ROLE OF ARTIFICIAL INTELLIGENCE (AI) IN RESHAPING THE BANKING SECTOR IN GHANA: THE GOOD, THE BAD AND THE UGLY

Kofi Nyarko Gyimah *

Senior Lecturer, Faculty of Business Administration

Pentecost University, Accra, Ghana.

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ABSTRACT

Ghana's banking industry is going through a significant transition as a result of advances in artificial intelligence (AI) technologies. This research sought to outline the beneficial, negative, and potentially harmful effects of artificial intelligence (AI) on Ghana's banking sector. Improved financial inclusion, simpler processes, and better customer experiences were identified as the "positive" elements of AI implementation in Ghanaian banking. Furthermore, banks now offer their services to marginalized communities thanks to AI-driven solutions, which promote greater financial inclusion throughout Ghana. However, integrating AI into banking has "bad" effects in addition to these positive ones. Because AI systems require access to large amounts of sensitive customer data, concerns about data privacy and security breaches arise. In addition, the dependence on automated decision-making mechanisms might unintentionally reinforce prejudicial trends found in past data, aggravating problems with inequality and prejudice in the financial services industry. The "ugly" aspects of AI deployment in Ghanaian banking are also evident from the responses received. Since AI systems have a substantial impact on important financial decisions, ethical conundrums of responsibility and transparency arise. AI-driven automation is also posing issues to the workforce by replacing traditional banking professions, which could worsen socioeconomic inequality and unemployment. The results of the study showed that while AI holds immense potential to revolutionize the banking sector in Ghana, its adoption necessitates careful consideration of its broader implications. Mitigating the risks associated with AI implementation while maximizing its benefits requires proactive regulatory frameworks, ethical guidelines, and investments in workforce reskilling. Ghana's banking sector can harness its transformative power to drive sustainable growth and equitable development.

Keywords: Artificial Intelligence, Banking Sector, Financial Inclusion, Regulation, Workforce Displacement.

Corresponding Author: Email: kngyimah@pentvars.edu.gh; kngyimah67@gmail.com;

I. INTRODUCTION

The digital marathon, which began with the introduction of the internet that has led organisations through multiple stages of digitalisation, and has reached the Artificial Intelligence (AI) phase for the financial services sector. The rise of artificial intelligence (AI) is seen to be modifying the laws governing the financial sector, weakening the system that has held financial institutions together and creating opportunities for further advancements and novel business models (OECD,2021).

There is no argument that one of the key factors enabling digital transformation in a large variety of businesses is artificial intelligence (Ahmed et al. 2022). Businesses may find it easier with artificial intelligence (AI) more than before in terms of creativity, adaptability, and versatility. AI is already being used in a variety of enterprises, including banks, to drive digital transformation and increase productivity and competitiveness. Artificial Intelligence is revolutionising the financial services and banking industry in particular by changing hiring and labour management practices.

Financial institutions must employ cutting-edge technology to stay ahead of the curve, optimize their IT, and meet the most recent market demands in an era where technology has permeated practically every industry. AI enables computers to do a wide range of difficult tasks. AI and technology-driven modern banking have greatly streamlined the process of opening an account, making payments, credit scoring, onboard documents processing, detecting and complying with fraud, improving investment appraisal, and preventing money laundering, among other things (Kumar and Nagara, 2021). There is less waiting and error because the procedure is faster as automated systems verify your information.

The banking industry is extremely important but customer service in traditional banking is very laborious procedure that needs transformation. Banks are gradually making use of technologies to meet the diverse demands of their new-age customers. In order to improve transparency in banking activities and to increase financial inclusion, banks in Ghana are implementing technological innovations within the industry. Some already used financial tools have been transformed into precise AI solutions to allow for complete automation to assist customers in making consumption choices. As such AI now provides banks with an advanced, cutting-edge technology that may enhance task automation, customer service, and problem-solving (Deloitte, 2018). Banks make use of AI to enhance credit scores, detect possibly fraudulent transactions, and automate data administration tasks. AI presents potential and problems as technology becomes increasingly common in banking and finance, requiring existing procedures to be adjusted to suit the demands of digitisation.

The banking industry will be significantly impacted by this technology in the future. Although generative AI presents new problems for the financial services industry, it also has a tremendous deal of potential to drive efficiency and innovation. How do banks train their employees, for example, to collaborate with AI to do complicated jobs and make important judgments in the future? How can generative AI be reliably implemented across all functions? How do banks make sure that no one is left behind? This study is to assess how banks are making use of AI through digitization to reshape the banking sector in Ghana. The study specifically sought to answer the following questions:

1. How has the implementation of Artificial Intelligence (AI) positively impacted efficiency and customer service in the banking sector in Ghana?

