



**THE IMPORTANCE OF ARTIFICIAL INTELLIGENCE (AI) IN THE 21ST CENTURY
BANKING AND FINANCE AND ITS IMPACT IN THIRD WORLD COUNTRIES**

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Abstract

The advent of Artificial Intelligence (AI) has brought significant advancements and transformations in all industries and sectors of businesses, of which the banking and finance industry is not an exception. The world has become digitized and the effective integration of AI technologies has become imperative to aid financial institutions in management of huge volumes of information and processing it in real time thereby improving the effectiveness and efficiency of their operations, to foster the process of decision-making, and to improve customer experiences. This dissertation explores the importance of AI in the banking and finance area of the 21st century, focusing on its impact on efficiency, risk management and fraud detection, and customer-centric services. Secondary data collected from case studies, journals, articles and research papers on different sectors of banking from 2001 till date was analysed using descriptive statistics. Research suggests that AI techniques outperform traditional statistical methods in addressing financial issue, and gradually revolutionizing the conventional Financial Technology (FinTech). However, AI is yet to be fully explored in the banking and financial sector, there is still an untapped market and application which give scope for development and growth. AI is still in the introduction phase and is being used in very limited areas.

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CHAPTER ONE

1.0 INTRODUCTION

Artificial intelligence (AI) refers to the simulation of human intelligence in machines that are programmed to think like humans and mimic their actions. The term may also be applied to any machine that exhibits traits associated with a human mind such as learning and problem-solving (Frankenfield, 2021). It is a novel technology science that integrates theory, method, technology, and application system by making computer simulation, extend and expand human intelligence, to make it similar to human thinking and behavioural mode. Its essence wants to be a perfect and mature intelligent machine by continuously simulating and exploring human behaviour. After years of development, the theory and technology of AI are becoming ever more versatile, and the application field is also expanding. Now it has broken through the simple simulation of human behaviour and developed into an integrated multi-functional application-oriented composite discipline. Together with virtual reality technology and 3D printing technology, AI is referred to as “the hottest technology in the early 21st century”. With the development of digital technology and the increasing maturity of AI theory and technology, the roles of enterprises, the attributes of value creation, and even economic structures are changing rapidly (Schwab, 2017). In January 2016, in the Davos Forum, AI as well as big data was regarded as the core of the Fourth Industrial Revolution (Science and Technology Policy Institute, 2016). Historically, the introduction of AI is an automated process that has gone on

for a long time. Mechanization at the end of the 19th century and the end of the 20th century made part of the manual labour automation, and the progress of information technology in the middle and late 20th centuries made the standardized data processing automation (Korinek and Stiglitz, 2017). Big Data, AI, blockchain, the Internet of Things (IoT), and other new technologies emerging in the 21st century are changing our economy and society. International Data Corporation (IDC), an American market research company specialized in IT, announced in October 2016 that cognitive systems and AI for integrating, learning, and analysing data from a large number of vast and various information sources will be distributed across wide-ranging industries, and the global sales will increase from \$8 billion in 2016 to \$47 billion in 2020. This is equivalent to an annual growth rate of 55.1% (IDC, 2016). Companies from a wide range of industries, together with the government, get involved in research on AI and its applications, especially in the financial, stocks, and manufacturing industries (Kim, 2018). Following the report from the financial magazine Euromoney, it is expected that the biggest changes will be achieved in the fields of credit evaluation, asset management, stock exchanges, and hedge fund management (McCauley, 2016). They expect financial companies to conduct more effective portfolio and risk management through more precise and insightful data analysis. Tractica predicts that the enterprise AI system market will grow at an average annual rate of 56.1%, from \$200 million in 2015 to \$11.1 billion in 2024 (Tractica, 2015). In the past 40 years, AI has made remarkable progress in imitating human reasoning and thought processes. Historically, the tools of AI were mainly limited to sequential processing and the very basic representation of knowledge and logic. A more modern method of AI is tantamount to constructing a computer with the structure and processing ability to imitate the human brain and thought process. These results provide the ability of knowledge representations based on a large amount of processing power, fast retrieval of large amounts of data, and pattern recognition based on experience. This AI technology is called neural computing or Artificial Neural Network (ANN).

The banking and financial market is one which has occupy with my research with problems ranging from false financial reports, financial fraud, financial or credit risk, ineffective financial operations to customer dissatisfaction. Financial analyst have employed various forms of analytical and managerial techniques to proffer solutions to these issues. One aspect of financial sector that has grown the fastest happens to be Fintech. Fintech, the word, is a combination of "financial technology". Fintech is used to describe new technology that seeks to improve and automate the delivery and use of financial services. At its core, fintech is utilized to help companies, business owners and consumers better manage their financial operations, processes, and lives by utilizing specialized software and algorithms that are used on computers and, increasingly, smartphones (Julia Kagan, 2019).

Recently AI has been used in the banking, trading, investment, lending, fraud detection, and investment opportunity discovery and portfolio management sectors. Each sector has different advantages to using AI. Some advantages include recognizing patterns, anticipating future events, making sound decisions etc. All these sectors have great potential and scope that can be used in Artificial Intelligence (Dylan Azulay, 2019). Artificial Intelligence (AI) is rapidly transforming the banking industry and shaping the future of financial services. AI is helping banks automate routine tasks, improve customer experience, and make better decisions (Smith and Nobanee, 2020). The advancements in AI technology and its applications in the banking sector have created a wealth of opportunities for innovation and improvement. The introduction of AI in the banking industry has the potential to revolutionize financial services by improving the speed and accuracy of transactions, reducing the risk of fraud, and providing more personalized services to customers. As technology continues to evolve, it is likely that AI will play an increasingly important role in shaping the future of the banking industry.

This study provide a deep insights of the advantages and disadvantages of the integration of AI in the banking sector and help banks understand how to fully leverage the benefits of this

technology. By exploring the importance of AI in the banking sector in the 21st century, this research is aimed to contribute some recommendation that will aid to the development of a roadmap for the Bank for Tomorrow.

1.1 JUSTIFICATION OF THE STUDY

The fast development of technology in all the fields around the world is taking place with help of Artificial Intelligence (AI). This study will attempt to assess how digitalization made the necessity to implement AI in the banking sector to handle their customers' complaints, queries, and so on without human intervention and/or along with human intervention. This research is aimed to aid the spread of the usefulness of artificial intelligence to financial and non-financial institutions of the banking sector.

1.2 AIM AND OBJECTIVE OF STUDY

The purpose of this study is to analysis and report the extent to which artificial intelligence influences banking operations in the 21st century. In striving to achieve this aim the certain objectives would be actualized. They include:

1. To determine the impact of AI on operational efficiency in banking and finance.
2. To evaluate the role of Artificial Intelligence (AI) in financial risk management and the detection of fraud in the banking sector.
3. To examine how AI enhances customer service and personalization in the finance industry.
4. To explore the potential challenges and ethical considerations as AI is increasingly integrated into banking and finance.

1.3 RESEARCH QUESTIONS

The following questions if answered would gear towards realization of the aim and purpose for this study:

1. Does the integration of AI in the banking and financial sector support and ease operational efficiency of banks globally?
2. To what extent has the implementation of AI support detection of fraudulent activities and enhance cyber security in the banking and finance sector?
3. Does AI facilitate financial transactions and collaboration between banks and other financial institutions?
4. Does AI facilitate data analysis and contribute to making informed decisions within the banking and finance sector globally?
5. What are the current challenges of AI with in the banking and finance sector?
6. What are the potential AI opportunities in 21st century banking and finance?
7. Is AI helping developing or third world banks in their daily operations?
8. Is AI changing the way 21st century banking is being practiced?

1.4 SCOPE OF STUDY

The integration of AI in banking and finance brings numerous benefits, but it also presents potential challenges and ethical considerations that need to be addressed. However this study would focus more on the areas where AI is being applied in banking and finance and the impacts recorded as well as impending and potential challenges, paying little or no details to ethical considerations.

1.5 METHODOLOGY

The study would employ qualitative description of sourced secondary data as well as descriptive analysis of systematically collected online survey data (online questionnaire) from key players of the banking and finance sector.

CHAPTER TWO

LITERATURE REVIEW

2.1 OVERVIEW OF ARTIFICIAL INTELLIGENCE

The term "Artificial Intelligence" was coined by John McCarthy in 1956, as stated by Koerselman (2023). McCarthy defined it as the field of study and engineering which is focused on the creating of intelligent machines. AI encompasses the development and analysis of intelligent agents capable of perceiving their environment and taking actions to optimize their chances of success. In another perspective AI is defined as the capacity to hold conflicting ideas and still function effectively, requiring elements such as learning from past experiences, reasoning for decision-making, inference abilities, and rapid responses. AI is design to prioritize tasks, address complexity and ambiguity, and perform tasks that typically necessitate human intelligence. When machines execute tasks requiring intelligence, they are considered to possess artificial intelligence. The scientific aim of AI is to comprehend intelligence by constructing computer programs that demonstrate intelligent behaviour through symbolic inference or reasoning. Importantly, the definition of AI is not static and may vary over time, accounting for the judgment of systems within specific temporal context

AI has many different definitions as there are many areas within AI. The numbers are still growing. According to McPherson, (2018) AI also signifies “robots, computers, and other machines with a humane ability and intelligence to reason and solve problems.

Artificial intelligence involves creating computer systems capable of executing tasks typically requiring human intelligence, such as recognizing visuals, understanding speech, making decisions, and translating languages. AI enables machines to learn from experience, adapt to new information, and carry out tasks resembling human actions. Many contemporary AI applications, such as chess-playing programs and autonomous vehicles, heavily utilize deep learning and natural language processing technologies

Most recently, the exploration of artificial intelligence (AI) has focused on creating intelligent machines capable of undertaking tasks necessitating human intelligence. AI employs computer systems and algorithms to acquire knowledge, engage in logical thinking, and make decisions grounded in data input. These technologies emulate human cognitive functions, enabling the analysis of data, automation of tasks, and support across diverse domains (Kok et al., 2002). AI encompasses both the scientific discipline and technological advancements aimed at producing machines that replicate human behaviour and intelligence (Ottosson and Westling, 2020).

Artificial intelligence (AI) continues to evolved and to encompass the creation of intelligent machines capable of performing tasks typically associated with human cognition, such as reasoning, learning, decision-making, and speech recognition (Frankenfeld, 2021). AI, as a field, encompasses a diverse array of technologies and disciplines and is often considered a general-purpose technology that becomes pervasive, evolves over time, and stimulates complementary innovation (Bresnahan and Trajtenberg, 1995). Consequently, there is no universally accepted definition of AI (Van Roy et al., 2020), though Acemoglu and Restrepo (2020) propose a comprehensive definition focusing on intelligent agents recognizing and responding to their environment.

