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Artificial Intelligence, Machine Learning and Effects on Financial Services in Nigeria

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ABSTRACT

The Nigerian financial services have, in the past and now, experienced tremendous vitality over time. A great deal of changes has been embraced in the area that brought about prompt expansion of service-related items, exercises, and hierarchical structures that have enhanced and expanded the machine learning of the financial service framework in Nigeria. Artificial intelligence has emerged as a breakthrough in academic performance, providing intelligent agents software programmed and developed inside a machine (system) to act like human experts. These intelligent agents can adapt themselves based on the user's immediate needs. In an era of technological and information explosion, artificial intelligence and machine learning have emerged as a breakthrough in financial services. This paper examined artificial intelligence and machine learning in financial services. Specifically, the paper discussed the concept of artificial intelligence, major applications of artificial intelligence, machine learning, chatbots, deep learning machines, big data technology, machine learning utilization, and financial services. The paper concluded that artificial intelligence implicitly possesses the capability to stimulate human intelligence and can be applied in various fields of human endeavor to achieve a competitive advantage in the global marketplace. The paper recommended, among others, that financial institutions should embark on an intensive capacity-building programme for their staff to enable them to be adequately equipped for the integration of artificial intelligence and machine learning into their day-to-day activities to increase their financial services in the global economy.

Keywords: Artificial intelligence, machine learning, chatbots, deep learning, big data technology

Jel G17, G21, C53

1. Introduction

The financial sector is being revolutionized today because Artificial Intelligence (AI) and Machine Learning (ML) are no longer a novelty in leading financial service providers. Previously, financial institutions only depended on rules and records while working on models. Still, with the help of AI and ML, it becomes possible to detect patterns and predict essential market trends, also automating the processes occurring in real-time, which significantly benefits each organization. These innovations impact some of the following areas, namely fraud detection, risk management

and assessment, customer-related solutions and services, algorithmic trading, and many others, which are more effective than traditional methods. It is an established fact and research that AI and ML have acted as the perfect solutions to an array of complex problems currently facing financial institutions. For example, machine learning algorithms can analyze enormous datasets for patterns to try to detect fraud when it occurs in transactions, which is more effective than traditional systems

Artificial Intelligence (AI) and Machine Learning (ML) are rapidly transforming the financial services industry. These technologies are being utilized more and more to improve processes, reduce costs, boost efficiency, and provide a superior customer experience. Recently, AI and ML have been widely applied in various financial services, such as fund traceability, fraud detection, credit scoring, risk management, and investment analysis. AI and ML have emerged as a breakthrough in academic performance, providing intelligent agent software programmed and developed inside a machine (system) to act like human experts. These intelligent agents can adapt themselves based on the user's immediate needs. As a result of the global economy, organizational competitiveness must be supported by artificial intelligence for effective machine learning.

In a highly competitive environment, AI is essential for a bank to obtain a dominant position and achieve higher profits (Cerulli, 2014). Therefore, the understanding of which artificial intelligence leads to improved machine learning is important. In recent years, the sector has been characterized by rapid changes in technology, automation, customer expectations, regulatory environments, and increased competition. These factors have compelled banks to adopt AI to remain competitive and retain customers. The complex and competitive environment in which present banks operate, combined with technological advancement and globalization, requires businesses to devise strategies to empower them to gain the upper hand over rivals. To achieve this, there is a need for management to determine the necessary financial services (Khalil, 2020). Artificial intelligence is one of the various services banks develop to enable them to outsmart competitors. Kombo and Letting (2019) opine that artificial intelligence is linked to machine learning and has emerged as a major source of competitive advantage. Specifically, the paper will discuss the concept of artificial intelligence, major applications of artificial intelligence, machine

learning, chatbots, deep learning machines, big data technology, machine learning utilization, and financial services.

1.2 Statements of Problems

Banks operate in an environment that is turbulent and constantly changing, due to shifting customer services, globalization, investor demands, market deregulation, and increased competition. Nonetheless, the climate presents difficulties that will not be quickly settled because of their intricacies. This has made banks create and embrace vital methodologies to manage evolving needs (Bragg, 2015). The fundamental tool for expanding and entering new markets is artificial intelligence, and banks develop different techniques to manage artificial intelligence and to gain a competitive advantage (Fouad, Tourabi & Lakhanti, 2018). Given the service-oriented nature of banking, maintaining strong customer relationships is crucial to an institution's sustainability. Machine learning, encompassing cognitive, emotional, and behavioral dimensions, plays a crucial role in shaping loyalty, satisfaction, and overall performance. Consequently, machine learning has become a strategic imperative for banks seeking to remain competitive in the digital era (Kumar *et al.*, 2019).

