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Relationship between Artificial Intelligence and Business Process Optimization: Insights from Selected Banks in Anambra State

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Abstract:- This study explored the relationship between artificial intelligence and business process optimization in selected banks in Anambra State. The population consisted of 745 employees from commercial banks in Anambra State, Nigeria. Using purposeful sampling, three banks from each senatorial district in the state were chosen, and 170 questionnaires were distributed to staff members of these selected banks. Out of the 170 distributed questionnaires, 125 were completed and returned. A Pearson correlation critical value table was used to test the assumptions, and the Pearson product-moment correlation coefficient was the statistical instrument for data analysis. The hypothesis results indicated a significant correlation between business process optimization in banks and artificial intelligence, specifically in enhancing customer service relationships and boosting cyber-security in the selected banks in Anambra State. The study recommends that the banking industry should continue to implement artificial intelligence cautiously to maintain a balance between innovative developments and the responsible and ethical use of AI. This approach will ensure improved cyber-security and customer service in banks.

Keywords:- *Artificial Intelligence, Business Process Optimization, Banking Sector, Anambra State.*

I. INTRODUCTION

Banks are a necessary component of a functioning society because they provide financial services such as accepting bills of exchange, lending money at interest, converting domestic currency into foreign currency, and storing money safely. The banking industry is crucial to the financial transactions, investment activity, and economic advancement that are made possible in today's rapidly changing economic landscape (Ojong, Ekpuk, Ogar, and Emori, 2024). One could argue that banks are an important part of financial stability and economic growth because they act as a conduit for savings and investments (Alley, 2023). The relevance of banks is revealed in the rendition of their services or in their business processes.

A business process is a standardized method a company uses to accomplish routine activities and reach a specific target (Kraus, Jones, Kailer, Weinmann, Chaparro-Banegas, 2021). Kraus et al. added that business process also refers to a repeatable collection of steps that a company uses to accomplish a goal, ensuring that the process is designed to be repeated, transparent, and adaptable to changing situations. Business processes are critical to keeping a business organized and on track, and they contribute to achieving business goals by producing specific outcomes. This explains why its business practices—which include capital raising, credit extension, risk management, and facilitating seamless payments and transactions—the banking sector helps the economy of a nation (Omotosho, 2021). The efficiency and smoothness of these transactions and even more, expose the optimization level of the banks' business processes.

Business process optimization in the banking sector revolves around ensuring that the banking system meets the needs of its customers, and can transact data and information as at when due while saving cost and resources. In the expressions of Bag, Wood, Mangla, and Luthra (2020), business process optimization is simply the process of enhancing business procedures by making them more sensitive and flexible to the changing business user requirements. Svoboda (2023) claims that a variety of problems the banking industry is currently facing could jeopardize both its profitability and its traditional business tactics. The twenty-first century has come with attendant challenges to the banking industry especially as it concerns the utilization of technologies. The rising rivalry from new players, such as fintech companies and non-bank businesses that use contemporary technologies to challenge traditional banking services, is one of the main problems at the moment (Chahal, 2023). Customers now anticipate more personalized and convenient banking experiences as a result of the widespread availability of Internet and mobile banking platforms (Svoboda, 2023). Because of this, financial institutions face tremendous pressure to adopt cutting-edge technological solutions to stay relevant in the market. One of such cutting-edge technical solution is Artificial Intelligence.

Operationally, Artificial intelligence is the collection of technologies that enable machines to sense, understand, plan, act, and learn at levels of intellect comparable to those of humans. In attempting to define AI, people have encountered some difficulties. In its broadest sense, for example, it is frequently associated with algorithms, but it is also commonly understood to be a technology that makes it

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possible for robots to mimic a variety of intricate human abilities (Silver, Singh, Precup, and Sutton, 2021). But this term is vague and can suggest that artificial intelligence doesn't exist yet. In general, artificial intelligence (AI) has been defined as a branch of computer science research that creates and examines techniques and software that allow machines to sense their surroundings and apply intelligence and learning to make decisions that increase the likelihood that they will accomplish specific objectives (Zimmer, 2022). Tay, Dehghani, Bahri, and Metzler (2022) define artificial intelligence (AI) as any kind of computer code that demonstrates a high level of intelligence, problem-solving, and learning and can be examined as such.