2. What challenges are associated with the adoption of AI in the banking sector in Ghana, particularly concerning customer privacy and data security?

3. What are the potential societal implications of over-reliance on AI in banking, and how might this impact trust in financial institutions among the Ghanaian population?

II. LITERATURE REVIEW

A. Definition and Importance of Artificial Intelligence (AI)

In actuality, there is no widely agreed-upon definition of artificial intelligence (AI). The extreme diversity of definitions that exist is a feature of artificial intelligence (AI) itself, not the result of negligence. John McCarthy, who coined the term in 1956, defines it as "the science and engineering of making intelligent machines". It has been referred to by Russel and Norvig, (2020) as “the birth of artificial intelligence.” It is a technology that enables machines to imitate various complex human skills. Nilsson, (2009) describes AI as a “technology that functions appropriately and with foresight in its environment”. Additionally, it has been defined as "Systems that display intelligent behaviour by analysing their environment and acting, somewhat autonomously, to achieve predetermined goals."(HLEG AI, 2019). It has several uses in today's society, these include expert systems which are intelligent systems that emulate the ability of a human expert, decision support systems help with making decisions by using data, algorithms, mathematical models, and finally artificial intelligence has been used to control robots and provide an aid with path finding. AI plays a critical role in the banking industry. It is the process by which banks are able to utilize data in order to build predictive models and create an intelligent, fact-based decision support system.

These systems allow various financial institutions to achieve automation on various tasks that typically require human intelligence. This could range from credit card applications and approvals using predictive models and an automated approval process, to deploying intelligent chatbots. AI is about building data and applying intelligence to it, and in today's age, it is the intelligent things that we see and take for granted that are going

to improve. These kinds of intelligent things would never be possible without AI. Artificial intelligence provides banks with data and insights about their customers. It provides tools to succeed in a highly competitive market, and it is changing the way customers and banks interact.

Artificial intelligence (AI) is the machine imitation of human intelligence, particularly in computer systems. Self-correction, reasoning, and learning are some of these processes. Artificial intelligence (AI) has enabled machines to learn from fresh inputs and carry out activities that resemble human intelligence. Today, AI is highly fragmented among several distinctive sub-fields, including services and applications in the banking world. However, the High-Level Expert Group on Artificial Intelligence (AIHLEG, 2019) definition of artificial intelligence is used for the purposes of this study, which is defined as "Systems that display intelligent behaviour by analysing their environment and taking actions - with some degree of autonomy - to achieve specific goals."

B. Impact of AI on Efficiency and Customer Service in the Banking Sector

The degree to which customers' expectations are met by the services they receive is one way to gauge a bank's performance. Consumers make service purchases in response to their own requirements. Customers have certain standards and expectations of how banks services should be done to fulfil their needs. As such measuring service quality can help enhance service delivery to satisfy customer needs in the competitive era in banking history to earn customer satisfaction. Al-Araj, et al. (2022) conducted research on the importance of AI application on service quality provided by Jordanian banks. Primary data was collected from 270 Jordanian banking clients employing correlation analysis to examine the correlations between AI and service quality and customer satisfaction. Their findings indicated a positive correlation between AI and the consistency of the service quality, the banks' ability to meet customer demands and uphold transparency and promptness with their clients.

Kaur, et al., (2020) researching on the concept of AI in banking concluded that AI is a valuable tool in the field of banking emphasising the various technologies that have emerged from AI in core banking activities that have help improve core banking activities, operational performance as well as customer support and analytics. Silberg and Manyika (2019), posit that artificial intelligence (AI) systems have the potential to mitigate human bias in decision-making processes by removing illogical biases resulting from subjective data interpretation. Miller (2018) points out that although AI systems are prone to embedded bias, they can nonetheless enhance the process of making decisions by reducing the influence of human prejudice.

Jewandah, (2018) undertook a study of four top Indian banks on how machine learning was changing the banking sector. The conclusion was that machine learning had brought advancement into the traditional banking system and that banks were adopting innovative technologies such as AI, blockchain and cloud computing to improve customer service and overall performance. When designing and training AI systems, human bias can have an impact on algorithms. A researcher's choice of features to include or exclude in the machine learning model, for instance, could be impacted by a range of psychological, social, emotional, and cultural factors. Catalini et al., (2018) research on machine intelligence vs human Judgement in New Finance Ventures concluded in this age of "information overload," artificial intelligence (AI) can assist people in efficiently screening, assessing, and managing vast amounts of data at a rapid pace. It may also provide useful insights that manual assessment cannot match, enabling financial decision-makers to make informed choices. These variables might also affect what the researcher has to say about the results of the AI system's training procedure.

