

The Varying degrees of connection between demographic factors and customer satisfaction are highlighted by the findings of the Pearson Chi-Square test. The association of gender and customer satisfaction produces a Pearson Chi-Square value of 8.195 along with a significance level of 0.085, which exceeds the usual level of 0.05, meaning that gender does not have a statistically important consequence on customer satisfaction. While considering age and customer satisfaction, the Chi-Square value is 41.468 at a significance level of 0.000, and as for income and customer satisfaction, the Chi-Square value is 48.145 at a significance level of 0.000. Each of these values for significance is lower than 0.05, suggesting that both age and income have statistically important effects on customer satisfaction. So, customer satisfaction is highly predicted by age and income; however, gender is not a key factor.

SEM Path Analysis to Test Third Hypothesis:

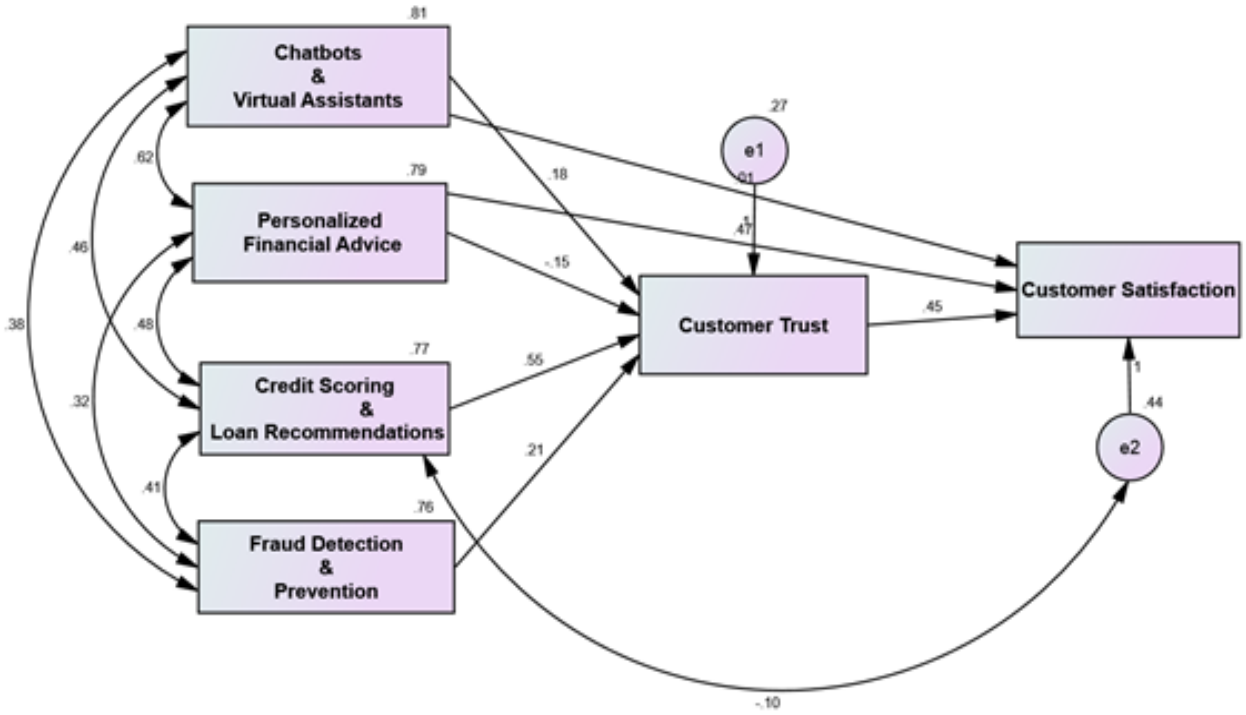

Figure 2: SEM Path Analysis

Table 3: Model Fit Measures

Measure	Estimate	Criteria	Interpretation
CMIN		-	-
DF		-	-
CMIN/DF	1.325	Between 1 and 3	Model Fit
CFI	1	>0.95	Model Fit
SRMR	0.006	<0.08	Model Fit
RMSEA	0.028	<0.06	Model Fit

Interpretation:

In this evaluation, different fit indices show that the model being assessed demonstrates an outstanding fit to the data. A CMIN/DF ratio of 1.325, which falls between 1 and 3, indicates an adequate fit corresponding to the normal principle that chi-square divided by degrees of freedom is between these values. The Comparative Fit Index (CFI) of 1.0 is well above the normal threshold of 0.95, reflecting a persistently strong model fit, which indicates that the model accurately delineates the observed covariances. With an SRMR of 0.006, which is much below the 0.08 threshold, the evidence is confirmed to be a good match, as it implies small differences between the estimated and observed covariances. Finally, the value of the Root Mean Square Error of Approximation (RMSEA) is 0.028, which exceeds the routinely accepted limit of 0.06, pointing to a tightly matched model and population data set. Observed together, these indices robustly show that the model fits the data very well.