AI technology has significantly advanced along with worldwide scientific and technological breakthroughs. Sreedharan, Kulkarni, and Kambhampati (2022) describe artificial intelligence (AI) as a machine's or computer's intelligence that allows it to duplicate or imitate human talents. This term includes a wide range of technologies that give machines the ability to think, feel, plan, act, and learn at levels of intelligence comparable to that of humans. This was visible in Munn (2022) who affirmed that artificial intelligence (AI) makes use of a variety of technologies, including computer vision, natural language processing, machine learning, and others, to comprehend human language, learn from examples, and make predictions. With the use of these technologies, computer systems are now able to observe their surroundings, identify objects, assist in making decisions, resolve challenging issues, draw lessons from the past, and mimic patterns. The main objectives of AI, according to Rakova, Yang, Cramer, and Chowdhury (2021), are to help people solve problems, incorporate knowledge representation, make planning easier, permit continuous learning, and enable self-aware AI. This explains why artificial intelligence (AI) systems are made to function autonomously; draw conclusions logically, mimic human thought processes, and deal with ambiguous or insufficient data. According to Almustafa, Assaf, and Allahham (2023), artificial intelligence also constitutes a wide range of applications including chatbots, natural language processing, robotic process automation, and machine learning algorithms. This explains why the strong family of technologies known as artificial intelligence (AI) is especially well-suited to offer novel approaches to business process re-engineering.

In the financial services sector, artificial intelligence (AI) refers to the application of technology, such as machine learning (ML) and sophisticated algorithms, to analyze data, automate processes, and enhance decision-making (Finio and Downie, 2023). The banking industry has seen tremendous change as a result of artificial intelligence (AI), which offers financial institutions both benefits and challenges. To adapt to changing customer tastes and set themselves apart from rivals, financial institutions nowadays must be able to swiftly provide highly customized, user-friendly services while yet upholding high standards of quality and productivity. Service delivery optimization is becoming essential as financial services companies adopt new technology. It is no longer an option.

Artificial intelligence has the potential to produce a wide range of beneficial results due to its innovative traits, including improved consumer experiences, higher operational efficiency, more effective risk management, and sophisticated data analytics (Finio and Downie, 2023). Singh and Hess (2020) averred that financial institutions could be able to detect fraudulent activity, automate tedious activities, offer individualized suggestions, and strengthen cybersecurity with the use of Artificial Intelligence (AI). The researcher is concerned that banks' reliance on antiquated systems and architectures may not be well-equipped to support the core banking capabilities and services of the future, given the problems faced by traditional banks in Nigeria, notably in Anambra State. Given this, understanding how AI will impact the banking industry is essential if one is to consider the significance of the sector as well as the disruptive potential of AI. The thoughtful examination of these possibilities has motivated the researcher to investigate the relationship between artificial intelligence and business process optimization in selected banks in Anambra State.

➢ *Statement of the Problem*

In the twenty-first century, artificial intelligence (AI) is being used in some commercial domains, such as genetics, accountancy, insurance, internet, transportation, aerospace, and advertising and targeting. The banking sector is still being tasked to brace up for evolution that will accommodate the import of Artificial Intelligence in line with the global trend.

In actuality, the banking industry is changing, and banks are gradually adopting cutting-edge technologies like blockchain, cloud computing, and artificial intelligence (AI). But since the human touch is still proving to be so important, they haven't quite reached the AI revolution's stage. The researcher is concerned that most banks in Nigeria, especially Anambra State, continue to operate on antiquated systems and architectures that were not intended to serve the essential banking functions and services of the future. Many banks are reluctant to engage in enhancing their service delivery skills due to pressure to cut costs and risk. In contrast, modern non-traditional banks are well-positioned to provide financial services that have a high level of consumer appeal and the potential to capture a large share of the Millennial market.

An empirical study of this kind could give traditional banks reasons to consider the utmost accommodation of Artificial Intelligence as to achieve business process optimization. Against this backdrop, this study seeks to determine the relationship between artificial intelligence and business process optimization in selected banks in Anambra State.

➢ *Research Questions*

The study was guided by the following research questions:

- What is the relationship between artificial and capacity to enhance customer service relationships in selected banks in Anambra State?

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- What is the relationship between artificial and capacity to enhance cyber-security in selected banks in Anambra State?

➢ *Objectives of the Study*

This study investigates the relationship between artificial intelligence and business process optimization in selected banks in Anambra State. Specifically, the study sought to:

- Ascertain the relationship between artificial and capacity to enhance customer service relationships in selected banks in Anambra State.
- Determine the relationship between artificial and capacity to enhance cyber-security in selected banks in Anambra State.

➢ *Research Hypotheses*

At the 0.05 level of significance, the following null hypotheses were put out to direct the investigation:

- **Ho 1:** No significant relationship exists between artificial and capacity to enhance customer service relationship in selected banks in Anambra State.
- **Ho 2:** No significant relationship exists between artificial and capacity to enhance cyber-security in selected banks in Anambra State.