Despite earlier setbacks known as "AI winters," the advancement and widespread adoption of AI have accelerated recently due to factors such as the availability of large datasets, increased computing power, and heightened investment in innovative technological projects (Ernest et al., 2018). Unlike traditional industrial robots that require explicit instructions, AI technologies can learn autonomously from their environment, translating sensory data into actionable instructions (Raj and Seamans, 2019). Moreover, AI is not limited to manual tasks but encompasses what are considered mental tasks as well (Ernest et al., 2018).

The adoption of AI is expected to have profound economic and societal implications, potentially boosting global GDP and improving company performance (Van Roy et al., 2020). North America and China are leading the investment in AI, with Europe and emerging markets in Asia and South America following suit (PwC, 2017). However, AI adoption may reshape labor markets, increasing demand for high-skilled workers while potentially reducing low-skilled job opportunities due to automation (Ernest et al., 2018; Acemoglu and Restrepo, 2020).

In the financial sector, AI is revolutionizing operations, enabling automation of processes, enhancing efficiency, and accuracy in predictive analytics and trading strategies (PwC, 2020). Additionally, AI has implications for regulatory compliance and financial supervision (Wall, 2018), facilitating fast credit decisions and benefiting both lenders and consumers (Jagtiani and John, 2018). Various applications of AI in finance include fraud detection, algorithmic trading, portfolio management, credit decisions, risk management, and regulatory compliance.

The momentum of AI advancements gained traction in the 21st century, driven by more powerful computing systems and the abundance of data (Ratia et al., 2018; Haenlein and Kaplan, 2019). The implementation of AI varies across industries, with companies developing in-house capabilities, partnering with AI solution providers, or utilizing cloud-based platforms to leverage AI's potential and gain competitive advantages (Burström et al., 2021)

THE FEATURES OF AI PROGRAMMING

2.2 FEATURES OF AI PROGRAMMING

According to Brook (1991), traditional programming languages lack the capacity to handle qualitative information effectively. Therefore, AI machines are programmed with their own specialized language to manipulate knowledge more efficiently. Unlike standard programming languages, AI programs primarily work with qualitative rather than numerical data. They utilize declarative knowledge, comprising assertions whose truth value is independent of algorithmic context, allowing for induction, deduction, and sometimes speculation. These systems can reevaluate decisions using backtracking techniques. AI encompasses four main components: expert systems, heuristic problem-solving, natural language processing, and computer vision.

Expert systems function as machine systems incorporating human knowledge stored in machine memory to offer intelligent advice and justify decisions. They rely on extensive databases of specialized knowledge about specific areas and are constructed through knowledge engineering. These systems mimic human experts' skills, such as those possessed by doctors, engineers, or analysts, to provide guidance to less experienced users. The transfer of knowledge occurs gradually through interactions between the expert and the system. Expert systems represent specific task domains, utilizing task-oriented problem-solving activities within defined areas.

One of the earliest expert systems, MACSYMA, handled symbolic mathematical tasks using a set of fairly unstructured LISP functions. Other examples include MYCIN, TURNX, and PROSPECTOR, designed for expertise training, troubleshooting, and other purposes. Expert systems, however, are still in their early stages.

Expert systems can create flexible programs by utilizing both qualitative and quantitative data to solve various design problems, such as spring design. They require minimal user input, relying on a knowledge base, rule base, and data base during the design process. The knowledge base contains equations related to spring design, the rule base includes constraints provided by the user, and the data base consists of standard compression designs for comparison. The system interacts with the user throughout the design process, seeking additional input and allowing the user to make the final selection based on application requirements.

The benefits of expert systems include their ability to outperform humans by making fewer mistakes and providing consistent recommendations, their cost-effectiveness compared to human expertise, and their success in training and improving the expertise of both experts and non-experts. They can handle repetitive tasks, allowing experts to focus on unique skills, and are compatible with various decision-making styles. Expert systems also enable operations in environments unsuitable for humans and enhance industry productivity.

Fuzzy logic, introduced by Dr. Lotfi Zadeh of UC Berkeley in the 1960s, addresses the uncertainty of natural language by modeling imprecise data. Fuzzy logic finds applications in controlling subway systems, industrial processes, entertainment electronics, diagnostic systems, and household appliances. It is particularly useful in manufacturing processes and other situations where traditional true/false logic is inadequate. Fuzzy logic, a mathematical approach to problem-solving, allows for reasoning with approximate judgments, unlike classical logic, which deals only with true/false statements.

Fuzzy expert systems, utilizing fuzzy logic instead of Boolean logic, consist of membership functions and rules for reasoning about data. These systems focus on numerical processing and differ from conventional expert systems, which mainly rely on symbolic reasoning. The rules in fuzzy expert systems involve premises and conclusions, with the inference process comprising fuzzification, inference, composition, and optionally defuzzification. Neuro-fuzzy logic combines fuzzy logic with neural networks, enhancing knowledge representation and learning capabilities.

Artificial neural networks (ANNs) mimic the information processing capabilities of the human brain. They consist of interconnected neurons organized in layers, processing data to solve specific problems. ANNs are well-suited for time series analysis and forecasting, providing insights into nonlinear dynamics and structural changes within systems. They require training to learn patterns from data, with supervised and unsupervised training methods available. Multi-layer perceptions (MLPs) and self-organizing feature maps (SOFMs) are common types of ANNs used in financial applications. Supervised training involves feeding input data to the network until the output meets accuracy requirements, while unsupervised training explores data properties without predefined outputs.

AI technologies, including expert systems, fuzzy logic, and neural networks, play crucial roles in problem-solving, decision-making, and data analysis across various industries, revolutionizing processes and enhancing productivity.

2.3 HEURISTIC PROBLEM SOLVING IN AI

What are Heuristics? They are defined as mental shortcuts, they are also known as rules of the thumb that makes decision process and problem solving simple. They are strategies derived from previous experiences with similar problems that help individuals make quick, efficient

judgments. In the realm of artificial intelligence (AI), heuristics are employed to craft algorithms capable of resolving problems with greater efficiency. Heuristic algorithms find extensive application in both computer science and cognitive science for addressing challenges that conventional algorithmic methods struggle with or cannot tackle at all. Unlike traditional algorithms, which consider all possible solutions, heuristics are shortcut methods that aim to find good solutions quickly. They rely on rules of thumb and assumptions to guide their search, often sacrificing optimality for speed.

The dilemma arises when these heuristics fail to produce optimal solutions or fail to find a solution at all. The inability to guarantee the optimality of heuristic algorithms is a fundamental issue in AI. While they may be efficient in many cases, they are not fool proof, leading to a debate within the AI community.

Understanding and addressing the heuristic problem is crucial for the further development of AI. Researchers are constantly striving to improve heuristics and develop new algorithms that provide better solutions. This dilemma presents an ongoing challenge that requires a deeper understanding of the mental processes engaged in making decisions and solving problems

Unlike computer algorithms that can follow a set of predefined rules and instructions, heuristics involve using intuitive judgment or rules of thumb to explore potential solutions. This method enables AI systems to manoeuvre through uncertain or complex data and make decisions using incomplete information. However, the issue with heuristics lies in striking the right balance between flexibility and efficiency. While heuristics enable AI systems to quickly explore a large solution space, they may also lead to suboptimal or biased outcomes. This is because heuristics rely on simplifications and assumptions that may not always hold true in complex real-world scenarios.

Furthermore, heuristics can introduce biases and prejudices when the underlying information used in training the AI system is messed up or incomplete. If the machine learns from biased human decision-making patterns, it may perpetuate those biases and reinforce inequalities or discrimination.

Addressing the heuristics problem in AI requires a multidisciplinary approach that combines knowledge from computer science, cognitive science, and algorithmic thinking. Researchers must design algorithms and models that can balance efficiency and accuracy, while also accounting for the potential biases and limitations of heuristics.

By better understanding the puzzling issue of heuristics in artificial intelligence, the AI community can develop more robust and ethical systems. This ongoing research and exploration will drive the progress of AI and ensure that it is applied responsibly and beneficially in various fields.

2.4 NATURAL LANGUAGE PROCESSING IN AI

Natural Language Processing (NLP) is an Artificial Intelligence (AI) subdivision that empowers machines to comprehend human language. Its objective is to construct systems capable of interpreting text and executing tasks like translation, spell check, or topic classification automatically. NLP facilitates computer comprehension of human language by scrutinizing sentence grammatical structures and word meanings, leveraging algorithms to derive meaning and produce outputs. In essence, NLP deciphers human language, enabling automated task execution. NLP utilizes two techniques to aid computers in text comprehension.

- Syntactic analysis involves examining text through fundamental grammar principles to identify sentence structure, word organization, and word relationships.

Key sub-tasks within syntactic analysis include:

- Tokenization divides text into smaller components known as tokens (such as sentences or words) to facilitate text manipulation.
- Part of speech tagging (PoS tagging) categorizes tokens as verbs, adverbs, adjectives, nouns, etc., aiding in word meaning inference (e.g., the word "book" can convey different meanings based on its usage as a verb or a noun).
- Lemmatization & stemming involve reducing inflected words to their base form for simplified analysis.
- Stop-word removal eliminates commonly occurring words that lack significant semantic value, like I, they, have, like, yours, etc.
- Semantic analysis centres on comprehending the meaning of text, starting with individual word meanings (lexical semantics) and progressing to word combinations and their contextual significance.

Key sub-tasks within semantic analysis encompass:

- Word sense disambiguation endeavours to discern the intended meaning of a word within a given context.
- Relationship extraction strives to grasp how entities (such as places, individuals, organizations, etc.) interrelate within a text.

2.5 COMPUTER VISION IN AI

Computer vision, a dynamic facet of artificial intelligence (AI), empowers computers and systems to extract rich insights from diverse visual inputs, such as digital images and videos, and subsequently utilize this information to guide actions or offer recommendations. At its core, computer vision involves the intricate development of algorithms and sophisticated

techniques aimed at unravelling meaningful patterns and context from visual data, effectively providing software and technology with a form of visual perception.

In essence, computer vision mirrors the functionality of human vision, albeit with some inherent disparities. Human vision benefits from the cumulative experience and contextual understanding gained over a lifetime, enabling individuals to effortlessly discern objects, gauge distances, detect motion, and identify anomalies within visual stimuli. In contrast, computer vision endeavours to replicate these capabilities within a condensed timeframe, employing an arsenal of cameras, vast datasets, and intricate algorithms in lieu of biological structures like retinas, optic nerves, and a visual cortex.

