



THE IMPACT OF ARTIFICIAL INTELLIGENCE-DRIVEN PERSONALIZED BANKING SERVICES ON CUSTOMER TRUST, FINANCIAL INCLUSION, AND CUSTOMER LOYALTY: A CONCEPTUAL STUDY

Dr. SUJITHA K A, ASSISTANT PROFESSOR, P G DEPARTMENT OF COMMERCE,
SREE VIVEKANANDA COLLEGE, UNDER UNIVERSITY OF CALICUT

Corresponding mail id :sujithaka1977@gmail.com

Abstract: In the banking sector, Artificial Intelligence (AI) is ushering in a new era of personalized services, offering numerous benefits such as improving customer experiences, streamlining operations, and fostering inclusive banking. AI personalised banking services utilise artificial intelligence technologies like machine learning, natural language processing, predictive analytics, intelligent automation and more to deliver customised financial recommendations, product offerings, customer service, fraud detection and data-driven decision making. While existing studies have studied the adoption of AI, digital banking, customer satisfaction and financial technologies in isolation, there is a lack of conceptual studies that focus on the complex relationship between AI-powered personalized banking and customer trust, financial inclusion, and customer loyalty in a single theoretical framework. This conceptual study aims at compiling recent literature published from 2020 to 2025 and creating a framework that gives an understanding of the relationship between these constructs. The proposed framework sets the parameters of AI-powered personalized banking services as the key driver that has a direct impact on customer trust and financial inclusion, thereby improving customer loyalty. The study also suggests that relationships between the above factors are moderated by ethical AI governance, data privacy, transparency, explainability, and digital literacy. The study builds on existing literature in the field of AI-powered banking and draws on several theories, including the Technology Acceptance Model (TAM), Relationship Marketing Theory, Trust Theory and Financial Inclusion Theory to provide a comprehensive understanding of the subject. The study draws upon several theories, including the Technology Acceptance Model (TAM), the Relationship Marketing Theory, the Trust Theory and the Financial Inclusion Theory, to provide a comprehensive understanding of the subject. The conceptual framework being proposed can be used as a basis for further empirical validation by means of the Structural Equation Modeling (SEM) and/or Partial Least Squares Structural Equation Modeling (PLS-SEM).

Keywords: Artificial Intelligence, Personalized Banking Services, Customer Trust, Financial Inclusion, Customer Loyalty, Digital Banking, AI-Driven Banking, Machine Learning, Customer Experience, Conceptual Framework.

1. Introduction

As Artificial Intelligence (AI) evolves and transforms customer interactions and the delivery of financial services, the banking industry is going through an important digital transformation. Financial institutions are moving from traditional

banking structures to customer-focused, data-driven service networks through the adoption of AI technologies, such as machine learning, natural language processing, predictive analytics and intelligent automation. Banks can leverage these technologies to gain insights into



customer preferences, transaction patterns, and financial habits, thereby offering tailored financial products, personalised recommendations, intelligent customer support, and proactive financial advisory services. As a result, AI-powered banking has emerged as a critical strategic initiative to boost operational efficiency, elevate the customer experience, and bolster competitive edge [1].

Personalized banking services has become one of the top transformative uses of AI in the financial sector. Using the data and sophisticated analytics, banks can offer personalized finance solutions to suit each customers' requirements, thereby enhancing the quality and responsiveness of financial services offered. The use of AI-powered personalization unlocks the potential of financial institutions to provide tailored loan products, investment guidance, fraud prevention, real-time financial advice, and an intuitive customer experience across multiple channels. Personalization plays a crucial role in the business growth of the bank in the modern banking world and is one of the factors that make customers stay with the bank for long, while providing the better customer experience with these personalized interactions [3].

In addition to boosting customer experience, AI is also proving to be a game-changer in financial inclusion and trust building. AI-powered financial services enable greater access to financial products through digital onboarding, alternative credit scoring, personalized financial offerings and intelligent decision-making – especially for those who were previously unbanked or underbanked. On the other hand, clear and secure, and ethically guided AI systems can help boost customer confidence in digital banking

services. Trust, financial inclusion, and customization of the financial services experience should work together to foster customer loyalty and long-term relationships with financial institutions as customer expectations continue to shift toward AI-driven financial services [16].

While preliminary research has examined AI adoption, customer experience, personalised banking and financial inclusion individually, there is a lack of conceptual research that combines these elements in a single study to examine how AI-enabled personalised banking products and services can affect all three of financial inclusion, customer experience and financial trust. Understanding these relationships comprehensively is crucial as it can help banks develop customer-focused and responsible AI initiatives and enhance customer retention and organizational sustainability.

