



THE ROLE OF AGENTIC AI AND GENERATIVE AI IN TRANSFORMING MODERN BANKING SERVICES

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ABSTRACT

The research is based on the importance of the agentic AI and generative AI that can change the current banking services. The entire analysis has been executed using secondary qualitative analysis using journals and other reports. A total of three themes are generated that are decision-making and automation using agentic AI, personalisation and fraud detection using generative AI, and integration issues, together with future opportunities. The results indicate that these two tools and hybrid human-AI decision-making are used to mitigate fraud-related activity in the banking sector. These findings cover gaps in the past research, which concentrated on isolated applications. The study finds that ethical adoption of agentic and generative AI will lead to innovation, build customer confidence, and deliver sustainable banking solutions.

Keywords: *Agentic AI, Generative AI, Modern Banking, Digital Transformation, Fraud Detection, Personalisation, Decision-Making, Automation, Risk Management, Customer Experience, Ethical AI, Financial Services Innovation*

I. INTRODUCTION

The digital technology is developing day by day at this time, the financial sectors, like the banking sector, are trying to modify their transactional operational process. In this process, the banking sectors are using two AI-based, newly developed technologies, such as agentic AI and generative AI. These two are used in two different ways such as agentic AI is used for automatic decision-making processes, and generative AI is used to perform details analysis of individualized communication, fraud detection, and powerful analytics [1]. These two technologies are very effective for modern banking operations. These technologies can help to reduce the fraud that are detected in these financial sectors and also reduce the manual workload. The smart automation process can help to fill all fraud-related gaps in these sectors. This study helps to analyse these technologies in a details way to understand the opportunities, challenges and future directions of sustainable banking innovation.

Problem Statement:

The present financial sectors are facing various challenges to maintain their customer expectation and technological automation in this digital era. The other challenge is to maintain the authenticity of their customer raw

data [2]. The agentic AI and generative AI can help to address these challenges, improve financial services, regulation, and sustainable development within the banking sector.

Aim and Objectives of the Research:

The aim of this research is to investigate agentic AI and generative AI that are transforming modern banking services by enhancing efficiency, customer experience, and innovation.

- To evaluate the role of agentic AI in enhancing decision-making and automation in banking.
- To analyse generative AI that supports personalised customer interactions and fraud detection.
- To identify challenges and future opportunities for integrating AI technologies in banking operations.

II. LITERATURE REVIEW



Fig 1: Flow of the Research



Structured Literature Review Approach followed the following steps:

- I. Keyword identification and search.
- II. Screening articles by relevance.
- III. Thematic analysis of selected studies.

Academic Database and Source Utilisation for this study are:

- I. Google Scholar.
- II. IEEE Xplore.
- III. ScienceDirect, SpringerLink.

A. Searching Study:

The literature search is aimed at determining academic literature concerning agentic AI, generative AI and their use in contemporary banking. The keywords included: AI in banking, agentic AI in finance, generative AI in finance and digital banking transformation. These keywords are used in databases to identify relevant and high-quality and peer-reviewed research studies.

B. Selection of Journal Articles:

Articles are filtered on relevance, recency and credibility. Preference is given to peer-reviewed articles of reputed computer science, finance and banking technology journals. The literature that provided practical applications to the case, or conceptual frameworks or critical evaluations to AI adoption within financial services is picked to undergo a thorough thematic analysis and comparison.

C. The Goal of the Review:

The review will aggregate the current literature on agentic AI and generative AI in contemporary banking that can change the banking system and its constraints. It also aims at finding the gaps in the existing literature, giving information on future areas of research, and contributing to the evidence-based solutions to the effective implementation of AI in financial services.

D. Study of Previous Literature AI in Personalised Banking Services



Fig 2: Agentic AI in Banking

Customising financial products and services is an important trend in contemporary banking, and AI allows customising financial services. According to [3], the agentic AI adjusts recommendations to the needs of the customers on its own, whereas generative AI produces personalised content, like financial advice or chat responses. Previous research has shown that AI-enhanced personalisation can lead to enhanced customer satisfaction and retention [4]. The problem of data privacy, explainability, as well as fairness remains, and it restricts the mass trust. Studies indicate that personalisation enhances competitiveness, but banks should strike a balance between automation and ethical issues. It is an opportunity to have customer-centric and scalable services because of the integration of agentic and generative AI, yet the governance frameworks are still immature.