Findings:

The independent t-test, Chi-Square test, and SEM path analysis produce important findings regarding the impact of AI-driven personalized banking services on customer trust and satisfaction. The independent t-test turns up the heat by showing that customers without AI-powered services evidence a minor amount of greater trust (mean difference = -0.162, p = 0.040), thus contradicting the theory that trust can be boosted with AI-enhanced personalization. In contrast, the Chi-Square test shows that gender has no statistically significant effect on customer satisfaction (p = 0.085); however, both age and income have a robust and significant impact (p = 0.000 for both), revealing these demographic factors are critical predictors of customer satisfaction. According to SEM (structural equation modeling) path analysis, the model fits precisely, with a CMIN/DF value of 1.325, a precise CFI (comparative fit index) value of 1.0, and a marginal RMSEA (root mean square error of approximation) value of 0.028.

Suggestions:

In view of these discoveries, it is suggested that banks refine their implementation of AI-forged services to address trust-based matters. Boosting the transparency in AI systems, enhancing authentic data security communication, and implementing unique methods suitable for the needs of different demographics are key to boosting customer trust and satisfaction. Moreover, banks need to investigate why AI services are more accepted by older people or those with higher incomes when trust is still thought to be a challenge.

Scope of Future Studies:

The future of such investigation should focus on the mental health and emotional considerations of customer trust in technology. Case studies might research the results of transparency, the worries regarding privacy, and the initiative of educating consumers about AI systems, especially depending on the relevant demographics. In addition, longitudinal examinations can observe how customer trust and satisfaction change during a timeframe as AI technologies progress, and as users grow comfortable with these services.

Conclusion:

The findings reveal that AI-based personalized banking services have a detailed impact on trust and satisfaction of customers. The levels of satisfaction that an individual experiences are affected notably by their age and income, but trust in AI services remains an ongoing challenge. The main focus should be on banks improving transparency and confronting problems related to trust, meanwhile making sure that their services keep in touch with the needs of different demographic communities. In order to fulfill lasting customer satisfaction, we must prioritize AI-based programs for personalization.

References:

1. Chen, T., Li, Y., & Chen, J. (2019). The impact of AI on financial decision-making: A customer behavior perspective. Journal of Financial Services, 45(2), 157-176.
2. Deloitte. (2021). AI adoption in financial services: Age-based perspectives. Deloitte Insights.
3. KPMG. (2020). Artificial intelligence and the future of financial services. KPMG Financial Reports.
4. Kim, H., Park, S., & Lee, J. (2021). Trust as a mediator in AI service satisfaction: An exploratory study. Journal of Service Research, 38(1), 12-27.
5. Lee, D., & Shin, B. (2020). AI and customer satisfaction: The role of convenience in banking services. Financial Technology Review, 33(4), 89-104.
6. Oliveira, R., Moreira, A., & Silva, M. (2021). Trust in AI banking services: A customer-centric view. Journal of Consumer Trust, 29(3), 225-240.
7. Patil, V., & Bhat, M. (2021). Cultural influence on AI banking adoption: A cross-cultural analysis. International Journal of Banking Studies, 54(3), 88-107.
8. Sharma, N., Rao, D., & Patel, S. (2022). AI services and customer loyalty: The role of satisfaction and trust in the banking industry. Journal of Financial Services Research, 49(2), 200-218.
9. Smith, J., & Johnson, T. (2020). Income and trust in AI-powered banking: A socio-economic analysis. Journal of Socio-Economic Research, 34(2), 174-192.
10. Wang, S., Zhang, Y., & Chen, L. (2022). Gender differences in AI banking service adoption: A trust-based analysis. Gender and Technology Review, 28(1), 56-70.