Thus, this conceptual study aims to create a comprehensive framework to explore the effects of AI personalized banking services on customers' trust, financial inclusion, and customer loyalty. This study reviews the latest literature and offers theoretical links between these constructs to serve as a basis for further empirical research and for banking practitioners when implementing personalized solutions using AI and ensuring that they are both effective and ethical.

2. Literature Review

As Artificial Intelligence emerged as one of the most critical technologies revolutionizing modern banking and financial systems, Prathap et al. [1] explained. The authors believe that AI technologies like machine learning, deep learning, natural language processing, and predictive analytics can help banks complete repetitive tasks more quickly,



improve fraud detection, boost credit risk assessment, and make better decisions. It highlighted not only the efficiency gains of AI but also its capacity to offer customer-focused services by leveraging data-driven insights, which is particularly pertinent for financial institutions. The authors also predicted that the competitiveness of banks in the future will depend on the ability to introduce AI technologies into the basis of banking activities.

Mitra and Paul [2] emphasized that AI personalization has become a more powerful tool to reinforce the financial brand loyalty. The authors suggested that personalized banking service can provide a better understanding of financial behavior, preferences and expectations of customers, which can help financial institutions to offer customized financial products and services. Their findings suggest that AI personalization enhances customer engagement, satisfaction, and emotional connection with financial institutions, leading to increased customer loyalty and retention.

Likewise, Chaturvedi [3] has pointed out that personalisation is one of the major factors in banking that impacts customer retention. According to the study, AI-based recommendation systems, customised financial advices, person-made loan products and intelligent customer communication have a big positive impact on the customer experience of banks. The author found that banks that adopt AI personalization strategies will be more likely to retain customers and achieve a sustainable competitive advantage.

Vasuki et al. [4] summarized the digital banking evolution and elaborated how the digital transformation has boosted the use of AI technologies in banks' operations. The authors state that intelligent banking

platforms offer their customers a seamless, secure and convenient banking experience via mobile apps, AI-powered chatbots and automated customer service. These are the developments that have provided customers with greater convenience and enabled services to be more efficient.

Yousaf et al. [5] explored how AI is used in retail banking and discovered that AI-powered personalisation enhances customer satisfaction, loyalty, and financial decision-making. The study highlights the potential of predictive analytics and personalized financial recommendations for enhancing customer understanding and providing tailored financial solutions to banks. The authors found that the use of personalized customer experience has a positive impact on customer satisfaction and customers' long-term relationships with banks.

Sundaravaradan Ravathanallur Chackraborti [6] presented about hyper-personalized banking using Machine Learning. The study described how the machine learning algorithms analyze customer transaction histories, spending patterns, financial objectives, and lifestyle trends to provide very personalized financial advice. The author recommended that hyper-personalization could "increase customer engagement", by offering financial solutions that are more aligned with customer expectations.

Selvam [7] explored the ethical considerations of personalised banking using AI. The study underscored the importance of transparency, fairness, explainability, accountability, and data privacy in the responsible implementation of AI. The author says that ethical AI governance can boost customer trust and enhance the adoption of AI-driven banking services among customers.



Mohota [8] discussed the role of AI in Financial Inclusion in emerging markets. The author shared that AI can help promote financial inclusion in digital lending platforms, alternative credit scoring, mobile banking apps, and smart financial advisory services. Overall, the study found that AI has the potential to greatly enhance access to financial services for underserved communities and promote inclusive economic development. Sarkar and El Rahman [9] referred to AI as a revolution in contemporary banking, saying that it has the potential to enhance customer experience, streamline operations and manage risks. The authors noted that the use of AI for automation improves banking productivity and allows financial institutions to offer personalised financial services on the fly.

In the opinion of Arshad et al. [10] AI-powered CRM systems can help banks build better customer relationships by understanding customer data and communicating with them in a personalized manner. The authors found that CRM can be highly beneficial in terms of customer satisfaction and customer loyalty if it is utilised with data.

Okeke et al. [11] explored the potential of AI for optimizing customer experience in underserved communities, concluding that AI can contribute to financial inclusion by offering accessible, affordable, and tailored financial services. The research emphasized the role of AI in decreasing financial exclusion by creating smart digital banking solutions and customer-focused financial offerings.

Singh [12] studied the impact of FinTech innovations on customer experience and concluded that digital technologies have a significant effect on the convenience, accessibility, responsiveness and customer

satisfaction of services. By combining AI in FinTech, the study also indicated that customer engagement and banking efficiency are further enhanced.

AI and data science can be used to offer banks highly customized financial services and analyze customer information in real time, as Chandra et al. [13] suggested. The authors argue that AI-driven recommendation systems enhance customer satisfaction and aid in better financial decision-making.