➢ *Scope of the Study*

The intent of the study was delimited to examining relationship between artificial intelligence and business process optimization in selected banks. The geographical scope is in Anambra State, Nigeria. The content of the study specifically investigated the relationship between artificial intelligence and business process optimization (capacity to enhance customer service relationships and capacity to enhance cyber-security) of banks. Members of staff of commercial banks in Anambra State served as respondents of the study.

II. LITERATURE REVIEW

A. Conceptual Review

➢ *Potential Uses of Artificial Intelligence in the Banking Industry*

- *The Chatbot:*

The Chatbot uses pre-programmed questions to engage with clients in a way that promotes polite, effective communication and timely issue resolution (Barbu, Florea, Dabija, and Barbu, 2021). Hoyer, Kroschke, Schmitt, Kraume, and Shankar (2020), added that chatbots—AI programs used in banking—may someday replace bank front desk employees wherein customers may now enjoy personalized and intelligent digital experiences from AI-driven robots that are created specifically for them, all thanks to chatbots. In the thoughts of Finio and Downie (2023), chatbot technology in banks could gather data from user inquiries, which could be utilized to handle unforeseen issues later on in addition to giving customers answers to their questions without requiring human interaction.

- *Interaction with Customers across Social Media Platforms:*

Financial institutions can use a specific algorithm in conjunction with artificial intelligence (AI) and machine learning to forecast and assess client behaviour and credit scores (Kraus, Jones, Kailer, Weinmann, Chaparro-Banegas, and Roig-Tierno, 2021). This makes it possible for banks to create customized programs for their customers. Given this, banks may be able to better serve their customers by digitizing their procedures with the aid of artificial intelligence. When it comes to providing modern customers with financial services, artificial intelligence might be the way of the future (Ali, Ally, and Dwivedi, 2020). The rationale for this is that customers can access a wide range of value-based e-services via the bank stations' network of self-service terminals, including bill payment and government website interaction. This calls for extensive data analysis. The financial sector uses data to improve customer connections, and as such, artificial intelligence could help with the structuring and organizing of data.

- *Fraud Detection:*

AI's main objective in the banking sector is to replace human labor in tasks that were previously completed by humans to safeguard the performance of business functions from potential threats. The machine learning programming approach is the foundation of AI. Because corporate financial transactions are so large and the responsibilities of their jobs are so complex, financial institutions are more often than other types of companies vulnerable to the risk of fraud (Svoboda, 2023). Kumar and Sharma (2018) suggest that. As a result, using AI technology could make it simpler to prevent fraud given that it could utilize complex algorithms and mathematical computing to monitor employee and customer behaviour through unsupervised learning programs (Svoboda, 2023).

- *Analysis of Sentiments:*

The behaviour that financial institutions expect from their clients is the most important factor in the creation of new financial products and services. According to Matarazzo, Penco, Profumo, and Quaglia (2021), artificial intelligence (AI) technology collects data to create and display content that is tailored to the preferences and tastes of each user. It also can predict the thoughts, feelings, and answers of clients via email, social media, and survey channels. This could help the finance industry better meet the individual needs of its clients.

- *Automatic Control of Banking Services:*

Svoboda (2023) asserts that digital computers' rapid and precise cash counting is another instance of the technology of artificial intelligence being applied in the banking industry without requiring human input. With the use of automation technologies, the banks' daily business volume increases, which also reduces work-related stress and the number of math errors linked to cash counting. In not too too-distant future, the banking sector may experience increased

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productivity as a result of the deployment of automation technology. These would all enable the companies to replace tiresome and time-consuming tasks like form filling and back-end testing.

- *Planning and Management of Finances:*

Millions who use mobile banking extensively have been made possible by the twenty-first century, suggesting that they will probably be lured to artificial intelligence-powered banking mobile applications. Consumers have adapted to mobile banking rather well. Personalized advice and insights on how to save money can be obtained by applications that monitor a user's activities, according to Novák, Hendrych, and Kardela-Wojtaszek (2023). Making payments, transferring funds, and other regular financial duties have become much simpler and easier with the use of mobile banking. Users can now manage their money more effectively, get more insightful financial advice, and finish transactions more quickly and efficiently thanks to artificial intelligence in mobile banking (Novák, Hendrych, Kardela-Wojtaszek, 2023).