III. METHODS

The study employed a qualitative research design, focusing on the use of semi-structured interviews to gather in-depth insights from employees of nine purposively selected commercial banks in Ghana, as well as the Bank of Ghana. The interviews explored participants' experiences, perceptions, and concerns about AI, using interview guides based on themes such as regulatory frameworks, ethical issues, and societal impacts. Interviews were individually tailored and conducted until thematic saturation was reached after eleven sessions. All interviews were recorded, transcribed using MAXQDA software, and analyzed to ensure accuracy and depth, with irrelevant content removed during transcription. Confidentiality and anonymity were ensured, and informed consent was obtained from all participants.

Data analysis, guided by the Technology Acceptance Model 2 (TAM 2), focused on cognitive instrumental processes that revealed AI's positive contributions to customer service efficiency, as well as its associated challenges such as data security and trust. The study aimed to answer three research questions related to the benefits, drawbacks, and societal implications of AI adoption in Ghana's banking sector, providing a detailed understanding of how digitization is reshaping the industry.

Several ethical considerations were observed throughout the study, including confidentiality, participant privacy, and informed consent. The researcher ensured that participation in the study was entirely voluntary, without any coercion, and that participants were fully informed of the purpose of the research.

IV. RESULTS

This section presents three major conclusions on the alleged benefits of AI technology. The literature researched provides support for these findings, which have similarities to the interviews. According to the TAM 2 framework, AI was seen as having a fierce degree of job relevance, which was a commonality across the majority of the interviews. Moreover, a majority of the institutional interviews indicated that AI application would have had a significant impact on the financial industry. The primary elements of the AI technology that were utilized as inspirations were its capacity to lower costs by reducing the number of arbitrators, computerizing procedures by utilizing smart contracts, trackability, fostering confidence, and rapid settlements being useful for risk prevention, control and supervision. The application of AI technology was also

anticipated to bring about a new wave of changes in risk management, credit financing, investment choices, financial goods, and service channels and procedures.

It was confirmed that establishing trust alone is an insufficient basis for a AI application in banking. This is because trust can sometimes be established more easily and beneficial than implementing AI technology. AI technology will not have much of a comparative advantage over any other technology in that sense. It was confirmed regarding the expense of putting the technique into practice by another interviewee that the cost of implementing AI technologies is often very high. On the other hand, in situations like multilateral settings, when confidence cannot be established in any other way, using AI can be beneficial and less expensive. When asked if AI is especially beneficial, the industry interviewees answered the following regarding the comparative benefit of AI:

> *"Artificial Intelligence (AI) aims to improve intermediary work, give buyers and sellers legally-compliant matching forecasts, efficiently find potential clients for businesses, and screen related asset targets for institutional customers. But unfortunately the cost of implementing a AI technology is very expensive" –* ***Interviewee A***

> *"Artificial intelligence (AI) automate and streamline repetitive tasks, increasing productivity and lowering human error. Employee concentration may now be directed toward more intricate and valuable duties, which boosts productivity and results in better customer service". –* ***interviewee B***

> *"AI systems can also ensure ethical and social responsibility. That is, AI may help uphold human dignity, rights, and values and advance societal well-being. For the purpose of directing the creation, advancement, and application of AI systems, financial institutions must embrace ethical frameworks and concepts including accountability, transparency, explainability, and fairness".* ***Interviewee E***

Investment support is critical to the growth of any industry. Investors will find this to be an alluring prospect as the deep integration of AI and finance is poised to transform the banking industry, but continuous innovation in AI technology makes investment into AI technology very expensive. The following were mentioned about AI and regulatory requirements:

> *"Banking institutions are being forced by client expectations to use AI technologies like data mining, language, and image recognition in order to better serve their cus-tomers' needs and make their experiences more enjoyable. However, the technology is still in its infancy and is therefore incredibly adaptable. Since regulatory compli-ance procedures necessitate the gathering of data from numerous source systems, the normal regulatory requirements of the banking industry have not been able to prevent bankruptcies from happening. Artificial intelligence (AI)-driven solutions can help with a number of the regulatory issues facing today's financial systems by streamlining data gathering procedures, accelerating and optimizing decision-making, and strengthening an organization's capacity to comply with legal require-ments." –* ***Interviewee C.***

> *"In order to use AI in the financial sector, careful personnel management is required. In order for AI systems to be just, open, and compliant with regulations, humans must supervise and direct them. Organizations should teach staff members how to use AI and make informed decisions when interacting with clients and managing sensitive data. To make sure AI-driven judgments comply with industry rules and moral princi-ples, human monitoring is still essential. -* ***Interviewee D****.*

The aforementioned quotations demonstrate how the lack of regulations or standards is a characteristic that negatively impacts the perceived serviceability of AI. This confirms the earlier conclusion by Patki and Sople, (2020) and recently affirmed by Yan (2023), that the development of AI is still in its early phases, with perceptual intelligence giving way to cognitive intelligence. For example, traditional anti-money laundering regulations because they are built on paper, are insufficient in the age of AI. Certain electronic payment methods are exempt from these regulations. Paperless financial firms can now be run remotely thanks to AI, which makes it much harder for the monitoring of money movements. There is therefore the need for standardization at the code level to ensure that the full benefit of AI is amassed.