Objective of the study

- To what extent does artificial intelligence and machine learning aid financial awareness in Nigeria
- To determine the influence of artificial intelligence and machine learning on financial services in Nigeria

Reviews of Theoretical and Empirical Literature

The technology acceptance model (TAM) is an information systems theory that models how users come to accept and use a technology. The *actual system use* is the end-point where people use the technology. *Behavioral intention* is a factor that leads people to use the technology. The behavioral intention (BI) is influenced by the *attitude* (A) which is the general impression of the technology. The model suggests that when users are presented with a new technology, a number of factors influence their decision about how and when they will use it, notably:

- *Perceived usefulness* (PU) – This was defined by Fred Davis as "the degree to which a person believes that using a particular system would enhance their job performance". It means whether or not someone perceives that technology to be useful for what they want to do.
- *Perceived ease-of-use* (PEOU) – Davis defined this as "the degree to which a person believes that using a particular system would be free from effort".^[1] If the technology is easy to use, then the barrier is conquered. If it's not easy to use and the interface is complicated, no one has a positive attitude towards it

Artificial intelligence is the acumen, astuteness, or brainpower that enables humans to act rationally, perform tasks accurately, and efficiently. It is the computational part of the ability to achieve goals in the world. Artificial intelligence, as a term, covers a plethora of cognitive skills, including the ability to solve problems, learn, and understand language, among others. Okute, Olom, and Ewuru (2016) define artificial intelligence as the ability to use resources to achieve goals and as the ability to see order where none was seen before. Abinabo, Shagari, and Mashi (2025) believe that artificial intelligence is a general property of an evolving universe, being connected with information storage and information processing capacities of the physical universe.

This evolving artificial intelligence, according to Kurzweil (1999) cited in Okute *et al.* (2016), does not require an intelligent designer behind the scenes directing the universe. What is needed is a system with decision-making capability embedded into the normal flow of work that triggers action without human intervention by sensing conditions and applying codified knowledge to make decisions. This development in information system provides the end user with a variety of applications that fill the gap for human intervention in modern business operations and managerial decision-making.

AI and ML are accelerating a long, ongoing shift in finance from face-to-face interactions conducted in a customer's community to online products and services fueled by advanced algorithms that require little or no human interaction and can occur anywhere. Such applications may have benefits for financial institutions and their clients (Paul, 2024). Nowadays, the future of financial services is determined by the introduction of large data, coupled with advanced statistical

needs and machine learning algorithms, which can uncover patterns in an organization's data that are otherwise impossible to detect with traditional analytical tools. Artificial Intelligence (AI) is the main driver of the organization in remaining competitive and sustainable (Paul, 2024). This is because AI is well known for its advantages in time saving, cost reduction, and increased productivity. In today's dynamic business environment, organizations have no choice but to adopt artificial intelligence technology into their operations in order to stay sustainable. There are escalating trends of AI technology in business operations, as is evidenced by the research done by Sutton (2016). Artificial intelligence, which is also called "machine intelligence," is intelligence exhibited by machines, contrary to the usual intelligence displayed by people.

Mónika-Anetta *et al.* (2021) studied banking with a chatbot. The study aims to identify the factors that influence consumers' retention in using chatbot technology applied in the banking industry. The measurement development and hypotheses were based on the technology acceptance model extended with compatibility, customers' perceived privacy risk, and awareness of the service. The sample contains 287 respondents, out of whom 24% have previously used a banking chatbot. These measured items were validated by a measurement model, and hypotheses were tested using Partial Least Squares-Structural Equation Modelling (PLS-SEM). The findings highlight the importance of perceived compatibility and perceived usefulness in the adoption of banking chatbot technology. Awareness of the service has an effect on perceived ease of use, perceived privacy risk, and indirectly affects usage intention of banking chatbots through perceived usefulness. Also, perceived ease of use influences perceived usefulness, and perceived compatibility has an effect on both perceived ease of use and perceived usefulness. Perceived ease of use and perceived privacy risk show no effect on usage intention