The foundation of computer vision lies in two pivotal technologies: deep learning and convolutional neural networks (CNNs). Deep learning, a subset of machine learning, empowers computers to autonomously discern the intricate nuances and contextual significance embedded within visual data. By subjecting these systems to extensive datasets, computers can effectively teach themselves to differentiate between various images without explicit programming. CNNs play a crucial role in this process by deconstructing images into their constituent pixels and associating them with relevant tags or labels. These labels serve as the foundation for conducting convolutions, intricate mathematical operations that enable the system to derive meaningful insights and make accurate predictions about the content depicted in the images.

Simply, computer vision represents a ground-breaking endeavour in the realm of AI, offering boundless potential to revolutionize various industries and domains by endowing machines

with the ability to perceive and comprehend the visual world with remarkable sophistication and precision.

2.6 AI APPLICATION

- a) Developing and evaluating mechanical components based on size constraints.
- b) Diagnosing electronic propulsion systems.
- c) Applicable in both electronics and electrochemical domains.
- d) Analysing the software development lifecycle.
- e) Identifying structures and compositions of chemical compounds.
- f) Employed in medical diagnostic procedures.
- g) Strategizing experiments in biology, chemistry, and molecular genetics.
- h) Creating and managing stock and bond portfolios.
- i) Implementing troubleshooting methodologies.
- j) Strategizing and exploring space missions.
- k) Predicting agricultural crop loss.
- l) Creating fully automated manufacturing facilities.

2.7 ADVANTAGES AND DISADVANTAGES OF ARTIFICIAL INTELLIGENCE

An artificial intelligence program is a program that is capable of learning and thinking. It is possible to consider anything to be artificial intelligence if it consists of a program performing a task that we would normally assume a human would perform. While artificial intelligence has many benefits, there are also draw backs. The advantages of AI include:

Reduction in Human Error

One of the biggest benefits of Artificial Intelligence is that it can significantly reduce errors and increase accuracy and precision. The decisions taken by AI in every step is decided by

information previously gathered and a certain set of algorithms. When programmed properly, these errors can be reduced to null. AI can significantly reduce errors and increase accuracy by utilizing information and algorithms to make decisions (Arner et al., 2017)

Zero Risks

Another big benefit of AI is that humans can overcome many risks by letting AI robots do them for us. Whether it be defusing a bomb, going to space, exploring the deepest parts of oceans, machines with metal bodies are resistant in nature and can survive unfriendly atmospheres. Moreover, they can provide accurate work with greater responsibility and not wear out easily. AI can perform tasks that are dangerous for humans, such as defusing bombs or exploring hazardous environments, reducing risks and increasing safety (Jain & Kota, 2018).

In a fully automated production line in a manufacturing facility, robots perform all tasks, eliminating the risk of human error and injury in hazardous environments.

Round the Clock Availability

There are many studies that show humans are productive only about 3 to 4 hours in a day. Humans also need breaks and time offs to balance their work life and personal life. But AI can work endlessly without breaks. They think much faster than humans and perform multiple tasks at a time with accurate results. They can even handle tedious repetitive jobs easily with the help of AI algorithms. Online customer support chatbots can provide instant assistance to customers anytime, anywhere. Using AI and natural language processing, chatbots can answer common questions, resolve issues, and escalate complex problems to human agents, ensuring seamless customer service around the clock. AI can work continuously without breaks, providing seamless customer service and handling repetitive tasks efficiently (PwC, 2019).

Digital Assistance

Some of the most technologically advanced companies engage with users using digital assistants, which eliminates the need for human personnel. Many websites utilize digital assistants to deliver user-requested content. We can discuss our search with them in conversation. Some chatbots are built in a way that makes it difficult to tell whether we are conversing with a human or a chatbot. AI-powered digital assistants enhance user engagement and eliminate the need for human personnel in various applications (Agarwal et al., 2020).

New Inventions

In practically every field, AI is the driving force behind numerous innovations that will aid humans in resolving the majority of challenging issues. For instance, recent advances in AI-based technologies have led to inventions of self-driving cars, which use a combination of cameras, sensors, and AI algorithms to navigate roads and traffic without human intervention. Self-driving cars have the potential to improve road safety, reduce traffic congestion, and increase accessibility for people with disabilities or limited mobility. They are being developed by various companies, including Tesla, Google, and Uber, and are expected to revolutionize transportation. AI drives innovation in different fields, leading to advancements like self-driving cars that improve safety and accessibility (Arner et al., 2017).

Unbiased Decisions

Human beings are driven by emotions, whether we like it or not. AI on the other hand, is devoid of emotions and highly practical and rational in its approach. A huge advantage of Artificial Intelligence is that it doesn't have any biased views, which ensures more accurate decision-making typical example is AI-powered recruitment systems that screen job applicants based on skills and qualifications rather than demographics. This helps eliminate bias in the hiring process, leading to an inclusive and more diverse workforce. AI makes impartial decisions

based on data, reducing biases in processes like recruitment and decision-making (Jain & Kota, 2018).

Perform Repetitive Jobs

We will be doing a lot of repetitive tasks as part of our daily work, such as checking documents for flaws and mailing thank-you notes, among other things. We may use artificial intelligence to efficiently automate these menial chores and even eliminate "boring" tasks for people, allowing them to focus on being more creative. AI can automate mundane tasks, allowing humans to focus on more creative and strategic activities (PwC, 2019).

Daily Applications

Today, our everyday lives are entirely dependent on mobile devices and the internet. We utilize a variety of apps, including Google Maps, Alexa, Siri, Cortana on Windows, OK Google, taking selfies, making calls, responding to emails, etc. With the use of various AI-based techniques, we can also anticipate today's weather and the days ahead. AI technologies are integrated into everyday applications like virtual assistants and predictive analysis, enhancing user experiences (Agarwal et al., 2020)

AI in Risky Situations

One of the main benefits of artificial intelligence is this. By creating an AI robot that can perform perilous tasks on our behalf, we can get beyond many of the dangerous restrictions that humans face. It can be utilized effectively in any type of natural or man-made calamity, whether it be going to Mars, defusing a bomb, exploring the deepest regions of the oceans, or mining for coal and oil. AI can be utilized in perilous tasks, overcoming human limitations in dangerous environments and scenarios (Jain & Kota, 2018).

Medical Applications

AI has also made significant contributions to the field of medicine, with applications ranging from diagnosis and treatment to drug discovery and clinical trials. AI-powered tools can help doctors and researchers analyze patient data, identify potential health risks, and develop personalized treatment plans. This can lead to better health outcomes for patients and help accelerate the development of new medical treatments and technologies. AI contributes to the medical field by facilitating diagnosis, treatment, and drug discovery, leading to improved healthcare outcomes (Arner et al., 2017).

The disadvantage of AI includes:

High Costs

According to Arner et al., (2017). Developing and maintaining AI systems requires significant investment in hardware, software, and resources, making it costly. The ability to create a machine that can simulate human intelligence is no small feat. It requires plenty of time and resources and can cost a huge deal of money. AI also needs to operate on the latest hardware and software to stay updated and meet the latest requirements, thus making it quite costly.

No Creativity

A big disadvantage of AI is that it cannot learn to think outside the box. AI is capable of learning over time with pre-fed data and past experiences, but cannot be creative in its approach. A classic example is the bot Quill who can write Forbes earning reports. These reports only contain data and facts already provided to the bot. Although it is impressive that a bot can write an article on its own, it lacks the human touch present in other Forbes articles. AI lacks the ability to think innovatively or creatively, relying on pre-fed data and experiences for decision-making (Jain & Kota, 2018).

Unemployment

One application of artificial intelligence is a robot, which is displacing occupations and increasing unemployment (in a few cases). Therefore, some claim that there is always a chance of unemployment as a result of chatbots and robots replacing humans. PwC, (2019) Argues that Automation and AI applications may lead to job displacement and increased unemployment in certain industries. For instance, robots are frequently utilized to replace human resources in manufacturing businesses in some more technologically advanced nations like Japan. This is not always the case, though, as it creates additional opportunities for humans to work while also replacing humans in order to increase efficiency.

Make Humans Lazy

AI applications automate the majority of tedious and repetitive tasks. Since we do not have to memorize things or solve puzzles to get the job done, we tend to use our brains less and less. This addiction to AI can cause problems to future generations. Dependency on AI for tasks can reduce human cognitive engagement and problem-solving skills, potentially leading to laziness (Agarwal et al., 2020).

No Ethics

Ensuring ethical considerations in AI development and deployment poses challenges, raising concerns about the ethical impact of AI (Jain & Kota, 2018). Ethics and morality are important human features that can be difficult to incorporate into an AI. The rapid progress of AI has raised a number of concerns that one day, AI will grow uncontrollably, and eventually wipe out humanity. This moment is referred to as the AI singularity.

Emotionless

Since early childhood, we have been taught that neither computers nor other machines have feelings. Humans function as a team, and team management is essential for achieving goals.

However, there is no denying that robots are superior to humans when functioning effectively, but it is also true that human connections, which form the basis of teams, cannot be replaced by computers. AI lacks emotions and human connections, limiting its ability to understand and respond to complex social interactions (PwC, 2019).

No Improvement

Humans cannot develop artificial intelligence because it is a technology based on pre-loaded facts and experience. AI is proficient at repeatedly carrying out the same task, but if we want any adjustments or improvements, we must manually alter the codes. AI cannot be accessed and utilized akin to human intelligence, but it can store infinite data. AI cannot learn or adapt beyond its programmed capabilities, hindering its ability to make dynamic adjustments or improvements (Arner et al., 2017). Machines can only complete tasks they have been developed or programmed for; if they are asked to complete anything else, they frequently fail or provide useless results, which can have significant negative effects. Thus, we are unable to make anything conventional.

2.7 IMPACTS OF ARTIFICIAL INTELLIGENCE (AI) IN THE BANKING AND FINANCE SECTOR

The banking sector has witnessed significant enhancements in efficiency, accuracy, and personalized customer experiences through the adoption of artificial intelligence (AI) (Anastasi et al., 2021). AI implementation offers a wide array of opportunities for banks to streamline operations and foster innovation, including data analysis, adaptive learning platforms, personalized marketing, automation of repetitive tasks, chatbots, natural language processing, voice recognition, and risk-based predictive maintenance and fraud detection (Nikitas et al., 2020). AI embodies human intelligence in machines, promoting sustainable and efficient

resource utilization (Nikitas et al., 2020). Data-driven companies stand to benefit from improved decision-making and more precise predictions (Anastasi et al., 2021), marking a significant advancement in digital transformation strategy that leverages insights from extensive datasets (Lichtenthaler, 2020). Consequently, the integration of AI processes is poised to enhance productivity among bank employees (Plastino and Purdy, 2018), with previous studies highlighting cost reduction and revenue generation through operational enhancements in areas like lending, security services, compliance, fraud detection, and novel service offerings (Burgess, 2017; Kaya, 2019; Ryll et al., 2020). Moreover, tailored solutions and services enable customers to access personalized investment strategies, wealth management techniques, and robo-advisors (Wheeler, 2020).