Olere Omogbeme et al. [14] discussed the potential of AI in fostering financial inclusion for the unbanked. The authors found that AI technologies contribute to decreasing financial inequality by enabling intelligent credit assessment, digital identity verification and personalized financial education, emphasizing their positive role in access to financial services. Cherian and Kumar [15] studied the use of AI in microfinance institutions and found that AI can enhance the customer experience by streamlining loan processing, tailoring financial products and services to meet individual customer needs, and providing efficient customer support. The authors highlighted that AI improves the quality of the services provided and boosts customer satisfaction.

Siji [16] mentioned that the personalization of banking services with AI can greatly enhance the customer experience by offering tailored financial products, intelligent customer service, and personalized financial suggestions. The study also indicated that the implementation of AI with a focus on ethics is crucial for customer trust and building long-term customer relationships. These studies collectively highlights the positive impact of AI-driven personalized banking services on customer experience,



customer trust, financial inclusion, and customer loyalty. But, the literature available so far has focused on these constructs separately. Although there has been some conceptual research that considers multiple aspects of personalized banking services, customer trust, financial inclusion, and customer loyalty, there is little in the literature that brings these

together in a single framework to look at them together. In this regard, the aim of the present study is to fill this void by providing a theoretical model of integration of these variables which can explain the relationships between these variables and be used as a foundation for future empirical studies.

Ref. No.	Author(s) & Year	Key Findings
[1]	Prathap et al. (2024)	AI transforms modern banking by improving operational efficiency, fraud detection, risk management, and customer-centric financial services.
[2]	Mitra & Paul (2025)	AI-driven personalization enhances customer engagement, satisfaction, and financial brand loyalty through customized banking experiences.
[3]	Chaturvedi (2025)	Personalized banking services significantly improve customer retention and strengthen long-term customer relationships.
[4]	Vasuki et al. (2025)	Digital banking powered by AI enhances service delivery, operational efficiency, and customer convenience.
[5]	Yousaf et al. (2025)	AI applications improve customer loyalty, service quality, and financial decision-making through personalized banking.
[6]	Sundaravaradan Ravathanallur Chackrvarti (2025)	Machine learning enables hyper-personalized banking by analyzing customer behavior and financial preferences.
[7]	Selvam (2025)	Ethical AI practices, including transparency and fairness, strengthen customer trust in AI-powered banking services.
[8]	Mohota (2025)	AI promotes financial inclusion through digital lending, intelligent credit assessment, and mobile banking services.
[9]	Sarkar & El Rahman (2025)	AI revolutionizes banking by enhancing customer experience, operational efficiency, and risk management.
[10]	Arshad et al. (2025)	AI-driven customer relationship management improves customer engagement and service quality using data analytics.
[11]	Okeke et al. (2024)	AI-powered customer experience optimization improves financial inclusion in underserved



		communities.
[12]	Singh (2024)	FinTech and AI improve customer experience by increasing service accessibility and convenience.
[13]	Chandra et al. (2025)	AI and data science enable personalized banking through tailored financial recommendations.
[14]	Olere Omogbeme et al. (2025)	AI expands financial inclusion by providing intelligent financial services to unbanked populations.
[15]	Cherian & Kumar (2025)	AI implementation in microfinance enhances customer experience and service efficiency.
[16]	Siji (2025)	AI-powered personalized banking improves customer satisfaction and overall banking service quality.
[17]	Vidyashree et al. (2025)	AI-driven FinTech supports sustainable and inclusive retail financial markets.
[18]	Adrian et al. (2025)	Generative AI enables intelligent customer interactions and personalized digital banking services.
[19]	Kunwar & Kumar (2023)	Industry 5.0 technologies support AI adoption and digital transformation in the financial sector.
[20]	Meghani (2020)	AI and blockchain improve banking efficiency, transparency, and operational performance.
[21]	Aljohani (2025)	AI-enhanced financial technologies will shape the future of intelligent banking services.
[22]	Das (2024)	AI and machine learning contribute to financial inclusion by reducing barriers to banking services.

Table 1. Summary of Literature Review

Source: Compiled by the author based on the reviewed literature [1]–[22].

3. Research Gap

Artificial Intelligence (AI) has been a game-changer in the banking industry, as evidenced in the existing literature, through its ability to revolutionize banking with intelligent automation, predictive analytics, personalized financial services, and improved customer engagement. As Prathap et al. [1] described, AI has now emerged as an integral component of the operational efficiency, customer-centric banking, and data-driven decision-making in banking. Likewise, Sarkar and El Rahman [9] pointed out the transformative power of AI in customer experience, risk management and financial service delivery, and Adrian et al. [18] noted how

generative AI is becoming a critical enabler for personalised digital banking experiences.