2.1. Concept of artificial intelligence

Artificial intelligence is the general term used to describe the process of programming computers and machines to think and operate like humans (Paul, 2024). Artificial intelligence is often used to describe machines that are associated with the human mind, such as "learning" and "problem-solving machine." Artificial intelligence is the ability of a machine or a computer to copy from something that is natural, in terms of acquiring and applying knowledge and skills. When a machine mimics a human mind by thinking for itself, it is known as artificial intelligence. Artificial

intelligence and advanced analytics-driven decision-making have transformed the ability of smaller financial service providers to compete with larger institutions. Artificial intelligence is the catalyst of the Industry Revolution (IR) eruption in the digital age. It makes the machine learn from experience, adjusts to new input, and performs human-like tasks. With the existence of these technologies, large amounts of data can be processed, making patterns in the data more recognizable (Miller, 2019).

Artificial intelligence also refers to the science and engineering of creating intelligent machines, especially intelligent computers, with programs that make such machines work like humans. By this definition, artificial intelligence is associated with computer science in the aspect of programming. Engineering experts, after studying human intelligence, convert it to a machine operational function that is programmed into the computer. According to Diana (2026), AI is a branch of Computer Science that deals with helping machines find solutions to complex problems in a more human-like fashion. In other words, artificial intelligence is concerned with how to represent humans through processes in computers.

Artificial intelligence is conceptualized as the application of intelligent machines with in-built programs to perform problem solving and information processing tasks like humans. It is the application of computer programmes with self-regulating intelligent capabilities like those of humans to solve specific problems defined for it. In other words, artificial intelligence, as the name implies, is the capability of a machine to reason and solve problems that do not spring from natural human psychological processes. Artificial intelligence is created and programmed into a machine that performs tasks requiring human intelligence.

Artificial Intelligence is a field of technology and science. AI mainly focuses on developing the abilities of modern operating systems to resolve issues using a human-like complex skill set, like reasoning, learning, and self-correction. According to Aishwaryal *et al.* (2020), artificial intelligence is intelligence exhibited by machines, contrary to the usual intelligence displayed by people. It is the ability of a machine or a computer to copy from something that is natural, in terms of acquiring and applying knowledge and skills. When a machine mimics a human mind by thinking for itself, it is known as artificial intelligence.

Reim *et al.* (2020) defined AI as an intelligence feature that presents a more efficient capability in information. It is an extremely useful tool for identifying and solving abstract and complex problems. Artificial intelligence is playing a role in every sector, making the world smarter and more innovative in terms of providing solutions to various problems in many industrial and service sectors. Sensors, cameras, and cyber security in the security sector; robots doing office work, self-driving cars, mapping out routes as well as traffic detection using Google Map, global positioning system (GPS) units, price estimation in hail rides like Uber and Bolt in the transportation sector; and the detection of cancer and other ailments in the health sector among others

Artificial intelligence has been described as an intelligent system that is created to use data analysis, and observations to perform tasks without needing to be programmed to do so (Antonescu, 2018).

2.1.1 Application of Artificial Intelligence (AI)

AI has gained widespread application in different fields of human endeavor. In business, AI widely applied in information distribution and retrieval, database, product design, manufacturing, user support, training, complex resource management/ resource scheduling, and ad inspection. According to Okute *et al.* (2016), commercial applications of AI can also be found in the following areas:

- i. **Information retrieval:** artificial intelligence-based intranet and systems that distill tidal waves of information into simple presentation; natural language technology that enables the retrieval of any sort of information from text to pictures, videos, maps, and audio clips in response to English questions; database for marketing trend analysis, financial forecasting, and maintenance cost reduction, and more.
- ii. **Decision support:** This encompasses an intelligent work environment that helps to capture the "why" and the "what" of engineered design and decision making; an intelligent human-computer (IHC) system that understands spoken language and gestures; and facilitates problem solving by supporting organization-wide collaboration to solve particular problems; situation assessment and resource allocation software for uses that range from airline to business.

Robotics application: Robot machines with computer intelligence and computer- controlled capabilities are programmed to. function like humans. These applications utilize visual perception, tactility, dexterity, locomotion, and navigation.

Cognitive science application: This application area of artificial intelligence focuses on researching how the human brain works and how humans think and learn. The results of such research in human information processing are the basis for the development of a variety of computer-based applications in artificial intelligence. Artificial intelligence applications in the cognitive science area include the development of expert systems and other knowledge-based systems that add a knowledge base and some reasoning capability to information systems. These include learning systems, fuzzy logic, genetic algorithms, neural networks, and intelligent agents.