AI's role extends to autonomous decision-making processes, real-time asset and process monitoring, and value creation (Alcácer and Cruz-Machado, 2019), with anticipated benefits set to expand in the future (Cockburn et al., 2018). In the dynamic banking landscape, AI integration holds immense potential for enhancing decision-making processes and driving financial performance. However, alongside the potential benefits, AI adoption in banking raises concerns about biases, transparency issues, data privacy, and compliance (Nguyen, 2022). Organizations may grapple with challenges such as job displacement, training needs, high implementation costs, interoperability issues, and ethical considerations (Nguyen and Dang, 2023). To address these concerns, responsible AI practices should be prioritized, alongside investments in data quality, governance, and bias mitigation in AI models. Awareness of regulations and ethical standards is equally vital (Nguyen and Dang, 2023).

This study aims to address stakeholder concerns regarding the accountability and transparency of AI systems, advocating for transparent disclosure practices. Transparent AI disclosure can attract investors keen on technologically informed decision-making, bolstering a company's

valuation and regulatory compliance efforts (Meiryani et al., 2022). Moreover, transparent disclosure aligns with evolving regulatory frameworks, demonstrating adherence to ethical guidelines and enhancing corporate reputation (Meiryani et al., 2022). Despite the benefits of AI applications in banking, quantifying the link between AI usage and bank performance remains crucial for understanding its broader economic impact.

However, AI disclosure remains voluntary, with companies having discretion over the extent and type of information disclosed. To date, there's no consensus on the level of AI disclosure, with existing practices varying widely among companies (Sætra, 2021). While several studies have explored the benefits of AI in banking, there's a research gap concerning the impact of AI disclosure on financial performance, necessitating further investigation to shed light on its potential benefits.

Clear and ethical communication about AI initiatives can enhance a company's image as a responsible innovator, fostering trust among consumers and partners (Hasan et al., 2023). Conversely, a lack of transparency or negative perceptions may lead to scepticism and reputational damage, potentially impacting financial performance. This study seeks to provide comprehensive insights into AI's role in shaping contemporary business success, encompassing ethical, regulatory, financial, and reputational dimensions. However, empirical evidence on the direct relationship between AI disclosure and financial outcomes may be limited, depending on the timing of the study.

Technological innovations like AI, machine learning, big data analytics, cloud computing, and social media have transformed digital business operations, offering simplicity and efficiency (Tekic and Koroteev, 2019). AI's capabilities span forecasting, language processing, and autonomous operation, driven by self-learning mechanisms (Öztemel and Gursev, 2020). These

innovations redefine competitive strategies and contribute to value creation (Shang and Zhang, 2022), with chatbots emerging as a feasible solution for the banking industry (Suhel et al., 2020). Chatbots, leveraging natural language processing, enhance customer service, reduce operational costs, and increase accessibility (Sanny et al., 2020). Additionally, AI streamlines decision-making processes while ensuring regulatory compliance and fraud prevention (Han et al., 2020).

In the financial domain, AI finds applications across various assets, products, and services, including stocks, derivatives, commodities, indices, currencies, banking, insurance, wealth management, and surveillance and compliance (Raj and Portia, 2011). Banks leverage AI techniques to improve speed, accuracy, and efficiency, enhancing operational resilience and customer satisfaction (Soni, 2019). Predict

In finance, the main financial assets, products, instruments and their related operations and services that can benefit from AI include the following.

AI supports various banking operations in the following ways:

1. **Stock Market:** AI assists in stock market operations by analysing vast amounts of financial data to identify patterns and trends. It can predict market movements, assess risks, and optimize trading strategies. AI-powered algorithms execute trades swiftly and accurately based on predefined criteria, contributing to improved decision-making and portfolio management.
2. **Derivatives:** In the derivatives market, AI facilitates risk management and pricing strategies. It analyses historical data to predict future price movements, assess option valuations, and hedge against risks. AI algorithms can execute complex derivative transactions autonomously, enhancing efficiency and reducing errors.

3. **Commodities:** AI aids in commodities trading by analysing supply and demand dynamics, geopolitical factors, and market sentiment. It predicts price fluctuations, optimizes inventory management, and identifies trading opportunities. AI also assists in commodity price forecasting and risk assessment, enabling more informed decision-making.
4. **Index Services:** AI enhances index services by analysing market data to construct and rebalance indices efficiently. It identifies relevant securities, weights them appropriately, and adjusts compositions based on changing market conditions. AI-driven index services provide accurate benchmarks for tracking market performance and guiding investment decisions.
5. **Currency and Cryptocurrency:** In the currency and cryptocurrency markets, AI algorithms analyse exchange rate movements, macroeconomic indicators, and geopolitical events to forecast currency trends. They execute trades automatically, exploit arbitrage opportunities, and manage currency risk. AI also assists in cryptocurrency trading by detecting market anomalies, identifying profitable trading strategies, and ensuring compliance with regulatory requirements.
6. **Bank Operations:** AI streamlines various bank operations such as customer service, transaction processing, risk management, and fraud detection. Chatbots powered by AI provide personalized assistance to customers, while AI algorithms automate routine tasks like account reconciliation and credit scoring. AI-based systems monitor transactions in real-time to detect suspicious activities and prevent fraudulent transactions.
7. **Insurances:** AI enhances insurance operations by analysing customer data to assess risks, determine insurance premiums, and optimize underwriting processes. AI algorithms automate claims processing, accelerate settlements, and detect fraudulent

claims. AI-powered chatbots provide personalized insurance advice and support, improving customer engagement and satisfaction.

8. **Investments:** AI supports investment operations by analysing market data, economic indicators, and company fundamentals to identify investment opportunities and manage portfolios. AI-driven investment platforms offer personalized investment advice, asset allocation strategies, and risk management solutions. AI algorithms execute trades efficiently, optimize portfolio performance, and minimize investment risks.
9. **Surveillance and Compliance:** AI strengthens surveillance and compliance efforts by monitoring transactions, detecting suspicious activities, and ensuring regulatory compliance. AI systems analyse vast amounts of data to identify unusual patterns, anomalies, and potential compliance breaches. AI-powered surveillance tools enhance regulatory reporting, mitigate compliance risks, and facilitate audits and investigations.

2.8 THE IMPACT OF AI ON FINANCIAL PERFORMANCE

The contemporary business landscape is witnessing a profound shift driven by the accelerating adoption of Artificial Intelligence (AI) techniques across various sectors. Among these, financial services, manufacturing, information services, and banking stand out as the most prominent beneficiaries of AI's transformative potential (Bughin et al., 2017; Green et al., 2009). This burgeoning interest in AI is underscored by compelling evidence suggesting that strategic investments in AI technologies, coupled with the seamless integration of machine learning capabilities into collaborative workflows, have the potential to significantly bolster banks' revenue streams by a remarkable 34% (Shook and Knickrehm, 2018).

The momentum behind AI adoption is further substantiated by comprehensive global surveys such as the AI McKinsey Global Surveys series, which has been tracking a steady uptick in the integration of AI across various business functions and units since 2004, reflecting the evolving

landscape of AI integration as of 2023. This trend underscores the growing recognition among executives across diverse industries regarding the pivotal role played by AI in driving operational efficiency, fostering innovation, and unlocking new avenues for revenue generation.

Within the domain of accounting and finance, researchers have delved deep into the multifaceted factors influencing firm performance, elucidating both positive and negative impacts. For instance, insightful studies by Almustafa et al. (2023) have underscored the critical role played by the quality of national governance in mitigating the adverse impacts of crises such as the COVID-19 pandemic on firm performance. Concurrently, the works of Nguyen (2022) and Nguyen and Dang (2023) have shed light on the potentially deleterious effects of novel technologies such as FinTech on financial performance and stock prices, underscoring the intricate interplay between technological innovation and financial outcomes.

The Financial Stability Board (FSB) has embarked on a comprehensive analysis of the implications of AI adoption for financial stability, identifying a range of supply and demand drivers propelling AI adoption in the financial sector. These drivers encompass technological advancements, data availability, profitability imperatives, competitive dynamics, and regulatory imperatives, collectively shaping the trajectory of AI integration (FSB, 2017). Additionally, the Organisation for Economic Co-operation and Development (OECD) has elucidated AI's transformative potential in bolstering efficiency, profitability, risk management, regulatory compliance, and the overall quality of financial services offered to consumers (OECD, 2021).

In practical terms, the integration of AI applications in banking has yielded tangible benefits, including cost reduction, revenue enhancement, operational streamlining, and fortification of risk management and regulatory compliance frameworks. Moreover, AI-driven automation has

catalyzed productivity gains by relieving employees of repetitive tasks and augmenting the efficiency of banking operations (Kaya, 2019; Plastino and Purdy, 2018).

Numerous empirical studies have underscored the multifaceted advantages of AI applications in the financial realm, spanning improved customer service, fraud detection, credit rating, and the tailoring of bespoke product offerings to meet evolving consumer needs (Kunwar, 2019; Soni, 2020; Lui and Lamb, 2018; Buchanan, 2019; Fernandez, 2019). However, it is imperative to acknowledge and address the attendant challenges, encompassing issues like bias, discrimination, information privacy, security vulnerabilities, and regulatory compliance constraints, which are integral to fostering trust and confidence among consumers (Kunwar, 2019; Soni, 2020; Fernandez, 2019).

While select Indian banks have embarked on the journey of AI adoption to deliver personalized services and enhance transaction monitoring capabilities, the full potential of AI in banking remains largely untapped (Sabharwal, 2014). Consequently, the path forward entails a judicious balance between leveraging AI's transformative capabilities and navigating the intricate terrain of regulatory frameworks, privacy concerns, and investment requisites, thereby unlocking the latent potential for innovation, efficiency enhancement, and superior customer experiences in the banking domain.

Expanding on the implications of AI adoption in the banking sector, it is essential to delve into the various facets of AI applications and their impact on banking operations. AI technologies encompass a broad spectrum of tools and techniques that leverage machine learning algorithms, natural language processing, and advanced analytics to automate processes, enhance decision-making, and deliver personalized experiences to customers.

In the realm of stock market operations, AI plays a crucial role in analysing market trends, identifying trading opportunities, and optimizing investment portfolios. By leveraging AI-

driven predictive analytics and algorithmic trading algorithms, banks can gain deeper insights into market dynamics, mitigate risks, and capitalize on emerging opportunities in real-time. Moreover, AI-powered chatbots and virtual assistants empower investors with timely information, personalized recommendations, and seamless transactional support, thereby enhancing overall user experiences and satisfaction levels.