There are specific studies that have been conducted regarding personalization in banking with the use of Artificial Intelligence. Mitra and Paul [2] explored the power of AI to drive brand loyalty in financial services, by tailoring customer experiences. Personalized banking was identified as one of the factors that can affect customer retention by Chaturvedi [3] and Chandra et al. [13] showed that financial institutions can leverage AI and data science to provide personalized financial products and services. Similarly, Sundaravaradan Ravathanallur Chackrvariti [6] spoke on hyper-personalized banking



using machine learning in order to enhance customer engagement and financial decision making.

The connection between AI and customer loyalty has also been explored. According to Yousaf et al. [5] AI in retail banking can boost customer loyalty by creating better and more personalized services and offering financial recommendations. Arshad et al. [10] also went on to say that AI-driven customer relationship management enhances customer engagement by leveraging data insights to meet customer expectations and provide better service.

Another line of research has been related to the role played by AI in financial inclusion. In the realm of emerging markets, Mohota [8] described how AI technologies can help overcome financial services obstacles by implementing intelligent lending, digital banking, and alternative credit scoring. Likewise, Okeke et al. [11] and Olere Omogbeme et al. [14] have also shown that AI can help with financial inclusion by bringing banking services to the unreachable, via digital platforms and customized financial solutions. Das [22] further highlighted the role of AI and machine learning in bridging the financial gaps and in economic development that is inclusive.

Ethical AI, too, has become a key research focus. For Selvam [7], transparency, fairness, accountability and data privacy are critical in fostering trust in AI-powered banking systems. Siji [16] also highlighted the positive impact of AI-driven personalised banking services on customer experience, and their ability to build trust

and foster long-term relationship with customers.

While there are existing research studies that focus on specific aspects of AI adoption, personalized banking, customer loyalty, financial inclusion, customer relationship management and ethical AI, the existing research studies have focused on these constructs individually. Previous research concentrates on either customer experience [2] and customer retention [5] or the implementation of AI [8] or financial inclusion [16] but does not provide an integrated framework that addresses how these variables are interlinked.

In addition, there is a lack of conceptual studies that have considered at the same time the impact of AI-based personalized banking services on customer trust, financial inclusion, and customer loyalty in an integrated theoretical framework. Previous research also offers some scope for discussion of the relationship between customer trust and financial inclusion, which in turn could drive customer loyalty in the context of AI in banking. Thus, there is a need for a holistic conceptual model that brings all the constructs together and identifies their relations, both theoretically and from a managerial perspective.

In this regard, the present study aims to fill this research gap by introducing a conceptual framework exploring the role of personalized banking services through AI in building customer trust, financial inclusion, and customer loyalty. The proposed framework is added to the previous literature by consolidating these main constructs into a single framework, and gives a platform for further empirical



validation through Structural Equation Modeling (SEM) or Partial Least Squares Structural Equation Modeling (PLS-SEM).

4. Objectives of the Study

The overarching goal of the present conceptual research is to create a complete theoretical model to illustrate the effects of Artificial Intelligence (AI) in personalized banking on customer trust, financial inclusion and customer loyalty. In view of the identified research gap and literature, the specific objectives of the study are as follows:

1. Examine the role of Artificial Intelligence driven Personal Banked Services in Banking and Financial Services Sector.
2. To examine how AI-powered customisation of banking services affects customers' trust.
3. To explore the contribution of personalized banking services based on AI to financial inclusion.
4. To study the effect of customer trust on customer loyalty in AI powered banking services.
5. Financial inclusion's role in improving customer loyalty.
6. To create a holistic conceptual framework that encompasses AI-driven personalized banking services, customer trust, financial inclusion, and customer loyalty.
7. To derive theoretical and managerial implications which can

facilitate the responsible application of AI personal banking in banking.

8. To suggest directions for future empirical studies to test the conceptual framework quantitatively with the application of structural equation modeling (SEM) or partial least square structural equation modeling (PLS-SEM).

5. Proposed Conceptual Framework

Today's banking sector, driven by the swift growth and advancement of Artificial Intelligence (AI), has evolved into a digitally driven banking ecosystem where financial institutions are increasingly leveraging intelligent technologies to create personalized financial products and services. AI-powered personalised banking services leverage machine learning, predictive analytics, NLP, conversational AI, and data analytics to gain insights into customers' spending habits, preferences, and transaction patterns, allowing banks to offer personalised financial recommendations, intelligent customer support, proactive financial planning, and smooth customer banking experiences [1], [13] and [16].

According to the literature, when it comes to financial services, AI personalization increases customers' trust in the banking institution by delivering appropriate, timely, and accurate financial services. Individual interactions enhance customers' service quality, responsiveness, and reliability perceptions, and thereby also increase customers' level of trust in the service. The use of banking information and the need for trust in the fairness,

transparency, and security of AI-powered decision-making processes are especially crucial when thinking about banking transactions. Ethical use of AI, transparency, transparency and responsibility in data governance further reinforce customer trust in AI-powered banking services [7, 16].