B. Theoretical Framework

➢ *The Constraint-Induced Financial Innovation Theory*

American economist William Silber first proposed the constraint-induced financial innovation idea in 1975. William Silber's theory of constraint-induced financial innovation emphasizes that financial organizations innovate largely for-profit maximization. According to Silber's view, financial innovation is fuelled by the need to get past internal and external barriers to profit maximization, like organizational management and laws. These limitations can lower an organization's efficiency even while they guarantee management stability, which is why financial institutions work to remove these obstacles. According to Silber's view, the primary force behind financial innovation is profit maximization, with financial institutions coming up with new ideas to go around and over obstacles in the way of improving their financial performance.

William Silber's theory of constraint-induced financial innovation postulates that financial institutions use innovation to adjust to shifting market dynamics, advances in technology, and legal and regulatory requirements. Financial institutions can enhance their overall financial health, draw in new clients, and maintain their competitiveness by innovating. According to Silber's thesis, financial innovation is a dynamic process motivated by the urge to get past challenges and take advantage of openings in the financial environment. To prosper in a continuously changing environment, financial institutions must be able to adapt and respond to opportunities and restrictions.

This theory also emphasizes how competition pushes innovation in the financial sector. Financial institutions must innovate in a competitive market to set themselves apart, draw clients, and obtain a competitive advantage. Because of the intense competition, the financial industry has developed a culture of innovation that has resulted in the creation of new goods, services, and procedures that are better able to satisfy the changing demands of consumers and adjust to shifting market conditions. Silber's theory highlights the role that competition plays in influencing the strategic choices made by financial institutions and highlights its importance as a catalyst for financial innovation.

Given the aforementioned, it is imperative to emphasize the significance of risk management. Financial organizations innovate to successfully control risks as well as to maximize revenues. Innovation in financial products and services frequently requires the development of new tools and techniques for risk management to reduce and manage many types of risks, such as credit risk, operational risk, and market risk. Financial institutions may strengthen their resilience, safeguard their assets, and preserve stability in the face of uncertainty by implementing innovative risk management practices. Silber's thesis emphasizes how financial innovation plays a dual function in risk management and profit maximization, and how crucial it is to achieve a balance between the two to guarantee the financial industry's long-term success and sustainable expansion.

About this study, the constraint-induced financial innovation theory is of great essence given that in this twenty-first century wherein data has become the order of the day, financial innovation ought to be driven by the necessity to overcome constraints, both external (such as policies) and internal (like organizational management), that impede profit maximization. Silber's theory emphasis on the role of profit maximization as the central driver of financial innovation implies that in this twenty-first century, it is only fitting that banks employ innovations like artificial intelligence to not just overcome constraints and maximize profit but also to maximize positive customer relationships.

➢ *Towards Implementing Business Process Optimization in Banking Industry Using Artificial Intelligence*

Banking firms must thoroughly plan for successful integration, assess the possible benefits of AI, and acquire in-depth knowledge of its capabilities to use AI effectively (Smit, 2024). Given this, Achary (2021) proposed that banks should first understand how artificial intelligence (AI) may optimize their offerings in terms of goods and services, enable process efficiency, reduce operating expenses, and enhance risk management. This is predicated on the idea that banks, their staff, and their clients will benefit most from well-informed decisions regarding the application of AI. According to Smit (2024), this approach should start with a well-considered business case before a bank decides to onboard AI. The business case needs to clearly define, evaluate, and discuss the benefits and drawbacks of artificial intelligence and prioritize projects that would yield immediate benefits for the company, being clear about the deployment's goals (Alsheibani, Cheung, Messom, and Ahosni, 2020). This is because the bank's capacity to execute present and future AI initiatives may be hampered by taking on too difficult or time-consuming AI projects upfront (Fountaine, McCarthy, and Saleh, 2019). Thus, the implementation of AI should occur in areas of the bank where it may lessen the need for human intervention to achieve quick victories (Achary, 2021). To ensure the successful

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application of AI technology, banks must use the business case to validate their strategic goal. The organization should use this instance as a guide, using it to determine the best course of action and the financial requirements necessary for its success (Alsheibani, Cheung, Messom, and Ahosni, 2020).

The organization's highest levels should be the ones to champion the AI transformation journey in addition to allocating a sufficient budget for AI deployment. Fountaine, McCarthy, and Saleh (2019) conclude that once the organization has established its key initiatives, it is imperative to get sufficient funds for AI transformation. For banks with decentralized budgets, it can be challenging to form cross-functional teams for company-wide implementation and to negotiate the challenges of budgeting reconfiguration (Alsheibani et al., 2020). Enough money must be set up for both the purchase of AI technology and its integration throughout the entire organization.

Moreover, it is imperative to have the support of the CEO, senior executives, and an expert team in charge of AI design and implementation. With the CEO's support, the leadership team will be inspired to take charge of the transformation and fully advocate for it, highlighting its advantages and encouraging acceptance and usage throughout the company while significantly reducing errors and expenses (Alsheibani et al., 2020).