In derivatives trading, AI technologies enable banks to develop sophisticated models for pricing derivatives, hedging risks, and optimizing trading strategies. By harnessing machine learning algorithms and advanced statistical techniques, banks can gain a competitive edge in derivatives markets by accurately forecasting price movements, identifying arbitrage opportunities, and managing portfolio risks more effectively. Additionally, AI-driven regulatory compliance solutions help banks navigate complex regulatory requirements and ensure adherence to compliance standards in derivatives trading operations.

Similarly, in commodities trading, AI-powered solutions facilitate data-driven decision-making, risk management, and operational efficiency. By leveraging AI-driven predictive analytics and machine learning algorithms, banks can optimize

2.9 AI AND THE STOCK MARKET

Herdershott et al. (2011) contend that the integration of artificial intelligence (AI) in financial markets leads to enhanced market liquidity by reducing spreads, adverse selection, and the time required for price discovery through trading activities. This improvement in liquidity dynamics translates into a decreased cost of equity for publicly listed firms, particularly in emerging market contexts (Litzenberger et al., 2012). In comparison to human traders, algorithmic trading, a prominent application of AI in financial markets, demonstrates superior adaptability to new information and exhibits the ability to capitalize on market opportunities more swiftly,

particularly surrounding news announcements, owing to its advanced market timing capabilities and rapid execution speeds (Frino et al., 2017).

Despite occasional concerns about increased volatility associated with high-frequency trading, a subset of algorithmic trading, particularly during periods of news or fundamental developments, algorithmic trading as a whole has contributed to a reduction in return volatility variance and an overall improvement in market efficiency (Kelejian and Mukerji, 2016; Litzenberger et al., 2012). This suggests that while algorithmic trading may occasionally amplify short-term market fluctuations, its net effect is a more stable and efficient market environment.

Another area of exploration within the realm of AI in finance is the use of neural networks, alongside traditional methods, to forecast stock prices and asset performance. Neural networks, favoured over linear models, excel in capturing the complex, non-linear relationships between stock returns and fundamental variables, making them more adept at identifying patterns and adapting to changing market conditions (Kanas, 2001; Qi, 1999). Dixon et al. (2017) assert the robust predictive power of deep neural networks, achieving an accuracy rate of 68% in their analysis. Moreover, Zhang et al. (2021) introduce a model known as Long Short-Term Memory Networks (LSTM), which surpasses classical artificial neural networks in terms of prediction accuracy and computational efficiency, particularly when considering various indicators of online investor attention, such as internet search volume.

Likewise, the incorporation of AI in financial markets has led to tangible improvements in market liquidity, reduced trading costs, and enhanced efficiency. Algorithmic trading, driven by AI technologies, has demonstrated superior adaptability and responsiveness to market dynamics, contributing to a more liquid and efficient marketplace. Additionally, the utilization of neural networks for forecasting stock prices and asset performance has yielded promising

results, with deep learning techniques exhibiting high predictive accuracy and efficiency, particularly when accounting for various sources of market information and investor sentiment. Overall, the integration of AI in financial markets represents a significant advancement in market dynamics and investment decision-making processes.

2.10 AI AND PORTFOLIO MANAGEMENT

Soleymani and Vasighi (2020) propose a novel approach to asset allocation, combining clustering techniques with Value at Risk (VaR) analysis to enhance portfolio management. Their methodology involves categorizing stocks based on their risk levels and profitability, subsequently allocating the least risky yet most profitable stocks to the portfolio. This strategic allocation aims to optimize portfolio performance by prioritizing assets with favourable risk-return profiles.

Expanding upon this concept, more sophisticated asset allocation strategies incorporate additional components such as a bankruptcy detection model and an advanced utility performance system. These augmentations enhance the decision-making process by providing insights into the financial health of companies and their potential impact on portfolio optimization. Prior to integration into the portfolio, a neural network model assesses the default probability of each company, enabling informed decisions regarding asset inclusion (Loukeris and Eleftheriadis, 2015).

Furthermore, advancements in index-tracking techniques driven by deep learning technology have contributed to minimizing tracking error and enhancing portfolio performance (Kim and Kim, 2020). By leveraging deep learning algorithms, these methodologies aim to replicate index movements with greater precision, thereby mitigating performance deviations and optimizing portfolio outcomes.

Additionally, the incorporation of the asymmetric copula method for estimating returns dependence further refines the portfolio optimization process (Zhao et al., 2018). This statistical technique enables a more accurate assessment of the relationship between asset returns, facilitating the construction of diversified portfolios that are resilient to market fluctuations and exhibit enhanced risk-adjusted returns.

Therefore, the body of research underscores the efficacy of AI-based prediction models in improving the portfolio selection process by enabling more accurate forecasts of stock returns (Zhao et al., 2018). By integrating advanced analytical techniques and machine learning algorithms, financial practitioners can enhance portfolio management practices, optimize risk-adjusted returns, and achieve superior investment outcomes.

2.11 AI AND CORPORATE PERFORMANCE, RISK, DEFAULT VALUATION

Jones et al. (2017) and Gepp et al. (2010) conduct research to assess the likelihood of corporate default, while SabăuPopa et al. (2021) focus on predicting business performance using a composite financial index. The consensus from these studies is that classifiers powered by artificial intelligence (AI) demonstrate remarkable accuracy and interpretability, surpassing traditional linear models in effectiveness.

A notable study explores the correlation between facial masculinity traits in CEOs and firm riskiness using image processing techniques (Kamiya et al., 2018). Surprisingly, the findings suggest that firms led by CEOs with more masculine facial features tend to exhibit higher levels of risk and leverage ratios, and are more active in mergers and acquisitions activities.

Chen et al. (2013) examine real estate investment returns by forecasting the Real Estate Investment Trust (REIT) index, highlighting the influence of various factors such as the

industrial production index, lending rates, dividend yields, and stock indices. Their analysis indicates that both supervised machine learning techniques and artificial neural networks (ANNs) outperform traditional linear models in terms of predictive efficiency and accuracy.

Contrary to previous research, a text mining study suggests that the most significant risk factors in banking are non-financial, encompassing aspects such as regulation, strategy, and management operations (Wei et al., 2019). However, it is essential to acknowledge that the findings derived from text analysis are confined to the information disclosed within the analysed documents.

A study focusing on the Malaysian and Islamic banking sector, utilizing neural network-based methodologies, highlights factors such as negative cost structures, cultural influences, and regulatory barriers as contributors to inefficiency within these sectors (Wanke et al., 2016; Papadimitriou et al., 2020). This research contrasts the resilience, health, and regulatory robustness observed in the U.S. banking system, which operates under conditions of higher competition.

Again, this studies mentioned underscore the efficacy of AI-powered classifiers in various domains of financial analysis, from predicting corporate default and business performance to forecasting real estate investment returns. Additionally, novel approaches such as image processing techniques shed light on unconventional factors influencing firm behaviour, while text mining studies challenge conventional wisdom by identifying non-financial risk factors in banking. These findings collectively contribute to a deeper understanding of financial dynamics and underscore the potential of AI-driven methodologies in shaping future research and decision-making processes within the financial sector.

2.12 IMPACT OF AI IN THIRD WORLD COUNTRIES

Artificial Intelligence (AI) has garnered significant attention in recent years, prompting debates about its potential impact on various aspects of society. While some anticipate the opportunities AI may bring, others express concerns about potential disruptions it could cause on a global scale. Despite these differing perspectives, there is widespread recognition of AI's immense potential and its capacity to significantly shape the world's future. According to PwC, the global economy could see a substantial 14% rise solely due to AI.

In contrast to developed countries, which often promote AI adoption to stimulate economic growth, experts caution that AI deployment could exacerbate the gap between developed and developing nations. However, it's essential to recognize that while developing countries may be more susceptible to the disruptive effects of technology, they also stand to gain the most from its positive outcomes.

AI has the potential to address critical challenges faced by developing countries across various sectors. In healthcare, the integration of AI technologies can enable doctors to treat more patients efficiently by aiding in disease identification and treatment selection. For instance, companies like Clinicas de Azucar in Mexico are leveraging AI to analyse data from diabetic patients, thereby improving health outcomes. Additionally, AI can facilitate comparisons of medical product prices, assisting populations in developing countries where access to affordable medications is a concern.

Education systems in emerging countries can also benefit from AI by aiding teachers in planning curricula and implementing tailored learning approaches based on students' needs. By analysing extensive datasets of student performance, AI can help identify areas for improvement and enhance educational outcomes. Furthermore, AI-powered tools can extend educational services to remote areas, addressing challenges related to access and distance.

In infrastructure and energy, AI-driven innovations like 3D printing combined with AI technologies are enabling the construction of low-budget housing, particularly beneficial for regions grappling with housing shortages. Moreover, start-ups like Azuri Technologies are utilizing AI to optimize electricity consumption in households across African countries, contributing to energy efficiency and sustainability.

Agriculture, a vital sector for many developing nations, can also leverage AI to improve productivity and food security. Accurate weather forecasts generated through AI analysis of vast datasets can assist local farmers in planning agricultural activities effectively. Additionally, AI can aid in crop selection, pest management, and irrigation system design, leading to increased yields and reduced waste.

Despite these potential benefits, the rise of AI poses several challenges for developing countries. The International Monetary Fund (IMF) warns that AI adoption may widen the economic disparity between rich and poor nations. Advanced economies with higher wages may have a stronger incentive to invest in AI-driven technologies, diverting investments away from developing countries and potentially leading to a decline in GDP.

One of the most significant impacts of AI in the developing world is expected to be on the job market. Historically, emerging countries have provided labour for outsourcing purposes in sectors like manufacturing and logistics. However, the automation of tasks through AI, particularly in manufacturing, may lead to significant job losses. Additionally, service sectors like customer support, which have relied on outsourcing, could also be affected by AI-driven automation.

Another concern is the unequal access to AI solutions in developing regions. Limited internet access, particularly in regions like Africa and least-developed countries, could hinder the adoption of AI technologies. Given that AI relies on data and requires constant online

connectivity, the lack of internet access may isolate certain parts of the world from the benefits of AI advancements.

While AI presents both opportunities and challenges for developing countries, its potential to address critical issues across various sectors is undeniable. By leveraging AI technologies effectively, developing nations can overcome healthcare, education, infrastructure, and agricultural challenges, leading to improved quality of life and economic prosperity. However, to mitigate the negative impacts of AI adoption, policymakers must address issues related to economic disparity, job displacement, and internet access, ensuring that the benefits of AI are equitably distributed across all regions.

One example of AI implementation in the banking sector in a developing country is Equity Bank in Kenya. Equity Bank has embraced artificial intelligence technologies to enhance various aspects of its operations and customer service delivery.

Equity Bank has deployed AI-powered chatbots to provide customer support and assistance. These chatbots are capable of understanding natural language queries and can provide instant responses to customer inquiries, such as account balances, transaction history, and general banking information. This AI-driven customer service solution has significantly reduced wait times for customers and improved overall service efficiency.