Fraud Detection and Cybersecurity

One of the most important uses of AI in the banking sector is fraud detection [5]. The benefit of agentic AI in improving security is that it actively monitors transactions, detects irregularities, and responds to threats. According to [6], this is complemented by generative AI to simulate fraud scenarios to build more robust detection models. The literature shows that AI has a drastic effect of diminishing the false positives and enhancing efficiency in threat response [7]. There is still the issue of adversarial attacks in which malicious individuals use the AI's weaknesses. According to [8], explainable AI and layered security models are necessary in the case of security. The integration of predictive simulations of generative AI with real-time



responses of agentic AI is a good defence against the dynamic cyber threats of financial systems.

AI in Credit Scoring and Risk Assessment

The use of traditional credit scoring and risk evaluation has been based on unchanging models, which are not flexible enough to change the behaviour of customers. According to [9], in agentic AI, self-learning mechanisms are introduced to keep risk models updated, whereas in generative AI, synthetic data are generated to reinforce the training of models. There are better predictions and inclusivity in the literature, particularly among the underbanked. The important issue is prejudice and insufficient transparency of the AI-based credit decision [10]. Literature underlines the need to use explainable frameworks to keep customers confident and regulatory within acceptable limits. A combination of agentic and generative AI has the potential to provide more dynamic and predictive risk assessment in the banking sector.

AI-Driven Customer Support and Virtual Assistants



Fig 3: AI-Driven Customer Support in Banking

The new use of various advanced technologies such as AI-based chatbots and virtual assistants, in the banking sector [11]. All these mentioned systems are up-to-date with agentic AI and generative AI. These technologies can enable proactive and context-aware interaction that can increase conversational fluency and personalisation. Using these technologies, the cost of operations has been lowered. On the other hand, customer interaction and availability have been increased [12]. Among these advantages, there are some disadvantages also, such as addressing complex queries and maintenance of a large

database [13]. There are also fears of emotional disconnection and the sensitivity of data in conversational banking. The next trend of AI usage in customer service is the hybrid model, in which AI assistants will be used in addition to human advisors, combining efficiency with empathy in customer service.

Literature gap

The analysis of all the above literature can help to understand the AI utilization in fraud and risk analysis in customer data support in the banking sector. There are various gaps still present in this review regarding the implementation of agentic and generative AI in the banking industry, specifically in the area of ethical governance and customer trust. This gap will be addressed using the thematic analysis in the data analysis part of this research.

III. METHODOLOGY



Fig 4: Methodology

The study uses a secondary qualitative research methodology to analyse this technological advancement in the banking sector. The philosophy of this research is *interpretivism* because the idea of the research is taken from the already available journals to understand the meanings, patterns, and implications of AI adoption in financial services [14]. This philosophy can help analyze various previously done literature to find various contextual viewpoints for this analysis.

The approach of this research is an inductive type because this research used secondary qualitative data. No practical implementation has been done here. Various industrial reports and journals are analyzed in this study to understand the utilization of these technologies in the banking sector. This type of inductive



research approach can help to determine the extent of agentic and generative AI that is practically used in the banking operations [15]. This process also helps to detect fraud, credit scoring, customer service, and customized services

The systematic literature review (SLR) methodology is used. The targeted keywords are used to retrieve peer-reviewed articles in the academic databases such as Google Scholar, ScienceDirect, IEEE Xplore and ACM Digital Library. The process is conducted in three stages that are keyword searching, relevance and quality screening and analysis of the analysed works through thematic analysis.

After collecting secondary qualitative data, these data are analyzed using thematic analysis. A total of three themes have been generated to understand the uses of agentic AI and generative AI. This approach allows for finding similarities, contradictions, and gaps between the current studies [16]. The procedure guarantees an orderly synthesis of knowledge and also points out under-explored regions. This is a conceptual study based on *secondary data* as opposed to direct empirical data. Still, it makes an important contribution by consolidating the scattered literature, filling the gaps identified, and offering a conceptual framework to pursue in further research on AI-driven innovations in the contemporary banking industry.

IV. DATA ANALYSIS

Theme 1: Agentic AI enhances decision-making and automation in modern banking by enabling adaptive, context-aware, and efficient processes.