When asked about challenges and drawbacks associated with the adoption of AI in the banking sector, the following response was received.

> *"Building and managing a workforce is a significant obstacle that will prevent AI from having a bigger impact on banking operations. To guarantee that the AI technologies are operating to their full potential, the proper amount of human engagement is crucial. As technology is adopted more widely, workers must be retrained to reflect the changing industry trend. Therefore, it is imperative that banks have a workforce prepared to handle the problems posed by the use of AI".* ***Interviewee - E***

The above quotation indicate that AI is a comparatively recent advancement in technology. This implies that businesses who wish to use it will have to retrain their personnel in order to ensure their staff have the appropriate skill sets; they might even want to think about bringing on new employees. Data scientists, AI specialists, machine learning engineers, as well as software developers are in great demand in order to create, develop, and execute AI-powered solutions. Banks and other Financial institution will need to make adjustments to their internal training programmes and talent acquisition strategies as existing strategies employed in standard recruitment practices may not be sufficient to draw in and keep such tech talent. This assertion is collaborated by the Artificial Intelligence and Big Data in the Financial Services Industry Report (2021) which highlighted the need for qualified

specialists to implement and use artificial intelligence in finance.

When asked about the potential societal implications of over-reliance on AI in banking, and how might this impact trust in financial institutions among the Ghanaian population, the following responses was mentioned:

> *"The necessity of human-AI collaboration—wherein people and machines cooperate to get best results—is one of the primary ramifications of utilizing AI in banking. Because of this, financial professionals must acquire new abilities and competencies in order to supervise and enhance AI systems, such as data literacy, critical thinking, creativity, and emotional intelligence. Establishing transparent and unambiguous governance and accountability processes is crucial for financial institutions to guarantee that AI systems are in harmony with human values, objectives, and norms".* ***Interviewee A***
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> *"effects of AI use in banking on consumer privacy and trust are other areas of concern. Through the provision of convenient and tailored services like fraud detection, robo-advisors, and chatbots, artificial intelligence (AI) may improve consumer experience and satisfaction. However, because AI gathers and analyses vast amounts of private and sensitive data, like credit reports, financial transactions, and biometric data, it can also be a threat to consumer security and privacy. Financial institutions must thus make sure that AI systems respect consumer rights, preferences, and consent in addition to abiding by all applicable rules and regulations".* ***Interviewee G***
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> *"though IA has the potential to provide jobs, it also has the ability to cause job losses. Infact, job could be cut in certain sections of the banking industry with the transfer of labour to capital as AI-driven solutions could replace staffing"* ***Interviewee H***

From the above quotations, it can be deduced that though AI provides positive benefits it also has its drawbacks. The use of AI technology in banking and the provision of financial services in general could lead to the creation of certain types of risks which may lead to unforeseen losses for clients as well as have the potential of affecting the efficiency of the financial system.

V. CONCLUSION

The advantages of AI exceed the drawbacks. The expense of creating and deploying AI systems, in addition to possible security issues, is a major drawback. There are, nevertheless, a number of advantages to take into account. Artificial Intelligence facilitates rapid data and study analysis, enabling information collecting and prediction in a matter of minutes. Humans need hours to do this task. By thoroughly comprehending every scenario that could occur and making the optimal choice, AI also lowers error rates. Furthermore, by managing monotonous duties, AI frees up staff members to concentrate on important projects. By offering objective forecasts and problem-solving based on superior facts, artificial intelligence (AI) helps people make wise decisions.

It is critical that banks embrace technology and realize its potential as we navigate the AI era. Banks that don't adjust could end up losing out on disruption. In order to resolve ethical issues, protect data privacy, and promote the appropriate application of AI, governments and legislators must also contribute to the creation of regulatory frameworks. Artificial Intelligence has a significant and wide-ranging effect on the banking sector. It is changing corporate environments, rethinking the banker/customer relationship, and revolutionizing the way banks function. Organizations that want to survive and grow in the AI-powered future must embrace this disruption and grasp the opportunities it offers. In order to prevent stifling innovation, regulators should make compliance optional for lower-risk applications of AI and mandatory for high-risk uses such as banks where attacks might have serious social repercussions. By addressing these challenges head-on, banks can effectively harness the transformative potential of AI to increase profitability while safeguarding the well-being and livelihoods of bank staff.

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