Natural interface application: This area is considered a major area of Artificial Intelligence (AI) applications and is essential to the natural use of computer by human beings The development of natural language and speech recognition within the natural interface area of AI is aimed at making it possible to talk with computers and robots in natural languages and have them understand us as we understand them. This application involves the use of natural language, speech recognition, multi-sensory interface and virtual reality.

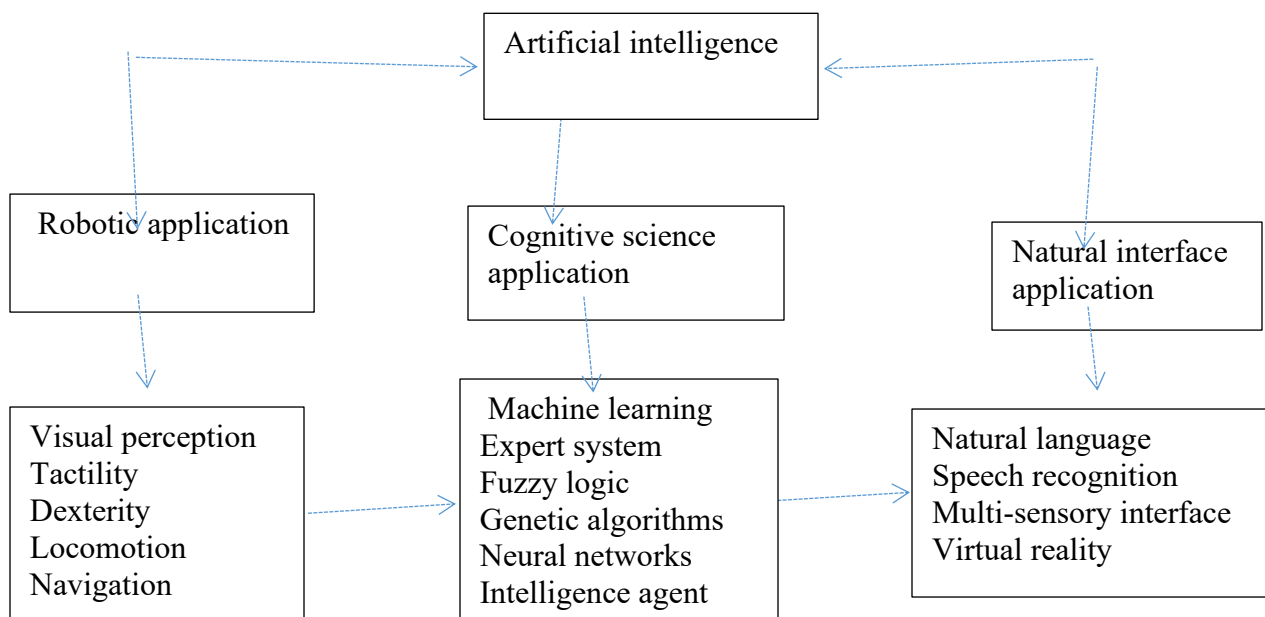


FIGURE 1: Major applications of artificial intelligence

Source: Adopted from (Okute *et al.*, 2016) and modified by the researcher.

2.1.2 Automated chat-bots banking services

Morgaji, (2021) identified chat-bots as computer programs designed to simulate a conversation, both voice and text with human users, especially over the internet. They are described as a never-sleeping, cost-efficient and powerful way to provide basic support to consumers. It was submitted that Nigerian banks have started to use chat bots despite the inherent challenges of low adoption of digital technology, poor internet access and even cyber security concerns. Adeshina (2020) observed that chat-bot technology has been a tool that has driven the banking sector to efficiently serve its customers better. It can respond faster to customers and even personalize consumer experiences as they are programmed to understand the patterns of interactions. Martin *et al.* (2020) pointed out that communicating with customers through live chat interfaces has become an increasingly popular means to provide real-time customer service in many e-commerce settings.

Shashank and Rashmi (2021) studied “a review of chat-bots in the banking sector.” The aim is to examine the contribution of chatbots to the performance of the banking sector in Nigeria. The study formulated two objectives, two research questions, and hypotheses. The study used a 45-person population and sampled all of them, and a questionnaire was designed and used in the collection of data. The result of the study shows that chatbots have a significant effect on the profitability of the banking sector. By helping customers round the clock, they help banking staff focus on other important tasks. Chatbots are being adopted in the banking sector at a very fast rate.