Moreover, Equity Bank utilizes AI algorithms for credit scoring and risk assessment. In many developing countries, traditional credit scoring methods based on credit history may not be applicable due to limited access to formal financial services. Equity Bank leverages AI to analyse alternative data sources, such as mobile phone usage patterns and utility bill payments, to assess the creditworthiness of individuals and small businesses. This enables the bank to extend credit to underserved populations who may not have a traditional credit history, thereby promoting financial inclusion.

Equity Bank employs AI for fraud detection and prevention. With the rise of digital banking and electronic transactions, detecting fraudulent activities has become increasingly challenging. Equity Bank leverages AI algorithms to analyse vast amounts of transaction data in real-time and identify suspicious patterns or anomalies indicative of fraud. This proactive approach to fraud detection helps safeguard customers' funds and maintains trust in the banking system.

Also, Equity Bank utilizes AI-powered analytics tools for personalized marketing and product recommendations. By analysing customer data and behaviour, the bank can offer targeted product offerings and promotional campaigns tailored to individual preferences and needs. This enhances customer engagement and satisfaction while driving revenue growth for the bank.

Generally, Equity Bank's adoption of AI technologies demonstrates how innovative solutions can address challenges and drive progress in the banking sector of developing countries like Kenya. By leveraging AI for customer service, credit assessment, fraud detection, and personalized marketing, Equity Bank has been able to improve operational efficiency, expand financial inclusion, and enhance the overall banking experience for its customers.

Another example of AI implementation in the banking sector in a developing country is Banco Bradesco in Brazil.

Banco Bradesco has embraced artificial intelligence to transform various aspects of its banking operations and customer service delivery.

One significant application of AI at Banco Bradesco is in customer service and support. The bank has implemented AI-powered chatbots and virtual assistants across its digital platforms and mobile banking applications. These chatbots are equipped with natural language processing capabilities, allowing them to understand and respond to customer inquiries, provide account information, assist with transactions, and offer personalized recommendations. By leveraging

AI chatbots, Banco Bradesco has been able to enhance customer engagement, reduce wait times, and provide round-the-clock support to its customers.

More also, Banco Bradesco utilizes AI algorithms for credit risk assessment and loan underwriting. In a country like Brazil, where many individuals lack traditional credit histories, AI-powered credit scoring models play a crucial role in expanding access to credit. Banco Bradesco analyses a wide range of data sources, including financial transactions, payment behaviour, and demographic information, to assess the creditworthiness of applicants. By leveraging AI for credit scoring, Banco Bradesco can make faster and more accurate lending decisions, enabling it to extend credit to a broader segment of the population.

Moreover, Banco Bradesco employs AI for fraud detection and prevention. The bank utilizes advanced machine learning algorithms to analyse transaction patterns, detect anomalies, and identify potential instances of fraud in real-time. By continuously monitoring transactions and flagging suspicious activities, Banco Bradesco can mitigate fraud risks and protect its customers' accounts and assets.

Beside, Banco Bradesco leverages AI-driven analytics tools for customer segmentation, marketing, and product development. By analysing vast amounts of customer data, including transaction history, spending behaviour, and demographic information, the bank can identify trends, preferences, and opportunities for targeted marketing campaigns and product offerings. This enables Banco Bradesco to better understand its customers' needs and preferences, tailor its products and services accordingly, and enhance customer satisfaction and loyalty.

Generally speaking, Banco Bradesco's adoption of AI technologies illustrates how innovative solutions can drive efficiency, improve customer experience, and drive growth in the banking sector of developing countries like Brazil. By leveraging AI for customer service, credit risk

assessment, fraud detection, and data analytics, Banco Bradesco has been able to stay competitive, expand financial inclusion, and deliver value to its customers.

CHAPTER THREE

METHODOLOGY

3.1 THEORITICAL CONTEXT OF STUDY

The research methodology adapted for this study was systematic and implemented according to specific objectives, which were described. Descriptive research is applied using the primary data sourced randomly from key players of the banking sector using well-constructed online survey form or questionnaire. Qualitative descriptive analysis of secondary data sourced from research papers, articles, journals and case studies was also carried out. The papers used were based on the different segments of banking such as: trading, lending, security, credit rating and fraud detection. Analysis of secondary sources helped in studying the impact of artificial intelligence on the financial industry and how it has completely changed the way of working.

The random method employed in this study will statistically present relations and dynamics; randomness, uncertainty, fuzziness; fair and unbiased representation. However, the cons of this survey method employed include too small populations, mixed data complexities (usage of both primary and secondary data), likelihood of bias and error.

3.2 RESEARCH DESIGN

The methodology employed to address the research problem involves a comprehensive blend of qualitative and quantitative descriptive analysis, utilizing both secondary and primary data collected in a methodical manner. This mixed research design aims to leverage the strengths of

both qualitative and quantitative research methodologies while mitigating their respective limitations.

Qualitative descriptive analysis, also known as content analysis, is utilized to examine the secondary data collected. This method entails a systematic review and interpretation of existing literature, journals, and articles related to artificial intelligence (AI) and its applications in the financial sector. Through qualitative analysis, researchers aim to gain a nuanced understanding of the various facets of AI implementation in finance, including emerging trends, challenges, and opportunities.

Conversely, quantitative descriptive analysis is employed to analyse the primary data obtained. This quantitative approach involves the quantification and statistical examination of numerical data collected through surveys, interviews, or other data collection methods. By employing quantitative analysis, researchers can identify patterns, trends, and correlations within the data, providing valuable insights into the research problem.

The rationale behind adopting a mixed research design lies in its ability to provide a comprehensive understanding of the research problem. Qualitative analysis allows researchers to explore the richness and complexity of the data, uncovering insights that may not be captured through quantitative methods alone. On the other hand, quantitative analysis enables researchers to quantify the prevalence of certain phenomena, test hypotheses, and draw statistically significant conclusions.

Data collection primarily relies on sources such as reputable journals, articles, and industry reports that discuss AI and its utilization in the financial industry. These secondary data sources are chosen for their reliability, relevance, and accessibility. By leveraging existing literature and empirical evidence, researchers can build upon previous research findings and identify gaps or areas requiring further investigation.

Furthermore, the utilization of secondary data sources serves multiple purposes. Firstly, it guides the direction of further research by identifying gaps and areas needing additional

exploration. Through a thorough review of existing literature, researchers can pinpoint deficiencies and gaps in knowledge, informing the need for collecting supplementary primary data. Additionally, existing data sources provide a benchmark for comparison with any additional primary data collected, enriching the overall understanding of the research problem. Moreover, the research design aids in enhancing comprehension of the problem under investigation. By synthesizing empirical evidence from secondary sources, researchers gain a deeper insight into the nuances and complexities of AI implementation in the financial sector. This comprehensive understanding serves as a foundation for designing research instruments and methodologies for collecting primary data.

The chosen research methodology combines qualitative and quantitative approaches to systematically analyse both secondary and primary data. By drawing from existing literature and empirical evidence, the study aims to provide a holistic perspective on the application of artificial intelligence in the financial industry, shedding light on emerging trends, challenges, and opportunities in this rapidly evolving field.

3.3 POPULATION AND SAMPLING

The study focuses on various key entities within the banking and finance sector, which comprise:

- **Corporations:** These are operational businesses that require capital for their growth and day-to-day operations. They engage in financial planning and analysis, among other functions.
- **Institutions:** This category includes financial managers, corporate investors, and small investors. Big financial companies provide capital to businesses in need of funding, and in return, receive debt or equity instruments such as shares or bonds.
- **Banks:** Acting as intermediaries, banks facilitate transactions between corporations and institutions. They are involved in financial modelling and valuation analysis.

- **Public accounting firms:** These firms provide multiple financial services, such as financial reporting, auditing, taxation, consultancy, capital raising, and advisory services.

The sampling method used in the study is simple random sampling, which involves randomly selecting samples from the population for analysis.

3.4 SAMPLE COLLECTION TECHNIQUE

The tool used for collection of sample is a well-structured online survey questionnaire sent randomly to the key players of the banking and finance industry. The questions comprises of multiple choice question where respondent is expected to pick options and submit the form as feedback. There were a total of 49 respondents within the time series.

CHAPTER FOUR

RESEARCH FINDINGS OR RESULTS

4.1 PRESENTATION OF RESULTS

As to the question whether the integration of AI in the banking and financial industry support and ease operational efficiency of banks globally? :

As presented in table 4.1 below, a total of forty six (46) responses were obtained from the online survey while 41 (89.1%) of the respondents agree that adoption of AI in the banking and finance sector support and ease operational efficiency of banks globally, 4 (8.7%) of the respondents disagree and 1 (2.2%) of the respondents was indeterminate.

Responses	Frequency	Relative frequency
Yes	41	89.1%

No	4	8.7%
Maybe	1	2.2%

As to question to what extent has the implementation of AI support detection of fraudulent activities and enhance cyber security in the banking and finance sector?

A total of forty five (45) responses were received, 19 (42.2%) of the respondents supported that AI has done more in fraud prevention in digital transactions, 13 (28.9%) opine that AI has done more in biometric authentication, 9 (20%) network security while 4 (8.9%) support machine learning models. This presented in table 4.2 below.

Responses	Frequency	Relative frequency
Fraud prevention in digital transactions	19	42.2%
Biometric authentication	13	38.9%
Network security	9	20%
Machine learning models	4	8.9%

Does AI facilitate financial transactions and collaboration between banks and other financial institutions?

As to the question above, there were a total of forty six (46), 35 (76.1%) agrees that AI facilitates financial transactions and collaboration between banks and other financial institutions, 1 (2.2%) do not agree to the subject while 10 (21.7%) of the respondents were indeterminate. This is presented in table 4.3 below.

Responses	Frequency	Relative frequency
Yes	35	76.1%
No	1	2.2%
Maybe	10	21.7%

Does AI facilitate data analysis and contribute to making informed decisions in the banking and finance sector globally?

The total number of responses obtained were forty six (46), 40 (87%) of the respondents believes that AI facilitates data analysis and contribute to making informed decisions in the banking and finance sector globally, 4 (8.7%) of the respondents disagree while 2 (4.3%) were indeterminate. This is presented in table 4.4 below:

Responses	Frequency	Relative frequency
Yes	40	87%
No	4	8.7%
Maybe	2	4.3%

What are the current challenges of AI with in the banking and finance sector?