The agentic AI is a novel trend in automation whereby systems behave autonomously and are able to adjust to dynamic conditions and make their own decisions [17]. This can be particularly useful in the banking industry, with loan approval, risk analysis, compliance monitoring and real-time fraud prevention processes. Agentic AI systems can change strategies as patterns change, and do not require constant human intervention to do so.

This allows banks to make decisions more quickly, data-driven, and accurately to improve operational efficiency and customer confidence.

There is a marked gap in the existing knowledge of the application of agentic AI to support decision-making, but literature also reveals a considerable advancement in applying AI in the field of decision support. Extreme automation poses the threat of algorithmic bias, non-explainability, and accountability, and these are significant in highly regulated sectors like banking [18]. Although agentic AI may make the credit evaluation faster, the existing literature is scarce on the way to guarantee the growth of fairness and transparency in the evaluation procedure. The research is dedicated to individual uses, not to investigating the extension of agentic AI to encompass a range of banking tasks to be integrated into a single decision-making system. Creating hybrid models in which human knowledge and agentic AI co-exist to offer explainable, ethical and customer-centric responses is another neglected area [19].

This thematic analysis aims to fill these gaps by summarising the available studies to present a moderate stance in which agentic AI is not perceived to be a substitute for human decision-making but as a supplement to it. Through this, banks will be able to use their adaptive features in their efficiency and scalability without loss of accountability and regulatory compliance. Agentic AI can foster more robust decision-making ecosystems, but that would have to be wisely integrated, governed, and built on trust with stakeholders.

Theme 2: Generative AI supports personalised customer interactions and strengthens fraud detection to improve trust and engagement in banking services.

Generative AI has become a disruptive element in the contemporary banking sector, especially in the fields of individualised communication with customers and fraud [20]. Banks can use large language models and generative methods to generate custom



financial advice, personalised messages and even simulate cases of fraud to make detection models more robust. These features are not limited to classic automation, and banks can engage with customers in much more natural and human-like modes, as well as take the initiative in dealing with security threats.

The investigations report the effectiveness of using generative AI in the customer service sector, where AI-based chatbots and virtual assistants offer 24/7 and context-based customer service [21]. There is limited literature discussing the ethical and regulatory implications of AI-driven personalisation. The issue of fairness is urgent because, in the case of over-personalisation, discriminatory financial proposals or discriminatory targeting may occur. On the same note, although generative AI has the capability to model patterns of fraud to improve predictive security, the use of synthetic data and vulnerability to adversarial attacks has not been studied adequately.

The other gap is that it is possible to combine the two functionalities of generative AI, namely personalisation and detection of fraud, into a consistent strategy. The majority of the research focuses on these functions separately, neglecting the possibility of their mutually supportive effects [22]. As an example, to keep customer experiences safer and more reliable, fraud detection insights can be used to create personalised financial guidance.

This study fills these gaps by focusing on a responsible adoption framework of generative AI in banking. Using thematic synthesis, it identifies the way to strike a balance between personalisation and fairness, robust fraud detection with ethical protection, and combines the two activities to create the ultimate customer-centric banking [23]. The banks will have a chance not only to ensure technological progress but also a high level of customer confidence, compliance with regulations, and competitiveness.

Theme 3: The integration of agentic AI and generative AI in banking presents significant challenges but also creates opportunities for future innovation and sustainable growth.

Although the agentic AI and generative AI have proved to be promising when applied separately, their integration in the banking system is not well-explored in the existing literature. The factor is that a single ecosystem is formed in which agentic AI is in charge of running things and decision-making, with generative AI enhancing the customer experience, risk analysis, and forecasting [24]. Together, they would be able to redefine modern banking, as efficiency, personalisation, and resilience would be combined.

Nonetheless, there are still challenges of integration. Proposed literature identifies a problem in data privacy, algorithmic transparency, and governance gaps as the most significant obstacles to overcome, but does not present much of a framework that would enable them to be overcome in a real-world banking scenario [25]. The ethical concerns as the explainability of AI-based credit decisions and the responsible use of synthetic data, are not solved. Also, regulatory uncertainty is a hindrance, since regulations have not yet adapted completely to the complexity of agentic and generative AI systems.