AI-powered personalized financial services are another vital aspect of financial inclusion, making financial services accessible to those who have historically struggled to access formal financial systems. AI-powered credit assessment, digital onboarding, mobile banking, automated lending, and tailored financial advice enable banks to better and cheaper cope with the needs of underserved populations. These technologies enable wider access to financial services and enhanced financial inclusion for customers, which helps to promote inclusive economic growth [8, 11, 14, 22].

Previous research also shows positive relationships between customer trust and financial inclusion with customer loyalty. When customers view AI-driven banking services as reliable, clear, and advantageous, they will be more inclined to keep utilizing banking products, suggest them to their friends, and have lasting connections with financial institutions. Likewise, customers who find that their banking experience is more accessible, convenient and inclusive with AI solutions are more likely to become loyal to their banks. Personalized banking experiences, therefore, not only enhance customer satisfaction, but also build long-term customer relationships and boost customer retention [2], [3], [5], [10].

This study suggests that AI personalised banking services act as the main

independent variable that affects customer trust and financial inclusion, thereby strengthening customer loyalty based on the analysis of the literature reviewed. In addition, ethical AI governance, which involves transparency, fairness, explainability, privacy protection, and accountability, is likely to enhance these connections, fostering customers' trust in AI-driven financial services [7], [16]. The proposed conceptual framework, therefore, brings these constructs together with a single model, which gives the theoretical basis for further validation of the model in the empirical field.

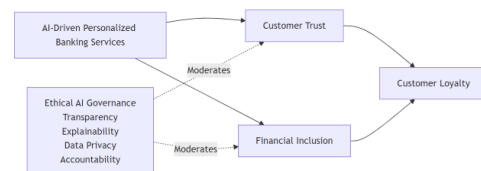


Figure 1
Proposed Conceptual Framework of the Impact of AI-Driven Personalized Banking Services on Customer Trust, Financial Inclusion, and Customer Loyalty

The conceptual framework that is being proposed in this study is presented in figure 1. The two key mediating variables identified for the framework are Customer Trust and Financial Inclusion, which are seen to be influenced by the independent variable – AI-Driven Personalized Banking Services. The mediating variables are believed to positively affect the dependent variable (Customer Loyalty). The framework also proposes moderating factors, such as Ethical AI Governance, Transparency, Explainability, Data Privacy, and Accountability, which enhance the connections between the mediating factors and AI-driven personalized banking services. The framework amalgamates these aspects into



a cohesive conceptual framework, illustrating the potential for responsible deployment of AI-driven personalized banking solutions to build customer trust, ensure financial inclusion, and drive customer loyalty. The proposed model gives the theoretical support for the future empirical validation using the method of Structural Equation Modeling (SEM) or Partial Least Squares Structural Equation Modeling (PLS-SEM).

The proposed framework envisages how AI can be used to create a more personalized banking experience that has a direct positive impact on customer trust and financial inclusion. These two factors serve as complementary mediators by which AI-driven personalization boosts customer loyalty. These relationships are expected to be bolstered by ethical AI governance, ensuring responsible, transparent, and trustworthy use of AI technologies within banking institutions. Therefore, the conceptual underpinning is considered to be a very strong basis to understand the potential of AI-based approach of personalized banking in improving customer relations, enhancing financial inclusion and customer loyalty in the long run.

6. Proposed Research Propositions

The existing literature review and the proposed conceptual framework form the basis for the following research propositions as an explanation of the relationships between AI-powered personalized banking services, customer trust, financial inclusion, and customer loyalty.

P1: AI personalised banking services positively impact customer trust.

AI-driven personalized banking services offer tailored financial advice, smart customer service, secure digital transactions, and data-backed financial solutions, boosting customers' trust in banks. The responsible use of AI, transparency, and the safeguarding of customer data further solidify trust in AI-driven banking solutions. Recent research has shown that personalized customer journeys play a crucial role in boosting customer confidence and adoption of AI in the financial sector [7, 16].

P2: Personalized banking services with artificial intelligence have a positive impact on financial inclusion.

Financial Institutions can use Artificial Intelligence to expand financial services to the underserved population via digital banking platforms, intelligent credit assessment, mobile banking, tailoring financial education to the individual, and automated lending systems. The technologies serve to lower access costs and increase their use of formal financial services, and thus support inclusive economic development [8], [11], [14], [22].

P3: Customer trust has a positive effect on customer loyalty.