A total of forty five (45) respondents responded to this question with 14 of the respondents accounting 31.2% believes that the current challenge of AI in the banking and finance sector is data privacy and security, 6 (13.3%) spotted explained ability and transparency as the current challenge of AI in banking and finance sector, 21 (46.7%) opted for cyber security risk, 2 (4.4%)

choose regulatory compliance, while another 2 (4.4%) bias and fairness. This presented in table 4.5 below

Responses	Frequency	Relative frequency
Data privacy and security	14	31.2%
Explained ability and transparency	6	13.3%
Cyber security risk	21	46.7%
Regulatory compliance	2	4.4%
Bias and fairness	2	4.4%

What are the potential AI opportunities in 21st century banking and finance?

A total of forty six (46) responses was obtained as regards the subject matter. 16 (34.8%) of the respondents sees potential AI opportunities in customer service and engagement, 14 (30.4%) believes AI has more potential opportunities in data analytics and insights, 12 (26.1%) spotted fraud detection and security as potential AI opportunities in 21st century banking, 3 (6.5%) of the respondents sees cyber security as a potential AI opportunity in 21st century banking while 1 (2.2%) of the respondents identified credit scoring and risk assessment as area of potential AI opportunity in 21st century banking. This is shown in table 4.6 below.

Responses	Frequency	Relative frequency
Customer service and engagement	16	34.8%
Data analytics and insights	14	30.4%
Fraud detection and security	12	26.1%
Cyber security	3	6.5%

Is AI helping developing or third world banks in their daily operations?

For this question, forty six (46) responses were obtained. 28 (60.9%) of the respondents agrees that AI is helping developing or third world banks in their daily operations, 5 (10.9%) of the respondents disagree on the subject matter while 13 (28.3%) of the respondents were not sure AI is helping banks in third world countries. Table 4.7 shows the respondents responses on whether AI has impacted banks in developing countries.

Responses	Frequency	Relative frequency
Yes	28	60.9%
No	5	10.9%
Not sure	13	28.2%

Is AI changing the way 21st century banking is being practiced?

Of forty six (46) responses on this subject matter, 40 (87%) of the respondents agrees that AI is impacting the way 21st century banking is being practiced, 4 (8.7%) disagrees to this position 2 (4.3%) is not sure if AI is actually changing the way 21st century banking is being practiced. This is present in Table 4.8 below.

Responses	Frequency	Relative frequency
Yes	40	87%
No	4	8.7%

CHAPTER FIVE

DISCUSSION OF RESULTS

5.1 DISCUSSION OF RESULTS

Artificial intelligence (AI) has become increasingly prominent in the banking and finance sector, revolutionizing traditional processes and offering new solutions to age-old challenges. In this comprehensive discussion, we delve into the multifaceted applications of AI within this domain, exploring its role in fraud detection, cybersecurity, credit assessment, operational efficiency, and innovation. Through a synthesis of research findings and industry insights, we unravel the transformative potential of AI and its implications for the future of finance.

Fraud detection stands as one of the most critical areas where AI has demonstrated its prowess within the banking and finance sector. Mishra, Gupta, and Singh (2017) conducted a comparative study to evaluate the effectiveness of artificial neural networks in detecting credit card fraud. Their findings revealed that neural networks exhibited high accuracy in identifying fraudulent transactions, outperforming traditional techniques. Similarly, Monirzadeh, Habibzadeh, and Farajian (2018) advocated for hybrid methods of fraud detection that combine the strengths of different approaches, including AI algorithms and metaheuristic optimization techniques. These studies underscore the potential of AI to mitigate financial fraud, safeguarding the integrity of banking systems and protecting consumers' assets.

Cybersecurity risk has emerged as a pressing concern for banks and financial institutions in the digital age. The interconnected nature of financial networks and the proliferation of online transactions have exposed vulnerabilities that malicious actors seek to exploit. Al-Suwaidi et al. (2019) highlighted the correlation between cyber-attacks and economic factors such as unemployment, underscoring the need for robust cybersecurity measures. Quan and Sranganesh (2008) proposed innovative AI-based solutions for real-time credit card fraud detection,

leveraging self-organization maps to analyse customer spending patterns and identify potential anomalies. These advancements in cybersecurity technologies empower financial institutions to proactively detect and prevent cyber threats, safeguarding sensitive information and preserving trust in the banking system.

In addition to addressing cybersecurity challenges, AI has revolutionized credit assessment processes within banks and financial institutions. Munkhdalai et al. (2019) compared the accuracy of human expert-based credit scoring models with machine learning algorithms, highlighting the superior performance of AI-driven approaches. By leveraging vast datasets and sophisticated algorithms, AI enables banks to assess creditworthiness more accurately and efficiently, reducing the risk of default and optimizing lending decisions. This enhanced credit assessment capability not only benefits financial institutions but also empowers individuals and businesses to access credit on fair and transparent terms, driving economic growth and prosperity.

AI holds the potential to optimize operational processes and improve service quality within the financial sector. Castelli, Manzoni, and Popovic (2016) proposed an AI system for predicting service quality in banking organizations, enabling management to identify areas for improvement and enhance customer satisfaction. By analysing customer interactions and feedback, AI algorithms can identify patterns and trends, allowing banks to tailor their services to meet evolving customer needs. This data-driven approach not only enhances customer experience but also improves operational efficiency and reduces costs.

Moreover, AI-driven innovations have the potential to drive significant value creation across various departments within financial institutions. By automating routine tasks and leveraging predictive analytics, AI enables banks to streamline processes, optimize resource allocation, and identify new business opportunities. From risk management and regulatory compliance to customer service and product development, AI offers transformative capabilities that empower financial institutions to adapt to changing market dynamics and capitalize on emerging trends.

AI represents a paradigm shift in the banking and finance sector, offering unprecedented opportunities for innovation, efficiency, and risk management. Through its applications in fraud detection, cybersecurity, credit assessment, and operational optimization, AI is reshaping the landscape of financial services and driving digital transformation across the industry. While challenges remain, the ongoing evolution of AI technologies promises to unlock new possibilities and create value for stakeholders across the financial ecosystem. As banks and financial institutions continue to embrace AI-driven solutions, they stand poised to reap the benefits of enhanced efficiency, improved risk management, and sustainable growth in the digital era.

Banking sector in developing countries is beginning to adopt artificial intelligence (AI). While major commercial and investment banks around the world are integrating AI into their customer care objectives. Using AI in ML data analytics and for customer service thus creates an opportunity for a customized and faster customer experience (Baruah, 2020). Result from this research shows that AI is helping banks in developing countries in their operations supporting findings of Baruah (2020). Customer service has been simplified with the use of AI. There is more customization, more common communication and faster response than in the past. AI also allows consumers to communicate and resolve customer queries.

CHAPTER SIX

CONCLUSION AND RECOMMENDATION

6.1 CONCLUSION

The research conducted sheds light on the burgeoning presence of artificial intelligence (AI) within the banking and finance sector, highlighting its transformative potential and underscoring the opportunities for further development and growth. While AI has already made significant inroads into various aspects of financial services, it is evident that there remains untapped market potential and unexplored applications, presenting a ripe landscape for continued innovation and expansion.

At present, AI in the banking and finance sector is still in its nascent stages, with utilization limited to specific areas. Despite this, Fin-tech continues to maintain its popularity as a preferred solution within the financial market. However, as the research suggests, AI emerges as a promising alternative, particularly in the realm of banking fraud detection. The complexity and sophistication of fraudulent activities necessitate advanced technological solutions, and AI presents a formidable tool in combating such threats. With its ability to analyse vast datasets and identify patterns indicative of fraudulent behaviour, AI offers unparalleled efficiency and accuracy in fraud detection, surpassing traditional manual methods.

Moreover, the potential of AI extends far beyond fraud detection, encompassing a wide range of applications that can revolutionize the banking and finance sector. In terms of loan processing, AI holds the promise of expediting the approval process and enhancing credit profiling, thereby facilitating faster access to financing for individuals and businesses alike. AI-driven solutions have demonstrated significant benefits in investment banking, particularly in wealth management and stock trading. By leveraging AI algorithms for predictive analysis and portfolio optimization, investment banks can deliver tailored investment strategies and maximize returns for their clients.

AI has revolutionized customer service within the financial industry, offering personalized interactions, faster response times, and round-the-clock support. Through chatbots and virtual assistants, banks can engage with customers in real-time, addressing inquiries and resolving issues promptly. This enhanced level of service not only improves customer satisfaction but also fosters loyalty and retention in an increasingly competitive market.

The transformative impact of AI is not limited to individual firms or sectors but has broader implications for the global financial landscape. As organizations across industries embrace AI technologies, the strategies and operations of financial firms are undergoing a paradigm shift. AI is no longer confined to niche applications but is being integrated into a wide range of functions, from risk assessment and financial advisory services to payment processing and security.

Looking ahead, the full realization of AI's potential in the banking and finance sector requires continued investment and commitment from industry stakeholders. With proper training and infrastructure in place, AI can be harnessed to address existing challenges and drive innovation across the industry. By leveraging AI's capabilities in predictive analytics, risk management, and customer engagement, financial institutions can gain a competitive edge and navigate the complexities of the digital economy more effectively.

AI appears as a game-changer in the banking and finance sector, offering unprecedented opportunities for growth, efficiency, and innovation. As organizations embrace AI-driven solutions and harness its transformative power, they stand to reap significant benefits in terms of operational excellence, customer satisfaction, and competitive advantage. The research underscores the importance of continued investment and exploration in AI technologies, paving the way for a more resilient and dynamic financial ecosystem in the digital age.

6.2 RECOMMENDATION

In light of the findings and implications elucidated by the research, several recommendations emerge to guide stakeholders in the banking and finance sector towards maximizing the potential of artificial intelligence (AI) while addressing associated challenges and risks.

First and foremost, it is imperative for financial institutions to prioritize investment in AI infrastructure and talent acquisition. Building robust AI capabilities requires substantial resources and expertise, and organizations must allocate sufficient funds and personnel to support AI initiatives effectively. This includes investment in cutting-edge technologies, data infrastructure, and AI-specific training programs to equip staff with the necessary skills to develop, deploy, and manage AI solutions.

Moreover, collaboration and partnerships within the industry and with external stakeholders can facilitate knowledge sharing, innovation, and scalability of AI applications. Financial institutions should actively seek out opportunities to collaborate with technology firms, academic institutions, and regulatory bodies to leverage collective expertise and resources in advancing AI initiatives. Collaborative ventures can also help mitigate risks associated with AI implementation, such as data privacy concerns and regulatory compliance.

A strategic approach to AI implementation is essential to ensure alignment with organizational objectives and priorities. Financial institutions should conduct thorough assessments of their business processes, customer needs, and competitive landscape to identify areas where AI can deliver the greatest value. By focusing on high-impact use cases and aligning AI initiatives with strategic goals, organizations can maximize ROI and drive sustainable business growth.