Considering what has been said so far, it is clear that getting the best outcomes requires AI to operate on a reliable IT platform and have access to high-quality data in order to develop and learn. Qahtani and Alsmairat (2023) assert that in order to create an atmosphere in which AI solutions may meet high standards, gain the trust of users, and exhibit ease of use, a solid IT foundation is required. Additionally, Alsheibani et al. (2020) emphasize that deploying AI requires having access to high-quality data. A strong IT infrastructure will guarantee that artificial intelligence (AI) can develop without being hindered by technological limitations, as AI technology primarily depends on the information it can safely gather to learn and develop.

Last but not least, the implementation of AI successfully depends on more variables than only technology, data, and change management. Reorganizing its business models, procedures, and organizational structures are also necessary for banks. Furthermore, Fountaine et al. (2019) conclude that businesses need to reorganize to take advantage of AI's compelling value-add. AI-using companies ought to think about establishing a central department in charge of managing several corporate functions, including partnerships, performance management, human resources, rules, and processes. The section is also in charge of keeping AI-related standards and systems up to date.

In the end, a network of business divisions with analysts and product managers for AI in charge of putting strategies into action, selecting solutions, and keeping an eye on business unit success should be supervised by the center division. A cross-functional divide between the centre and business units is also required to manage change and implement new projects, including developing data architecture and coding, defining user experience, rearrangement of IT infrastructure, deploying organizational capabilities, and securing finance (Uyyala and Yadav, 2023).

Additionally, banks need to make sure that AI technology is compatible with their internal procedures. Banks must modify all aspects of their internal operations, consumer-facing protocols, and business practices to meet customer expectations. This was disclosed by Met, Kabukçu, Uzunoğulları, Soyalp, and Dakdevir (2020). Antiquated systems, protocols, and workflows must be carefully updated. While challenging, this work is essential for businesses undergoing AI transformation.

➢ *Possible Challenges Facing the Implementation of Artificial Intelligence in the Banking Sector*

- *Cost of Implementation:*

When using artificial intelligence (AI) in the financial sector, the cost of implementation is a crucial factor to take into account because the initial investment in talent acquisition, AI infrastructure, and system integration can be large. Many financial organizations may find it difficult to use AI solutions due to the high cost of development and system integration (Nagarajan, Arunadevi, Banu, Mohideenm, and Lakshmi, 2023). This leads to several problems, including expensive development expenses, licensing and subscription fees, integration, and maintenance, to name a few.

- *Data Quality and Accuracy:*

When applying artificial intelligence (AI) in the financial industry, data correctness and quality are critical factors to take into account. For AI systems to produce reliable forecasts and judgments, high-quality data is essential. If this data is corrupted, the results might be disastrous for an organization's finances and reputation. For accurate and useful insights, banks must thereby address problems with data consistency, cleanliness, and completeness. Geetha (2021) lists these as follows: Financial institutions deal with enormous volumes of data, which can result in errors and inconsistencies. This makes data inconsistencies a significant concern. It can be challenging to find and fix these discrepancies, particularly when handling intricate financial transactions. Another difficulty is maintaining data integrity, as financial institutions have to make sure that their information is current, accurate, and comprehensive. Inaccurate data has the potential to spread throughout an organization's activities, with dire implications like financial losses and noncompliance with regulations. Another problem is data governance, since preserving data quality requires the implementation of strong data governance structures. To guarantee data integrity and compliance, this involves integrating data quality initiatives inside a strong data governance structure.

- *Cybersecurity Risks:*

Banks need to put strong cybersecurity measures in place to prevent breaches because AI systems are susceptible to cyberattacks. Artificial intelligence (AI) systems,

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especially those that use deep learning and machine learning, may be subject to a variety of threats that could jeopardize their accuracy and integrity. Oyeniyi, Ugochukwu, and Mhlongo (2024) list the following: data poisoning problems, which arise from the vulnerability of AI systems to data poisoning attacks, in which malicious data is purposefully inserted into the training data to alter the behaviour of the model, resulting in erroneous predictions and monetary losses. Another problem is data leakage, which occurs when sensitive information is taken from the training set or the internal workings of the model, jeopardizing client information and financial security. AI systems are susceptible to these attacks. Data integrity attacks are feasible in that they can target AI systems to change or erase the data used for testing or training, which could result in inaccurate model behaviour and monetary losses.