They are not only used for answering customers’ questions but also for providing a wide range of services, which include bill payment, fund transfer, viewing recent transactions, and much more. Recommendation: Banks are encouraged to adopt the use of chatbots as soon as possible because the use of chatbots in banks is getting smarter due to the integration of natural language money deposit and machine learning. Therefore, we can say that chatbots have become an essential part of the banking system.

2.1.3 Deep learning machine

Le-Cun *et al.* (2015) defined deep learning as an advanced type of machine learning that consists of multiple artificial neural network layers, providing high-level abstracts for data

modelling. With the introduction and popularity of Financial Technologies (FinTech) in recent years, the prevalence of the use of deep learning in finance and banking services is being embraced (Mohammad, Ashok, Vinay, & Youngho, 2022). With the increasingly in-depth integration of the internet and social life, the internet is changing how people learn and work, but it also exposes us to increasingly serious security threats. How to identify various network attacks, particularly those not previously seen attacks, is a key issue to be solved urgently. Cybersecurity is a set of technologies and processes designed to protect computers, networks, programs, and data from attacks and unauthorized access, alteration, or destruction. (Giovanni *et al.*, 2023).

Despite the far-reaching development artificial intelligence has brought to the banking sector in terms of cost savings, accuracy, and speed in transaction money deposit, efficiency, and the results of machine learning, this will never be fully appreciated without taking adequate security measures to ensure reliable information protection systems to combat the scourge of cyber security threat posts by this technology. According to Jibril *et al.* (2020), as cited in Pontus and Dariush (2022), the term cyber security has many different definitions but could be summarized as the field of computer systems and data protection, both in hardware and software, as well as protection from misleading guidance that is provided by digital and physical services. Simply put, cybersecurity is the application of technologies, processes, and controls to protect systems, networks, programs, devices, and data from cyberattacks; it aims to reduce the risk of cyberattacks and protect against the unauthorized exploitation of systems, networks, and technologies.

Mohammad *et al.* (2022) studied cyber security and machine learning: Advantages, challenges, and future research, and found that the machine learning models) can learn about various cyber-attacks in the offline/online mode through the provided pre-processed dataset. The ML algorithms detect any sign of intrusion (some cyber-attack) in real-time, i.e., online mode. Here, we have an Internet-connected system (i.e., laptops, desktops, smartphones, IoT devices), which can be used to perform various online tasks, i.e., online financial transactions, online access to healthcare data, social security numbers, etc. Hackers are always in search of a vulnerability in such systems, and if they get anything like that, then they start their attacks. For the detection and mitigation of cyber-attacks, different kinds of ML techniques i.e., supervised learning, unsupervised learning in deposit money learning, and deep learning, can be used as per the situation. It is up to the communication

environment and available resources of the systems, which technique (i.e., supervised learning, unsupervised learning, deposit money learning, and deep learning) suits them in the best way. The learning (training) and prediction (testing) of cyber-attacks can be done through the cloud servers, as they have good computation and storage resources.

Massimiliano *et al.* (2022) examined data science and machine learning in financial transactions in Italy. The purpose of the study is to evaluate the effect of cybersecurity on fraud detection in financial transactions in Italy. The formulation of two objectives, two research questions, and hypotheses. The study used 70 population and sampled 45 out of the total population. The results from the descriptive survey revealed that Fraud in financial services is an ever-increasing phenomenon, and cybercrime generates multimillion-dollar revenues for the perpetrators; therefore, even a small improvement in fraud detection rates would generate significant savings.

This study arises from the need to overcome the limitations of the rule-based systems to block potentially fraudulent transactions. After mentioning the limitations of the rule-based approach, this work explains how this solution is able to address many of these limitations and, more effectively, identify risky transactions. A novel AI-based fraud detection system – built over a data science and machine learning – is presented for the pre-money deposit of transaction data and model training in a batch layer (to periodically retrain the predictive model with new data), while in a stream layer, the real-time fraud detection is handled based on new input transaction data. The architecture presented makes this solution a valuable tool for supporting fraud analysts and automating the fraud detection processes.