Trust is an integral part of customer relationship that is crucial for long-term customer relationships with financial institutions. By customers feeling secure, transparent, reliable, and ethically governed by AI-powered banking services, their confidence in the financial sector is



strengthened, leading to greater usage, word of mouth promotion, and loyalty to their financial institutions. Customer trust has been shown as a critical determinant of customer loyalty in the context of AI-powered banking services in previous research [7, 10, 16].

P4: Financial inclusion has a positive impact on customer satisfaction.

Access to financial services that are affordable, convenient and tailored to the needs of the customer improves customer satisfaction and fosters customer relationships with financial institutions. Financial inclusion initiatives powered by AI help to provide underserved customers with an active role in formal banking systems, leading to higher customer engagement, commitment, and loyalty [8], [11], [14].

P5: Customer trust lies between AI-powered personalized banking services and customer loyalty.

By providing accurate, transparent, and personalized financial solutions, AI-driven personalized banking services foster trust in the banking system. Customer loyalty is further enhanced through greater trust, resulting in repeat purchases, customer retention and positive word-of-mouth. Hence, customer trust is presumed to act as a vital mediator between the AI-powered personalized banking services and customer loyalty [2], [7], [16].

P6: Financial inclusion is a mediator between personalized banking services based on AI and customer loyalty.

By leveraging digital technologies and tailored financial offerings, AI-powered personalized banking services enhance financial inclusion, making banking more accessible to people in remote and underrepresented areas. Financial inclusion improves customers' banking experiences and promotes their long-term banking relationships. Thus, the relationship between personalized banking services offered with the help of Artificial Intelligence and customer loyalty is expected to be mediated by financial inclusion [8], [11], [14].

P7: The use of ethical AI governance positively influences the relationship between AI-driven personalized banking services and customer trust.

Ethical AI governance, characterized by transparency, accountability, fairness, explainability, and privacy of data, boosts customer trust in AI banking solutions. Therefore, robust ethical governance is expected to enhance the positive impact of personalized banking services provided by AI on customer trust [7], [16], [21].

P8: AI Governance in the banking sector positively moderates the connection between AI and Financial Inclusion.

Responsible AI implementation will lead to the fairer availability of AI-powered financial services, whilst reducing algorithmic bias and discrimination. Ethical governance encourages an inclusive banking system by ensuring access to personalized financial services, transparency in decision-making, and fair lending practices. Thus, there is an expectation of further enhancement of the positive relationship between AI based

personalized banking services and financial inclusion as expected under ethical AI governance [7],[8],[22].

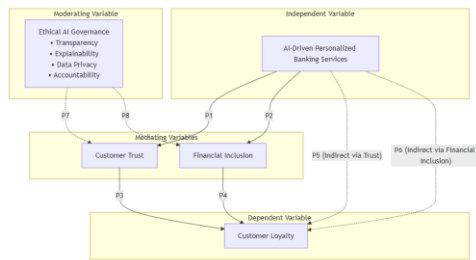


Figure 2
Proposed Research Model Illustrating the Relationships among AI-Driven Personalized Banking Services, Customer Trust, Financial Inclusion, and Customer Loyalty

This conceptual study developed the proposed research model (see Figure 2). AI-Driven Personalized Banking Services is the independent variable that directly affects the Customer Trust (P1) and Financial Inclusion (P2) of the model. Both of these constructs are suggested to positively affect Customer Loyalty via P3 and P4, respectively. The framework also suggests that Customer Trust and Financial Inclusion are the moderators between the use of personalized banking services through AI and customer loyalty (P5 and P6). Furthermore, Ethical AI Governance (Tran, Expl, DP, Acc) is posited as a moderating variable that boosts the relationships between the two mediating constructs (P7 and P8) and between AI-driven personalized banking services and the two mediating constructs. The integrated model in this study is used as a theoretical basis for testing and validation with empirical tests in the future use of Structural Equation Modeling (SEM) or Partial Least Squares Structural Equation Modeling (PLS-SEM).

7. Theoretical Contributions

The conceptual study has various substantial theoretical contributions to the emerging literature on the topic of Artificial Intelligence (AI) in the banking and financial services industry. Both AI adoption and personalized banking, customer experience, financial inclusion and customer loyalty have been studied in length, but these have been studied separately. The current study has a contribution in that it brings these variables together in a comprehensive conceptual framework, which explains the relationships between AI-driven personalized banking services, customer trust, financial inclusion, and customer loyalty.

One of the study's main contributions is the complementary nature of AI-driven personalized banking services and customer trust and financial inclusion to improve customer loyalty. The operational benefits of AI and customer personalisation in banking have been a priority in previous studies [1, 3, 9] and studies on financial brand loyalty, customer relationship management (CRM) [10] or customer experience (CX) [12] have concentrated on these individual areas. The suggested framework integrates these views, giving a more comprehensive view of how personalized banking, enhanced by AI technology, can generate value for customers and financial institutions over the long haul.