- *Skill Gap and Workforce Adaptation:*

The application of artificial intelligence (AI) in the financial industry presents some difficulties with workforce adaptation and skill gaps. Finance workers need to become accustomed to new technology and acquire the skills needed to use AI effectively as it transforms the financial sector. For generative AI to be implemented successfully, a highly qualified staff that can comprehend and use the technology is required. Banks may encounter difficulties hiring fresh talent with experience in AI and machine learning or upskilling their current workforce. Pattnaik, Ray, and Raman (2024) list these issues as follows: the financial sector needs to adjust to new technologies like chatbots and robo-advisors to improve productivity and service quality, which means training for new technologies. Another issue is the "soft skills quagmire," which refers to the need for soft skills like flexibility, professional ethics, and social perceptiveness in addition to a technical understanding of AI to adapt to the impact of AI in the workplace. The issue of the disconnect between education and industry is another one; it appears that current educational curricula and the rapidly evolving demands of AI applications are not keeping up with the times.

- *Concerns about Data Privacy and Security:*

The use of artificial intelligence (AI) in the financial sector has given rise to some concerns about data privacy and security. Generative AI relies on large datasets, which may contain personally identifiable information (PII) and financial details. It is imperative to protect this data from breaches and unauthorized access. These concerns, as outlined by Kumar and Kumar (2022), include Data collection and utilization concerns, which are based on the fact that AI applications in finance involve the collection and processing of enormous amounts of sensitive financial data, including financial and personal information that could be exploited by hostile actors if improperly protected. Another issue is the potential for AI algorithms to reinforce bias and discrimination if fairness and transparency are not taken into consideration. This could result in unjust decisions and erode customer confidence. Another issue is data breaches and unauthorized access, which is centered on the idea that as finance relies more on AI systems, there are more opportunities for data breaches and illegal access. These opportunities could lead to the theft or misuse of confidential financial information.

C. Empirical Studies

Chahal (2023) conducted a study to find out about digital transformation and business process optimization in the financial industry in the literature. The research was directed by three research questions. The literature was screened using a systematic review research design to find answers. To obtain information, academic journals and other data sources such as PubMed, IEEE Xplore, and Google Scholar were made available. The utilization of literature analysis has made it possible to evaluate the different concepts.

The study's conclusions showed that the financial services industry has benefited greatly from the digital revolution and that robotic process automation (RPA) and artificial intelligence (AI)-based algorithms are primarily responsible for efficiency gains in risk assessment operations. The need for financial institutions to be adaptable and competitive at all times in the quickly evolving digital ecosystem was again underlined by the study. As a result, AI has improved customer satisfaction rates and data security within financial institutions.

Almustafa, Assaf, and Allahham (2023) conducted research to determine how artificial intelligence is being used by Jordanian commercial banks to innovate their financial processes. Two research questions and two hypotheses that were evaluated at the 0.05 level of significance served as the study's compass. To achieve the research aims, a systematic research design is employed, with survey approaches acting as the primary means of data collection. For participation, 143 workers from significant banks in Amman, Jordan, are chosen as a sample. The survey comprises inquiries intended to obtain data regarding the present condition of artificial intelligence integration, obstacles encountered, and possible advantages in the domains of credit risk management and other financial services. A statistical analysis was conducted using t-tests, means, and standard deviations. Utilizing t-tests at the.05 level of significance, the hypotheses were examined to answer research concerns about the mean and standard deviation.

The study's findings show how integrating AI has the potential to drastically change the way Jordanian commercial banks conduct business. Credit assessment, market risk analysis, financial forecasting, risk model validation, and creditworthiness evaluation could all benefit from artificial intelligence (AI). The study also demonstrates how AI has the potential for customized customer care solutions, improving user experience, and pointing customers toward suitable financial services. The benefits of applying AI-driven innovation to boost financial performance and profitability in Jordan's banking sector are highlighted in the report's conclusion.

Chukwudi (2018) researched to find out the effect of Artificial intelligence on accounting operations' performance in an accounting firm in South East Nigeria (with a focus on Anambra State), one of the ancient states in Nigeria. Utilizing a descriptive research approach, the study was guided by two research questions and two hypotheses and assembled the

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necessary data from a subset of the population to reflect the complete population. The study's data was collected using the Structured Questionnaire. Four components make up the questionnaire. While sections B, C, and D addressed the respective objectives study using the descriptive research of the sample survey type, part A requested information on the socio-demographic characteristics of the accountants.

The creation and application of expert systems is the most extensively researched topic in the accounting disciplines' artificial intelligence literature. The study also reveals that accounting academics have, to varying degrees of success, used a variety of artificial intelligence technologies and approaches to certain jobs in financial reporting and analysis, auditing, and assurance. According to the study's findings, the use of artificial intelligence improves accounting operations' performance, which adds value to banks' business optimization processes.