Mahdi *et al.*, (2022) studied fraud detection in supply chain with machine learning and found that a variety of fraud in Supply chains may be detected either in physical parts or in cyber data. We use supervised machine learning to detect various fraud and misinformation in supply chains. The study is based on a car manufacturer concerned with increasing fraud, ranging from fraudulent invoices to inflated prices. Big data is provided for pattern recognition. As big data becomes available through ERP and other supply chain information systems, computer algorithms are instrumental in discovering any physical fraud, such as wrong or low-quality parts, or information fraud, such as invoices with false signatures or numbers.

Giovanni *et al.* (2023) studied the role of machine learning in cybersecurity and found that the deployment of ML in cybersecurity is still at an early stage, revealing a significant discrepancy between research and practice. Such a discrepancy has its root cause in the current state of the art, which does not allow us to identify the role of ML in cybersecurity. They presented how various stakeholders can contribute to future developments of ML in cybersecurity, which is essential for further progress in this field. Their contributions are complemented by two real case studies describing industrial applications of ML as defense against cyber-threats.

2.1.4 Big data technology

Big data technology is an AI-based solution that possesses the ability to speedily detect suspicious transactions in accounts and flag such transactions as red flags for further review. The banking and financial services sector has witnessed a huge transformation, and the ancillary force behind it is artificial brain power. One such area that is growing tremendously is financial fraud detection, where banks use automated systems programmed to recognize behaviors specific to fraudulent activity. As more financial transactions move online, the opportunity for fraud has increased. That makes the need for fraud detection paramount. Credit card companies, banks, and retailers are increasingly using data information applications to weed out likely cases of fraud. At a very basic level, these applications work by learning the characteristics of legitimate transactions and then scanning incoming transactions for characteristics that deviate. The tool then flags these transactions. These AIs continuously scan the data passing through a system, flag suspicious transactions, and alert humans to look closely (Samuel, 2016).

Companies with large repositories of information may be poised to reap the benefits of that data and the models they may sustain. Big tech companies—technology-based businesses of considerable scale that have played a substantial role in transforming the internet economy, attracting billions of users—have large repositories of data and are developing their own AI models and products (Paul, 2024). They have the financial capacity to make the necessary IT investments and may be best situated to capitalize on this investment by selling access to certain products or services (Paul, 2024). This would represent a further consolidation of data and model creation and reinforce third-party dependency, potentially exacerbating concentration or systemic risk. Another policy issue of the central role of data is that it may also create opportunities for big tech to increase

its presence in financial services. Big tech companies currently have some presence in finance, mostly on the consumer products side.

Wu (2022) examined the usefulness of big data in customer acquisition and retention. Data for the study were collected from secondary sources such as articles and online publications. The data were later analyzed using thematic content analysis. Findings indicated that big data is revolutionizing the interaction of companies with their customers. For instance, the study showed that the technology allows firms to learn about their customers and address their concerns before they occur. The findings also showed that big data is allowing firms to attract and retain clients. The technology achieves this role by offering insights that enable firms to provide customized services. However, the findings suggested that big data can bring out privacy and security concerns. Therefore, users need to put in measures to reduce the likelihood of increased privacy and security issues within their big data environment. For instance, firms can use data anonymization to reduce privacy issues within the big data ecosystem

Big data and analytics are also used to attract and retain customers. Klein (2017) suggests that big data and analytics allow firms to attract and retain customers. The technology does this by ensuring that firms have the necessary insights and provide personalized products. In other words, big data allows firms to focus on what best serves the interests of their target customers. For instance, a company that uses big data and analytics can understand its target customers and provide customized services. In doing so, the company enhances customer experience and satisfaction, which are key to machine learning. Additionally, understanding what customers want allows firms to provide customized offers based on their individual needs. Such offers make customers feel unique and special and keep patronizing a company for more. For instance, TikTok became the fastest-growing social media platform in 2021 due to its ability to leverage big data and analytics (Klein, 2017). The company uses machine learning and artificial intelligence to understand the target users and keep them hooked onto the platform by providing personalized videos

Le and Liaw (2017) discovered that the search for information, recommendation systems, customer service, and dynamic pricing significantly affect customers' responses. However, there are issues concerning security, privacy, group influences, and shopping addiction. These factors

were proven to have considerable effects on customers' shopping behavior and planning. Shopping addiction is more influential than other elements, such as group influence, in determining a customer's consumption behavior. Zhao (2019) proposed a Hadoop-based mixed recommender system made of online and offline components. User information, product information, and preference information are collected and processed through collaborative filtering, content-based filtering, and clustering models, respectively.