The second contribution is to expand the existing literature of AI-enabled personalization, introducing two mediating constructs: customer trust and financial inclusion. Previous studies have confirmed the positive impacts of AI personalization on customer satisfaction and retention [2, 3, 5], but there are relatively few studies in the literature that elucidate the underlying



mechanisms. The present framework suggests that AI-based personalized banking services should first foster customer trust and promote financial inclusion, which in turn will boost customer loyalty. This holistic approach helps to build a deeper understanding of the theory of AI-supported relationship formation in banking.

The third contribution of the study is the use of ethical AI governance as a moderating construct. While aspects of transparency, fairness, accountability, explainability, and data privacy have been addressed in previous studies regarding the use of AI in applications [7, 16], these principles have not often been incorporated in conceptual banking frameworks. This study contributes to the theoretical debate of responsible AI implementation as one of the contextual factors that influences the effectiveness of AI-driven personalized banking services, highlighting the need for ethical considerations in creating sustainable customer relationships.

In addition, the study adds to the existing body of knowledge on the issue of financial inclusion, emphasizing the role of AI as a key driver of inclusive banking. Previous research has shown that AI can enable financial inclusion by improving digital banking, intelligent credit appraisal, tailored financial advice and automated lending processes [8, 11, 14, 22]. However, most of these studies have concentrated on accessibility and financial involvement instead of their impact on customer loyalty. The proposed framework builds on the current understanding provided in the literature that greater financial inclusion can lead to better access to banking services, but also to greater customer commitment and loyalty.

Moreover, this study adds to the understanding of contemporary banking by merging the latest advancements in generative AI, machine learning, and data-driven personalization. The impact of AI-driven recommendation systems, conversational AI, intelligent chatbots, predictive analytics, and hyper-personalized financial services in reshaping customer experiences has been emphasized in recent research [6, 13, 18]. The study integrates these technological innovations into a cohesive conceptual framework, capturing the dynamic nature of AI-powered banking and offering a contemporary theoretical lens that resonates with current digital transformation efforts.

Last but not least, the conceptual framework proposed in this paper gives a solid theoretical base for future empirical work. This study proposes the relationships which can be examined empirically using quantitative method, SEM (Structural Equation Modeling) or PLS-SEM (Partial Least Squares Structural Equation Modeling). The proposed framework can be tested by future researchers in a variety of banking settings such as public sector banks, private sector banks, digital banks, FinTech firms and across country banking setups. The findings of the present study, therefore, help to extend the existing literature on AI-based personalized banking services as well as roadmap the future empirical research on the aforementioned concepts, namely customer trust, financial inclusion and customer loyalty.

8. Practical Implications

The conceptual framework presented herein has several practical applications for banking practitioners, policy makers,



and financial technology developers aiming to utilize Artificial Intelligence (AI) to gain sustainable competitive advantage and improve customer relationships.

First, banks can improve their customer relationship management (CRM) efforts by incorporating AI-powered personalized banking services into their customer engagement. AI tools can help financial institutions to analyse customers' actions, past transactions, spending habits, and financial preferences, which allows them to offer tailored products, suggestions, and customer support. Those customer-focused strategies lead to higher customer satisfaction, better customer relations, and increased customer loyalty [2], [5], [10].

Secondly, the results confirm the significance of tailored financial advising. These AI tools can deliver personalized financial planning, investment recommendations, loan suggestions, and budgeting advice based on individual customer needs. Customization of these services helps in the financial decision making of customers and the banking experience [3, 6, 13, 18].

Thirdly, the proposed framework highlights the strategic importance of harnessing AI for financial inclusion. AI-powered tools like alternative credit scoring, digital onboarding, mobile banking, and automated lending platforms can help financial institutions reach underserved and previously unbanked populations with financial services. Such programs can help to decrease financial disparities, increase financial access and enhance inclusive economic growth [8, 11, 14, 22].

The other significant implication relates to how ethical practices with AI are applied. Banks need to create robust governance

processes to be transparent, fair, accountable, explainable, and privacy-friendly in AI-based banking services. The benefits of responsible AI implementation include boosting customer trust,, minimizing worries about algorithmic bias, and fostering greater adoption of AI-powered financial services [7], [16], [21].

Last but not least, banks could integrate AI as a strategic approach to customer retention. Developing a personalized customer experience, delivering intelligent customer support, proactively delivering services, and offering customized financial products can help boost customer satisfaction, customer engagement, and customer loyalty. The power of AI in personalization, then, lies in its ability to keep customers engaged in the highly competitive digital banking landscape, making it an effective retention strategy [2], [3], [5].

9. Future Research Directions

The present study suggests a conceptual framework for future research with some opportunities outlined. The framework is conceptual in nature and the direct, indirect, and moderating effects of the proposed constructs are to be examined in future studies by using advanced quantitative techniques like Structural Equation Modeling (SEM) or Partial Least Squares-Structural Equation Modeling (PLS-SEM) for empirical validation of the proposed relationships [1], [16].

Future studies can also be done for comparative analysis across countries to examine the impact of cultural, technological, economic and regulatory shift on adoption and effectiveness of AI-driven personalized banking services. The generalizability of the proposed framework for different banking environments would



be enhanced by such comparative analyses [1, 21].

The other area of research that holds promise is comparing public sector banks with private sector banks to see the difference in the use of AI, customer trust, financial inclusion programs, and customer loyalty. This type of research can offer important insights into an organization's readiness and strategies for digital transformation in various banking service sectors [9, 16].

Another key area for further exploration is the evolution of Generative AI towards the creation of more sophisticated systems. One of the most significant future research opportunities is the development of more sophisticated Generative AI systems. Conversational AI, large language models, intelligent virtual assistants, and AI-powered financial advisors can impact customer experience, financial decision-making, and personalized banking services, which are areas for researchers to explore [18], [21]. The contribution of Explainable Artificial Intelligence (XAI) to banking should also be studied in the future. Exploring the effects of transparency, interpretability, and explainability of AI on customer trust and acceptance of AI-powered financial services would greatly enrich the existing body of research on ethical AI governance [7, 16].

In conclusion, future empirical studies could include digital literacy as a moderating variable to investigate if the effectiveness of AI personalized banking services is affected by customer's technological knowledge and digital competences. Digital literacy can impact consumers' comprehension, uptake, and confidence in AI-driven financial innovations, impacting both customer trust

and financial inclusion and customer loyalty [11], [17], [22].

10. Conclusion

Artificial Intelligence (AI) has become a game-changer in the banking sector, promising to revolutionize the industry by providing financial institutions with the means to offer tailored, efficient, and customer-focused banking solutions. Artificial Intelligence (AI) is undeniably one of the most promising technologies in the banking industry, offering financial institutions the potential to transform the way they provide banking services. The era of personalized banking has been defined by the intelligent automation, predictive analysis, machine learning, conversational Artificial Intelligence, and data-driven decision making processes introduced to traditional banking by AI, which have improved consumer banking experiences and driven better quality in financial services delivery. AI-powered tools and solutions are now playing a crucial role in today's ever-changing digital landscape as banks strive to meet evolving customer demands for personalised financial products, tailored recommendations, proactive customer support and intelligent financial advice, which help banks improve customer relationships and enhance organisational competitiveness [2] and [3] and [13].

The conceptual study aimed to explore the potential of AI-powered personalized banking services as a holistic approach to understanding how it affects customer trust, financial inclusion, and customer loyalty. The study revealed that the main antecedents affecting customer trust and financial inclusion were AI-powered personalised banking services, which in turn impact customer loyalty, after a thorough examination of the most recent



literature. The framework also acknowledges ethical governance of AI, such as transparency, explainability, accountability and data privacy, as a contextual factor which contributes to customers' trust in AI-powered banking services, and to responsible implementation of AI [7], [16], [21].

The suggested framework builds on the previous research by combining customer trust and financial inclusion in a single conceptual model which helps understand how personalized banking services with AI can support customer loyalty in the long term. The studies conducted before focused mainly on the adoption of AI, customer experience, financial inclusion and customer loyalty individually and without any relationship between them [1], [4], [7]. The current study integrated all these constructs in a theoretical framework, which explains the interrelationships between these constructs [2], [5], [8]. The integration helps to strengthen the theoretical understanding of AI and banking and provides a basis for future empirical studies.

The study also offers practical lessons for financial institutions looking to apply AI technologies to boost customer relationship management, financial inclusion, ethical AI principles, and customer retention. Responsible AI governance and personalization strategies that prioritize the customer can enhance trust, provide inclusive financial services, and create sustainable competitive advantages for banks in the digital era [10], [11], [14].

The proposed framework is conceptual, hence it is not empirically tested. Thus, future researchers are advised to study the relationships proposed in this study by quantitative analysis with Structural

Equation Modeling (SEM) or Partial Least Squares Structural Equation Modeling (PLS-SEM). Further research could also shed light on how Generative AI, Explainable AI, digital literacy and cross-country banking environments affect the use of AI for personalizing banking and their impact on customer behavior [18, 21].

To conclude, AI personalized banking services are a great chance for financial institutions to build customer trust, promote financial inclusion, and increase customer loyalty. When compatible with ethical AI governance and customer-centric banking approaches, intelligent technologies can revolutionize the banking sector, offering opportunities for more inclusive, trustworthy, and sustainable financial ecosystems of the future.

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