III. METHOD

The study used a correlational research methodology because its goal was to determine how business process optimization in banks and artificial intelligence relate to one another. Because the study employed primary data sources, it was possible to communicate directly with the respondents who work as employees of the selected banks in Anambra state. This study area (Anambra State) was chosen because of the researcher's familiarity with the subject area and the paucity of prior research on the topic of interest in the region.

The total population of the study was 745 employees of all the commercial banks in Anambra State, Nigeria. Among the commercial banks were First Bank, United Bank for Africa, Fidelity Bank, Eco Bank, Access Bank, Sky Bank, Heritage Bank, Zenith Bank, Access Bank, Union Bank Onitsha, Keystone Bank, First City Monument, Sterling Bank, Guarantee Trust Bank, Stanbic IBTC, Standard Chartered Bank, Unity Bank and Wema Bank.

These banks are dispersed through the State's several senatorial districts. To achieve this, the researcher used the purposive sample technique to select three banks from each of the aforementioned groups, one from each senatorial district (First Bank, Ekwuobia branch – Anambra Central; Access Bank, Awka branch – Anambra South; and GTB, Onitsha – Anambra North Senatorial District). 170 Questionnaires were distributed to the 170 staff of the selected banks out of which 125 were completed and returned. A methodical questionnaire was utilized to gather representative data. The questions on the questionnaire were pre-planned and followed a defined framework. The questionnaire was carefully crafted to avoid giving respondents any needless cues. The instrument was divided into sections, A and B. Respondents were questioned on topics related to business process optimization and artificial intelligence in Section B. Respondents gave their demographic data in Section A. In the questionnaire's design, a four-point scale was used: Strongly Agree (SA) = 4 points, Agree (A) = 3 points, Disagree (D) = 2 points, and Strongly Disagree (SD) = 1 points. The reliability of the questionnaire was evaluated using the Cronbach alpha statistics. The internal consistency of the questionnaire items was evaluated using Cronbach statistics.

The obtained coefficient of 0.78 was considered sufficient, and the instrument was rated reliable. The data collection technique employed was direct-delivery. The collected data was analyzed by the researcher using the Pearson product-moment correlation coefficient. The theories were looked at using a Pearson correlation critical value table. The study questions were selected with consideration for Nwana's (2007) recommendations in mind. Thus, the following is the correlation coefficient (r) between scores:

0.00 – 0.20 = Very Lowrelationship
0.20 to 0.40 = Lowrelationship
0.40 – 0.60 = Moderate relationship
0.60 to 0.80 = Highrelationship
Extremely strong correlation, 0.80 – 0.10.

When deciding which hypothesis to reject, the null hypothesis was discarded if the P-value was less than the significant value of 0.05; otherwise, it was not.

IV. RESULT

- *Research Question One: What is the Relationship between Artificial and Capacity to Enhance Customer Service Relationships in Selected Banks in Anambra State?*

Table 1 Pearson r on the Relationship between Artificial and Capacity to Enhance Customer Service Relationship in Selected Banks in Anambra State

	Source of Variation	N	R	Remark
	Artificial Intelligence Customer Service Relationship	125	0.70	High Positive Relationship

Table 1 demonstrates that, in selected banks, artificial intelligence and the ability to improve customer service relationships have a strong positive correlation. The size of the Pearson's Correlation Coefficient (r), which is 0.70 and indicates a strong positive link, makes this apparent. This suggests that the implementation of artificial intelligence will improve how well banks optimize their relationships with their customers.

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- *Research Question Two: What is the Relationship between Artificial and Capacity to Enhance Cyber-Security in Selected Banks in Anambra State?*

Table 2 Pearson r on the Relationship between Artificial and Capacity to Enhance Cyber-Security in Selected Banks in Anambra State

Gender	Source of Variation	N	R	Remark
Male	Artificial Intelligence Cyber-Security Enhancement	125	0.72	High Positive Relationship

Table 2 demonstrates strong positive relationship between artificial intelligence and banks' ability to improve customer service relationships. The size of the Pearson's Correlation Coefficient (r), which is 0.72 and indicates a strong positive link, expresses this. This suggests that the implementation of artificial intelligence will result in bank cyber-security.