2.1.5 Machine learning

Machine learning (ML) is a subset of AI that describes computers and programs that may be programmed to operate with minimal human intervention and can in some instances learn and/or update themselves. The ever-increasing proliferation of Machine Learning (ML) technology has led to numerous innovations and developments, revolutionizing the way individuals live, think, interact, and seek to solve problems in life. The array of contributing factors includes the explosion of large-scale dataset availability, data generation facilities, and advances in technologies like complex algorithms and models. These, in turn, have transformed the behavior, requirements, and expectations of not just individuals in their cells, but also of firms, industries, and entire economies. Restrictions due to limited access to, and know-how of, such technologies and their capabilities are not an issue anymore.

Nowadays, any firm with a sufficient budget can easily harness these technologies, give new meanings to its business processes, and offer new services to customers (Kannan, 2022). The uses and applications of ML technology are increasing in number and scope. AI is not just limited to manufacturing and engineering applications; instead, it has made a significant mark in non-technical fields like financial services, accounting and finance, marketing and sales, human resources, and IT, among many others. Within financial services, AI has found many interesting applications—many in the areas of investment and corporate finance, very few in the field of small business finance, and a couple of them in the area of personal finance.

Machine learning can, in fact, make the lending decision faster and will improve its accuracy and limit risks by analyzing massive semi-structured and unstructured data sources extracted from social media and mobile phone usage which is more efficient compared to additional tools that rely

on transaction data and financial history from firms to construct the credit score. However, the use of these tools may violate the data privacy of borrowers.

2.1.6 AI financial service

AI financial service refers to third-party service providers offering AI models to financial firms lacking their own capacity to develop them internally. In the financial services industry, BlackRock's Aladdin resembles such a service. BlackRock describes Aladdin as "end-to-end portfolio management software" that offers trading, operations, and compliance functions on a single platform (Tracy & BlackRock, 2014). The platform is used by a large number of other financial firms that, together with BlackRock, manage more than \$10 trillion in assets.⁸⁷ It uses AI to develop some of its insights, including pricing data or data cleansing, extending those services to its clients. The firm reportedly offers AI/ML-fueled sustainability evaluation and assessment tools and is integrating LLM capabilities to let its clients query Aladdin to help them find information more quickly.⁸⁸ Similarly, core services providers that serve small banks and credit unions, such as Jack Henry and Fiserv, also advertise AI/ML services, including fraud detection and chatbot services (Henry, 2023).

As financial industry policymakers focus their attention on AI and ML in finance, they face competing pressures. Certain financial service providers and technology companies will tout the potential for AI and ML to lower costs, increase speed and accessibility, and improve accuracy and regulatory compliance. Consumer advocates and smaller firms may oppose adoption on the grounds that it introduces bias, risk, and potential for manipulation; eliminates jobs; and is unaffordable. Policymakers may decide to balance these competing priorities while assessing whether the existing regulatory structure is sufficient or whether one that is more closely tailored to the technological capacities of the evolving technology is necessary.

Research Design

The study is descriptive in nature. The convenience sampling approach was utilized in the study. The questionnaire approach was used to obtain data, receiving a response rate of 85%. Incomplete surveys were removed from the research. While secondary sources are conference proceedings,

journals, articles and so forth. The questionnaire was divided into two pieces. The first segment comprises demographic questions, while the second piece covers Artificial intelligence in finance sector.

Conclusion

As financial industry policymakers focus their attention on AI and ML in finance, they face competing pressures. Certain financial service providers and technology companies will tout the potential for AI and ML to lower costs, increase speed and accessibility, and improve accuracy and regulatory compliance. Consumer advocates and smaller firms may oppose adoption on the grounds that it introduces bias, risk, and potential for manipulation; eliminates jobs; and is unaffordable. Policymakers may decide to balance these competing priorities while assessing whether the existing regulatory structure is sufficient or whether one that is more closely tailored to the technological capacities of the evolving technology is necessary.

4.1 Recommendations

Based on the findings, the following recommendations were made:

1. That financial institutions should embark on intensive capacity training programs for their staff to enable them be adequately equipped for integration of artificial intelligence and machine learning into their day-to-day activities to upscale financial services.
2. That huge investment in acquisition of deep learning machine should be ensured in order to boost machine learning of financial institutions, since it can uncover threats and automatically squash them before they can wreak havoc to their system in order to improve their retention.
3. Emphasis on securing big data technology should be encouraged since it ensures firm machine learning. Hence, the need for the use of it in the banking sector.

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