The literature is focusing more on technological ability than on socio-technical aspects, including adjustment of the workforce, customer confidence, and acceptance of AI usage in financial decision-making by the culture [26]. These softer terms are of importance to sustainable adoption. Little is said regarding the cross-functional integration, where AI is used across the customer support, compliance, risk, and operations on a seamless basis.

This thematic analysis aims to fill the gaps by synthesising the opportunities to be able to integrate responsibly. It proposes a hybrid governance system that integrates ethical AI principles, explainability mechanisms and



sound regulatory alignment. It points out the future possibility of using agentic and generative AI together to develop adaptable, customer-focused ecosystems. These AI paradigms are the new frontier in the contemporary banking transformation.

V. FINDINGS AND ANALYSIS

The results of this study not only emphasise the transformational character of agentic AI and generative AI in contemporary banking but also deal with the drawbacks in previous literature. The thematic analysis has revealed emerging ideas on these technologies that can be strategically implemented to close the gaps in personalisation, fraud detection, decision making and integration.

Firstly, the research concludes that agentic AI is an important part of the decision-making process and automation, as it goes beyond the unchanging rule-based systems. In contrast to the previous models, requiring frequent human interventions, agentic AI proves to be independent in changing financial tendencies. This finding demonstrates that agentic AI can aid real-time compliance oversight, dynamic risk evaluation, and adaptive loan approvals, and thus fill the literature gap on holistic integration in all banking operations [27]. Younger AI-based research also presents the possibility of hybrid systems, in which agentic AI operates with human knowledge to make decisions accountable, fair, and transparent.

Second, the results affirm that generative AI has two advantages in personalisation and fraud detection that enable banks to provide secure and customer-centred services at the same time. The main finding is that it is possible to connect the information on fraud detection with the personalised financial advice that has not been addressed in the previous studies. These two functions allow connecting generative AI with each other, that helps customers experience greater security and customisation, and it is also more effective in detecting fraud cases by banks [28]. The methodology serves to fill the past loopholes about the fragmented applications and places importance on the responsible application of

the generative models of fairness and data protection.

Third, the study indicates that the combination of agentic AI and generative AI has not been well studied in the literature, especially regarding integrated frameworks and regulatory compliance. The uncovered truth here is that the two technologies are not just complementary but also synergistic- agentic AI improves operational decision-making, whereas generative AI improves customer-facing services and predictive modelling [29]. Their joint use is filling the literature gaps of fragmented adoption by providing more of a coherent and future scale of banking innovation.

Thematic perspective on the adoption of AI in banking. It highlights new findings like hybrid human-AI decision making, personalisation in connection with fraud detection and the development of integrated AI systems. These contributions are informative in terms of theory and practical in terms of application to the banks in need of sustainable and ethical AI-driven transformation.

Limitations

- The research relies solely on secondary literature, limiting empirical validation.
- The study is conceptual and may not capture rapid, real-time advancements in banking AI adoption.

Implementations

- Banks can adopt hybrid human-AI models to balance automation with ethical oversight.
- Integration of personalisation with fraud detection can improve customer trust and security simultaneously.

VI. FUTURE DIRECTION

Future studies are needed to formulate hybrid conceptual frameworks based on the integration of agentic AI and generative AI throughout banking activities. More focus should be on ethical governance, explainability, and data privacy to enhance customer confidence and compliance with the regulations. Conceptual results will be



confirmed by empirical research based on practical datasets in banks, and will quantify the practical effects. Additional study of socio-technical factors, including workforce preparedness, consumer acceptance, and cultural views of AI, will also add to knowledge [30]. Also, longitudinal studies can compare the role of long-term AI integration in determining financial stability, customer satisfaction, and innovation within the transforming digital banking ecosystem.

VII CONCLUSION

This research paper concludes that agentic and generative AI are transforming the modern banking sector through decision-making, personalisation, fraud detection, and service integration. The thematic analysis showed that there were three main areas such as the role of agentic AI in adaptive automation, the two-sided impact of generative AI on personalisation and fraud prevention, and the opportunities and challenges of integration. The results indicate that each of the technologies in isolation delivers value, but when it is combined, the resultant banking becomes more powerful. This research offers an approach to ethical, sustainable and innovative transformation of AI-powered banking by addressing gaps in transparency, fairness, and unified adoption.

VIII. REFERENCES

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