- *Hypothesis One: No Significant Relationship exists between Artificial Intelligence and the Capacity to Enhance Customer Service Relationships in Selected Banks in Anambra State.*

Table 3 Test of Significance of Pearson Correlation between Artificial Intelligence and Capacity to Enhance Customer Service Relationships in Selected Banks in Anambra State

	Source of Variation	N	r	p-value	Remark
	Artificial Intelligence Customer Service Relationship	125	0.53	0.00	Significant

Table 3 demonstrates that, in selected Anambra State banks, artificial intelligence and the ability to improve customer service relationships are significantly correlated. There were P.values<0.05 for the computed r (0.53). As a result, the first null hypothesis was rejected, showing that there is a substantial correlation between artificial intelligence and the ability to improve customer service in a few chosen banks in Anambra State.

- *Hypothesis Two: No Significant Relationship Exists Between Artificial Intelligence and Capacity to Enhance Cyber-Security in Selected Banks in Anambra State.*

Table 4 Pearson r on the Relationship Exists between Artificial Intelligence and Capacity to Enhance Cyber-Security in Selected Banks in Anambra State

	Source of Variation	N	r	p-value	Remark
	Artificial Intelligence Cyber-Security Enhancement	125	0.52	.00	Significant

Table 4 demonstrates that, among a subset of Anambra State's banks, artificial intelligence and the ability to improve cyber-security are significantly correlated. P-values were less than 0.05 for the computed r (0.32 for males and 0.52 for females). As a result, the second null hypothesis was rejected, suggesting that there is a meaningful connection between artificial intelligence and the ability to improve cyber-security in particular Anambra State banks.

V. DISCUSSION

- *Relationship between Artificial Intelligence and Capacity to Enhance Customer Service Relationships in Selected Banks*

The study's conclusions revealed that there is a highly positive relationship existing between artificial intelligence and the capacity to enhance customer service relationship in selected banks in Anambra State. The test of the hypothesis further revealed that there is a significant relationship between artificial intelligence and capacity to enhance customer service relationship in selected banks in Anambra State. This connotes the fact that the deployment of artificial intelligence will be of great relevance to banks as it concerns the enhancement of customer-service relationships. This implies that artificial intelligence could be employed on social media platforms to listen and attend to customers in their various points of need.

The study's conclusions concur with those of Almustafa, Assaf, and Allahham (2023), who noted in their research the significant potential of AI integration to completely transform the way Jordanian commercial banks operate. They disclosed that the incorporation of AI presents the prospect of tailored customer service solutions, thereby enhancing the user experience and directing clients toward appropriate financial services. They also disclosed that artificial intelligence (AI) technologies facilitate improved financial forecasting skills, precise analysis of market risks, accurate credit assessment, strong validation of risk models, and sophisticated creditworthiness evaluation.

- *Relationship between Artificial Intelligence and Capacity to Enhance Cyber-Security in Selected Banks in Anambra State*

The study's findings indicate that there is a high positive relationship between artificial and capacity to enhance cyber-security in selected banks in Anambra State. The test of the hypothesis further revealed that there is a significant

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relationship between artificial intelligence and the capacity to enhance cyber-security in selected banks in Anambra State. This implies that cyber-security in banks will be highly aided by the deployment of artificial intelligence. Given the importance of security to the operations in banking systems, artificial intelligence is a welcome development. The study's conclusions support those of Chahal (2023), who found that the digital revolution has greatly benefited the expansion of financial services and increased efficiency, notably in risk assessment processes. Chahal went on to say that AI has improved customer satisfaction rates and boosted data security in banking institutions.

VI. CONCLUSION

The twenty-first century has paved the way for global technological development. Artificial intelligence is one of such. Bank as a financial institution is in dire need of efficiency, customer service relationship and risk management. After the components of artificial intelligence have been fully revealed, the study assessed the relationship between artificial intelligence and business process optimization in banks in Anambra State. The study revealed the existence of a high positive relationship between artificial intelligence and business process optimization in banks (capacity to enhance customer service relationship and capacity to enhance cyber-security in selected banks in Anambra State). The test of hypothesis further revealed the existence of a significant relationship between artificial intelligence and business process optimization in banks (capacity to enhance customer service relationship and capacity to enhance cyber-security in selected banks in Anambra State).

RECOMMENDATIONS

➢ *In light of the Study's Conclusions, the Following Suggestions were Made:*

- The banking industry must continue implementing artificial intelligence (AI) responsibly to maintain a balance between innovative developments and the responsible and moral application of AI. A move like this will guarantee improved cyber-security and customer service in banks.
- Following the study's conclusions, banks should set up technology committees to investigate the use of AI in business process improvement. Taking this step will assist the banking system in weighing the benefits and drawbacks of integrating AI.
- To ensure the proper and effective integration of AI in banking institutions, banks must address algorithmic bias, ethical concerns, and workforce challenges head-on.

Further research can investigate the potential for artificial intelligence to eliminate human interference in the banking industry while simultaneously improving customer service.

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