In addition to internal alignment, fostering a culture of innovation and experimentation is crucial for fostering AI adoption and driving organizational change. Financial institutions should encourage a mind-set of continuous learning and experimentation, where employees are empowered to explore new ideas, test hypotheses, and iterate on AI solutions. Creating cross-

functional teams and establishing innovation labs can provide dedicated spaces for experimentation and collaboration, driving creativity and fostering a culture of innovation.

Furthermore, ethical considerations must be central to AI implementation strategies in the banking and finance sector. As AI technologies become increasingly pervasive, organizations must prioritize ethical principles such as transparency, fairness, and accountability in AI development and deployment. This includes implementing robust governance frameworks, conducting thorough risk assessments, and incorporating ethical guidelines into AI algorithms and decision-making processes.

There is also an ongoing monitoring and evaluation of AI systems are essential to ensure effectiveness, reliability, and compliance with regulatory requirements. Financial institutions should establish mechanisms for monitoring AI performance, detecting biases or anomalies, and implementing corrective measures as needed. Regular audits and reviews by internal and external stakeholders can provide valuable insights into AI performance and help identify areas for improvement.

Finally, continuous investment in research and development is critical to drive innovation and stay ahead of evolving market trends and customer expectations. Financial institutions should allocate resources to support AI research initiatives, collaborate with academic institutions and research organizations, and stay abreast of emerging technologies and industry best practices. By investing in R&D, financial institutions can position themselves as leaders in AI innovation and drive long-term competitive advantage in the rapidly evolving digital landscape.

Conclusively, the successful integration of AI in the banking and finance sector requires a strategic, collaborative, and ethical approach. By prioritizing investment in AI infrastructure and talent, fostering a culture of innovation, aligning AI initiatives with strategic objectives, and upholding ethical principles, financial institutions can unlock the full potential of AI to drive growth, enhance customer experiences, and navigate the complexities of the digital economy

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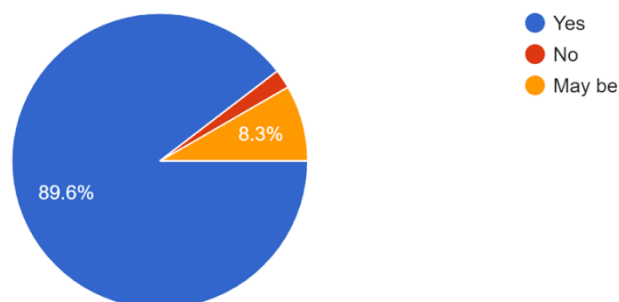
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6.4 Appendix:

Survey Responses

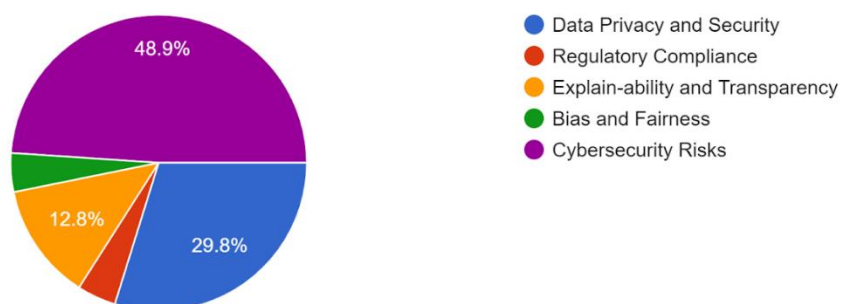
1. Does the adoption of Artificial Intelligence (AI) in the Banking and Financial sector supports and ease the operational efficiency of Banks globally?

48 responses



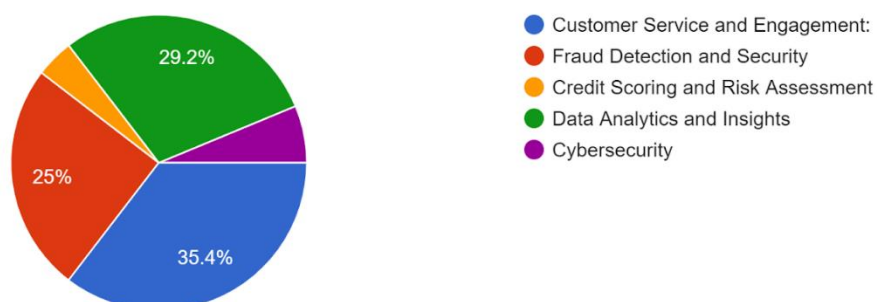
2. What do you think are current challenges with AI in banking and finance?

47 responses



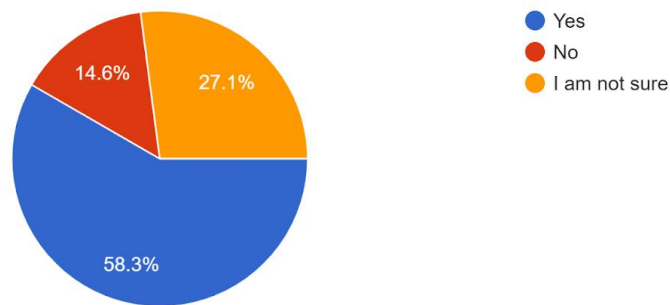
3. What are the potential AI opportunities?

48 responses



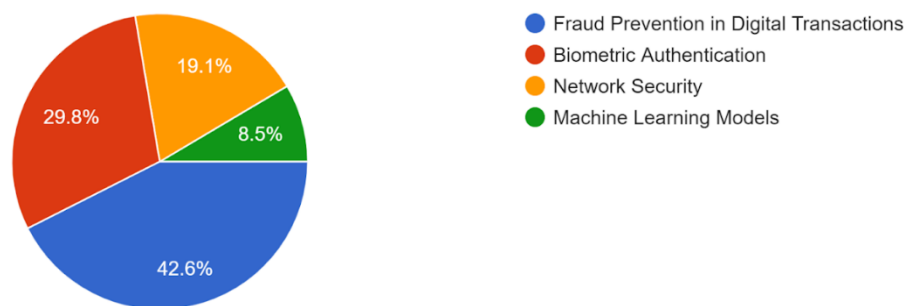
4. Is AI helping developing and third world Banks in their daily operations?

48 responses



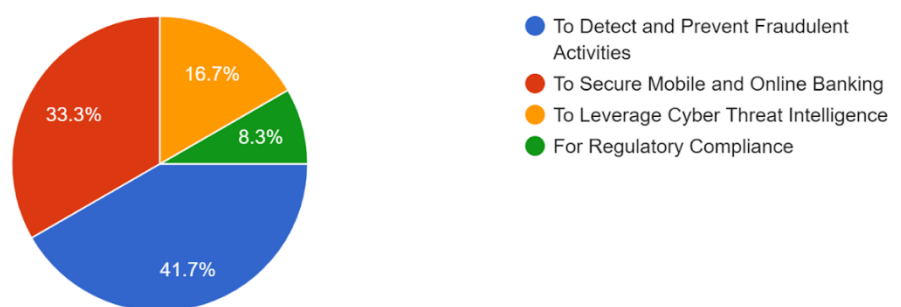
5. To what extent does implementing AI support detecting fraudulent activities and enhance cyber security in the Banking and finance sector?

47 responses



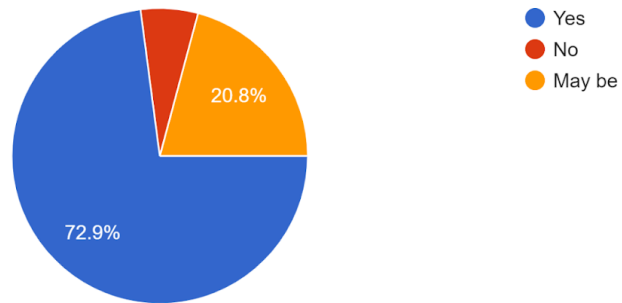
6. How should AI be leveraged to enhance security and trust in financial systems, particularly in developing countries?

48 responses



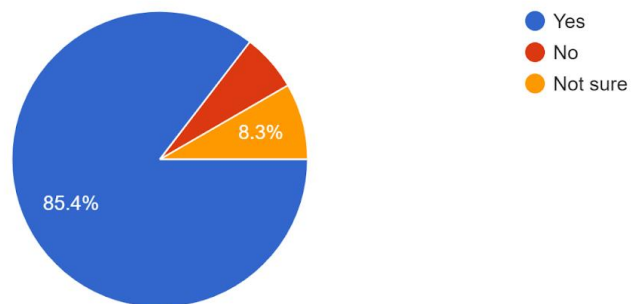
7. Does AI facilitate financial collaboration and transactions between Banks and other financial institutions?

48 responses



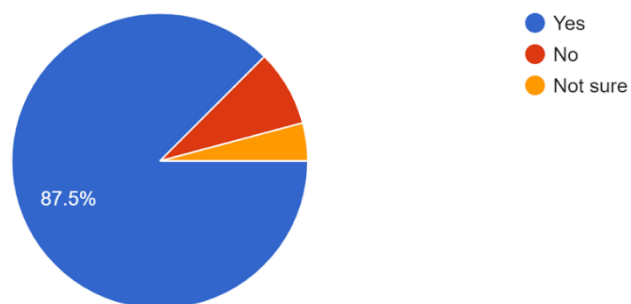
8. Is AI changing the way 21st century banking is being practiced?

48 responses

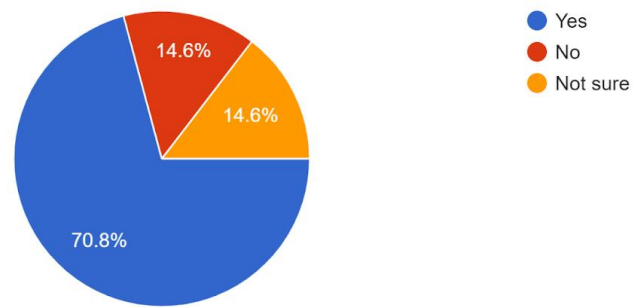


9. Does AI facilitate data analyses and contribute to making informed decisions in the banking and finance sector globally?

48 responses



10. Can AI analysis contribute to the stability of the financial systems in a global scale?
48 responses





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1. This work has not previously been accepted in substance for any degree and is not being concurrently submitted in candidature for any degree.

Signed.....Benson

Bechemayor.....

Date

...12/02/2014.....

.....

2. This dissertation is being submitted in partial fulfilment of the requirements for the degree of Master in Business Administration.

Signed ...Benson

Bechemayor.....

Date

...12/02/2024.....

...

3. This dissertation is the result of my own independent work/investigation, except where otherwise stated.

Other sources are acknowledged by footnotes giving explicit references.

A bibliography is appended.

Signed candidate: ...Benson

Bechemayor.....

Date:

...12/02/2014.....

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Bechemayor.....

Date...12/02/2014.....

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Supervisor's Declaration.

I am satisfied that this work is the result of the student's own efforts.

Signed:

Date: