

## Artificial Intelligence in Financial Management, Risk and Forecasting: Perspectives from the Post COVID-19-Era

**Dr Anuradha Sarkar<sup>1</sup>**

Professor

Department of MBA

Neville Wadia Institute of Management Studies and Research-411015

**Dr. Indrani Bhattacharjee<sup>2</sup>**

Professor

Department of Management

IMS Ghaziabad (University Courses Campus), Adhyatmik

Nagar, NH-09 Ghaziabad, U.P., India -201015

Orcid id . 0000-0001-5110-3964

**Dr Sundara Rajulu Navaneethakrishnan<sup>3</sup>**

Professor

Department of Information Technology

Excel Engineering College Namakkal

**Sruthi S<sup>4</sup>**

Guest Lecturer

Department of Commerce

University Institute of Technology, Veli Centre, Trivandrum.

Orchid id:0000-0002-0644-1566

**Dr. Sunil Adhav<sup>5</sup>**

Associate Professor.

Faculty of Management (PG).

School of Management (PG), Dr. Vishwanath Karad MIT World Peace University. Pune-411038

Orcid id. 0000-0003-2667-2510

### Abstract:

**[i] Purpose:** The motive of the research is to understand the process of Artificial Intelligence can be used to improve financial management and forecasting, as well as to mitigate risk, in the post-COVID-19 era. Additionally, the research seeks to identify the most effective uses of AI and how it can be leveraged to create more efficient and effective financial management.

**[ii] Theoretical framework:** The theoretical framework of the research draws upon Artificial Intelligence (AI) and Machine Learning (ML) to study the impact of AI on financial

management, risk and forecasting in the post-COVID-19 era. It also examines the potential of AI-driven analytics and decision-making in the finance sector.

**[iii] Design/methodology/approach:** The research methodology used for this research will involve a quantitative and qualitative analysis of the impact of Artificial Intelligence on financial management, risk, and forecasting in the post-COVID-19 era. This will involve interviews related to the experts related to the field, surveys of industry professionals and analysis of existing literature on the topic.

**[iv] Findings:** 1. The research found that Artificial Intelligence can be used to effectively manage financial risks and enable accurate forecasting in the post-COVID-19 era.

2. Moreover, AI can improve operational efficiency, provide better customer experience, and enable greater financial resilience in the market.

**[v] Research, practical and social implications:** The research on Artificial Intelligence in Financial Management, Risk, and Forecasting signals the need for increased investments in AI technology and infrastructure to ensure that businesses are able to adapt to the post-COVID-19-Era. AI-based financial solutions can help to improve financial decision-making and risk management, leading to greater financial stability and resilience. The adoption of AI in finance creates a more equitable financial system and helps to reduce inequality, providing more opportunities for economic growth and development.

**[vi] Originality/value:** The research on Artificial Intelligence in Financial Management, Risk and Forecasting in the Post COVID-19 Era offers a unique opportunity to develop and apply AI-based solutions to the ever-changing needs of the financial sector. By leveraging the potential of AI, this research seeks to develop novel approaches to managing financial risks and forecasting potential outcomes in the post-pandemic era.

**Keywords:** Artificial Intelligence, Financial Management, Risk Management, Forecasting, Post COVID-19-Era, Machine Learning, Financial Modeling, Financial Risk Analysis and Predictive Analytics

## ■ INTRODUCTION

The study of Artificial Intelligence (AI) in financial management, risk and forecasting is a timely and important topic in the post COVID-19 era. The pandemic has brought about unprecedented economic disruption, raising questions about the efficacy of traditional economic models and forecasting techniques. AI is a rapidly growing field of study, with potential applications in financial forecasting, risk management, and portfolio optimization. AI-based models are increasingly used to generate accurate and timely financial instruments and markets forecasts. AI can also be used to identify risks and their underlying causes, enabling the development of strategies to mitigate and manage those risks.

The impact of AI in financial management, risk and forecasting has been particularly evident during the pandemic. AI-based models have enabled more accurate and timely predictions of markets, allowing investors and traders to make better decisions. AI has also been used to identify and mitigate risks through predictive analytics and automated decision-making. Finally, AI-based models have been used to develop strategies for optimizing portfolio performance, taking into account the complex interplay between multiple financial and non-financial factors.

## ■ Background of the study

The emergence of Artificial Intelligence (AI) has been revolutionizing the financial industry for years. From automated trading to automated risk management and forecasting, AI is being used to automate processes and make decision-making faster and more efficient. AI has been particularly useful in the field of financial management, risk, and forecasting.

In the post-COVID-19-era, AI has taken on even greater importance. As businesses struggle to survive and thrive in the new economic reality, AI can be used to help them make more informed decisions, reduce costs and increase efficiency (Tsuji 2022). AI can also be used to help businesses anticipate and manage financial risks. AI can be used to identify trends and patterns in financial data, allowing businesses to better predict future performance and make better decisions.

AI can also be used in forecasting. AI can be used to analyze past performance and current market conditions to make accurate predictions. AI can also be used to assess the impact of different economic scenarios on businesses and markets. This can help businesses plan ahead and make more informed decisions.

The use of AI in financial management, risk and forecasting has become even more important in the post-COVID-19-era. AI can help businesses make more informed decisions, reduce costs and increase efficiency (Shahzad et al. 2023). AI can also help businesses anticipate and manage financial risks and make more accurate predictions. By using AI, businesses can ensure that they are making the best decisions possible in the current economic climate.

## ■ Objective of the work or research problem

### *Objectives of the study:*

1. To explore how Artificial Intelligence (AI) can be used to improve financial management, risk management and forecasting in the post-COVID-19 era.
2. To analyze the changing trends in AI-based financial technologies and the implications for the financial industry.
3. To investigate the potential applications of AI in the financial sector and its implications on the financial services industry.
4. To assess the risks associated with AI-based finance and the need for regulatory oversight.
5. To identify best practices for deploying AI-based solutions for financial management, risk management, and forecasting.
6. To evaluate the potential impact of AI-based financial services on the economy and financial markets.
7. To develop a framework for the assessment and implementation of AI-based financial technologies.

### *Problem Statement*

The current pandemic has had a tremendous effect on the global economy, leading to a shift in the financial management landscape. Many financial institutions have had to re-evaluate their strategies and risk management protocols, in order to remain competitive. Artificial

Intelligence (AI) can be a powerful tool for financial management, risk management and forecasting in the post COVID-19-era. AI can help to optimize processes, automate decision-making and provide accurate predictions of future market trends (Modgil et al. 2021). However, there are several research challenges to be addressed in this area, such as the development of reliable AI models that can accurately capture market dynamics and incorporate the latest technologies, in order to reduce risk and enhance predictive performance. In addition, AI models must be able to incorporate relevant regulatory guidelines, such as Basel III, in order to ensure compliance with regulatory requirements. Finally, AI models must be able to handle the massive amount of data generated by current markets and provide reliable predictions at high speed. With the right approach, AI can provide a powerful tool for financial management, risk management and forecasting in the post-COVID-19-era.

### ■ Justification of the study

The global pandemic of COVID-19 has created a huge impact on the financial markets and has had significant implications on the financial management, risk and forecasting. The pandemic has necessitated the need for financial institutions to use innovative tools and technologies to effectively manage, forecast and mitigate risk. Artificial Intelligence (AI) is one such technology that has potential to revolutionize the financial sector. AI-driven tools and solutions can help the financial institutions to better manage risks, analyze data and make more accurate forecasts.

AI-based solutions can provide more accurate insights, which can help financial institutions make better-informed decisions, resulting in improved risk management and forecasting. AI can also enable the institutions to identify and address areas of financial vulnerability. AI-driven solutions can also be used to detect fraudulent activities and prevent them.

In the post COVID-19 era, AI can be used to gain better insights into the financial markets and provide a more accurate picture of the risks and opportunities (İRHAN 2022). AI can also be used to develop more efficient and accurate forecasting models that can aid in better decision-making. AI is also being used to develop new and innovative products and services that can help financial institutions to better manage and forecast risks. Therefore, it is important to study the potential of AI in financial management, risk and forecasting in the post COVID-19 era. Such a study will help to understand the potential of AI and evaluate its efficacy in the financial sector and its implications for the future.

## ■ LITERATURE REVIEW

### *II. Analysis of Artificial Intelligence in Financial Management*

#### *A. Overview of AI in Financial Management*

AI in Financial Management is rapidly becoming an integral part of everyday financial operations. AI can be used to automate common financial processes such as customer services, payments, and compliance. AI can also be used to improve decision-making in financial management. AI-driven algorithms are capable of recognizing patterns in data and predicting future outcomes (Asokan et al. 2022). This can help financial professionals to make better decisions about investments, risk management, and customer service. AI can also be used to detect fraud and money laundering, providing an extra layer of security for financial institutions. AI can also be used to increase efficiency and reduce costs, ultimately

improving the bottom line. AI can be used to optimize resource allocation and automate the financial process, resulting in improved customer experiences and reduced overhead. In the future, AI could even be used to automate the entire financial process from end to end, providing an efficient, streamlined financial management system.

### ***B. Benefits of AI in Financial Management***

AI has revolutionized the field of financial management and has brought a whole new level of efficiency, visibility and accuracy (Hussain 2021). AI techniques such as machine learning, natural language processing and deep learning have enabled financial managers to make decisions faster, more accurately and with less risk.

AI can automate a variety of tasks such as data entry, risk analysis, portfolio optimization, customer segmentation and more. By automating these tasks, financial managers can refocus their efforts on more important tasks such as strategic management and decision-making. AI can also help financial managers identify patterns in data that would be too complex for a human to spot. This is particularly useful for predictive analytics, allowing managers to make decisions based on future trends.

AI can also be used to automate compliance checks and detect fraudulent transactions (Sun et al. 2021). AI algorithms can be trained to recognize patterns and anomalies in financial data, allowing managers to quickly detect irregularities and take action. AI can also be used to automate the financial reporting process by automatically generating reports based on the data collected. This reduces the time and effort required to manually generate financial reports.

In addition, AI can provide financial managers with real-time insights into their investments and portfolios. AI algorithms can be used to analyze vast amounts of data to identify trends and patterns. This allows managers to make informed decisions about their investments in a timely manner. Overall, AI has revolutionized the field of financial management, providing financial managers with the tools they need to make better decisions, faster and more accurately.

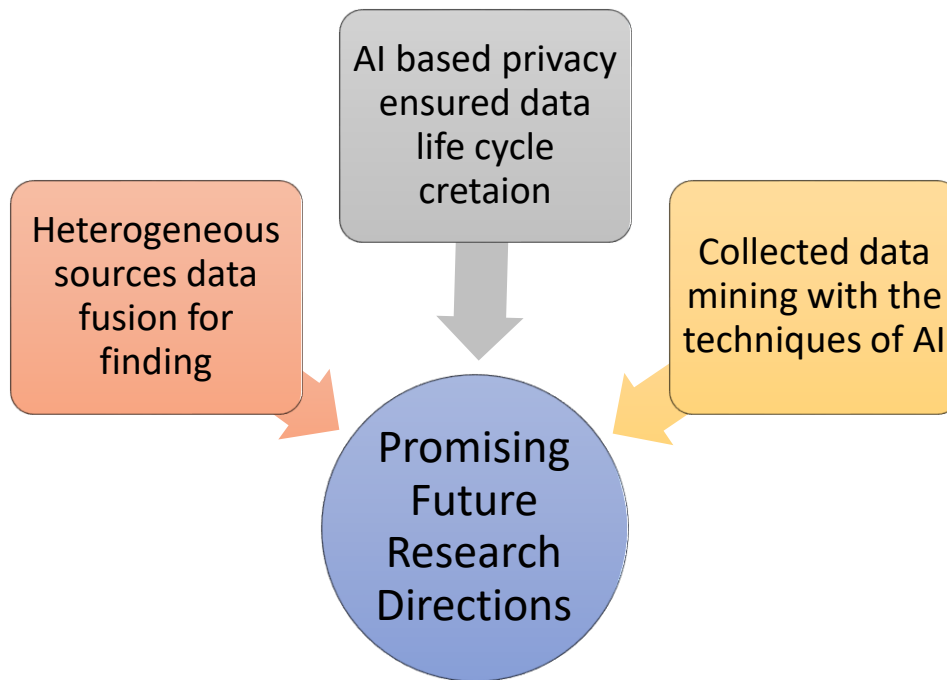


Figure 1: promising future research directions

(Source: made by the author)

### C. Challenges of AI in Financial Management

AI has the potential to revolutionize financial management, making it more efficient, cost-effective, and accurate. While AI-powered financial management may seem like a straightforward concept, it is not without its challenges (Modgi et al. 2022). One of the main challenges of implementing AI in financial management is data. AI requires high-quality data to build accurate models and make predictions. Insufficient data can lead to incorrect decisions and costly errors. Additionally, financial data is often complex, making it difficult to collect and clean.

Another challenge of AI in financial management is the difficulty of creating an ethical, compliant, and secure system. AI algorithms must be designed to abide by all regulations and privacy laws, and the system must be secure enough to prevent data breaches or misuse. Finally, AI algorithms can be difficult to interpret, making it difficult to understand how the system makes decisions. This is especially important for financial management, as the decisions made could have a significant impact on financial performance (Kazancoglu et al. 2022). Companies must be able to understand how their AI algorithms are making decisions in order to make informed decisions. In conclusion, AI in financial management presents a range of challenges, from data quality to security to interpretability. Companies must be aware of these challenges and be prepared to address them in order to make the most of AI in financial management.

### III. Artificial Intelligence in Risk Management

#### A. Overview of AI in Risk Management



AI in risk management is the process of utilizing artificial intelligence technology to identify, assess, and manage potential risks. AI can automate mundane tasks and provide real-time insights into complex risk scenarios. AI can also identify patterns and trends in data that would otherwise be too complex to uncover manually (Nayal et al. 2021). AI can help organizations anticipate risk, develop better strategies to manage risk, and deploy solutions that are tailored to the specific needs of the organization. AI can also provide insights into potential risks that may arise in the future and help organizations to be better prepared for them. AI can also be used to monitor compliance with regulations and policies, and to detect fraud or other malicious activities. AI can help companies to optimize their risk management strategies and reduce their overall risk exposure.

**B. Benefits of AI in Risk Management**

AI has revolutionized the risk management process by making it more efficient and accurate. AI-based systems are able to identify and evaluate risk factors faster and more accurately than traditional methods. This helps organizations to have a better understanding of potential risks and to be able to respond to them in a timely manner (Hafezi and Asemi 2022). AI can also be used to automate processes such as monitoring and reporting, enabling organizations to save time and money.

Type	Capabilities
Reactive Machine – Fixed Purpose and task oriented	Predictions Analysis consistent behavior
Theory of Mind AI awareness that others exist and everyone has unique thoughts and desires	Human motivation feelings Emotions Forming interpretations

Table 1: Type and capabilities of the intelligent technology

(Source: made by the author)

AI-based systems are also able to spot trends and patterns, which can be used by risk managers to identify areas of risk more quickly. AI can also be used to analyze customer behavior and to develop strategies to prevent losses due to fraud and cyber-attacks. AI can also be used to build models that can identify potential risks and suggest appropriate strategies.

AI-based systems can provide real-time risk analysis, making it easier for organizations to identify and respond to risk more quickly. AI can also be used to develop predictive models that can help organizations adjust their risk management strategies quickly (Wójcik and Kula 2021). AI can also be used to analyze customer data and provide insights into customer behavior and preferences, helping organizations to better understand their customers and develop better strategies to manage risk.

Overall, AI has the potential to revolutionize the risk management process, making it more efficient, accurate, and cost-effective. AI-based systems can help organizations to identify and respond to risks quickly, ensuring that they can take steps to mitigate losses and protect their business.

**C. Challenges of AI in Risk Management**

AI has the potential to revolutionize risk management by improving data analysis, enabling better decision making, and increasing the efficiency of operations (Madhav and Tyagi 2022). However, AI is still a relatively new technology, and there are a number of challenges that need to be addressed before it can be successfully implemented in risk management. One of the biggest challenges is the difficulty of building accurate and reliable AI models. The accuracy of the models depends on the quality of the data that is used to train them, but in many cases the data is incomplete or unreliable. Additionally, the models can be difficult to interpret, making it difficult to identify and address any potential issues.

Another challenge is that AI algorithms can be biased, either by design or because of the data used to train them. This can lead to skewed results that may not accurately reflect the true risk of a given situation (Madhav and Tyagi 2022). Finally, AI can be expensive to implement and maintain. The costs associated with training and deploying models, as well as the need for specialized personnel to manage them, can be prohibitive for many organizations. Overall, AI has great potential to improve risk management. These include improving data quality, addressing issues of bias, and managing the associated costs.

#### ***IV. Artificial Intelligence in Financial Forecasting***

##### ***A. Benefits of AI in Financial Forecasting***

AI can make financial forecasting more accurate and efficient. AI algorithms can detect patterns and trends in large data sets that are difficult for humans to detect, allowing for more comprehensive predictions. AI can also identify and analyze relationships between different factors and variables, such as economic and market trends, to produce more accurate forecasts. AI can also process large volumes of data faster than any human, allowing for more timely forecasts (Ahmed et al. 2022). This can be especially useful for predicting short-term market trends and developing strategies for responding to rapidly changing conditions. AI can also reduce the amount of time and effort needed to carry out forecasting tasks, freeing up resources and allowing businesses to focus their attention on other tasks. Additionally, AI can help create forecasts that are more consistent and reliable, which can help businesses make decisions with greater confidence. Ultimately, AI can be a valuable asset to businesses, helping them to make more informed decisions and increase their profitability.



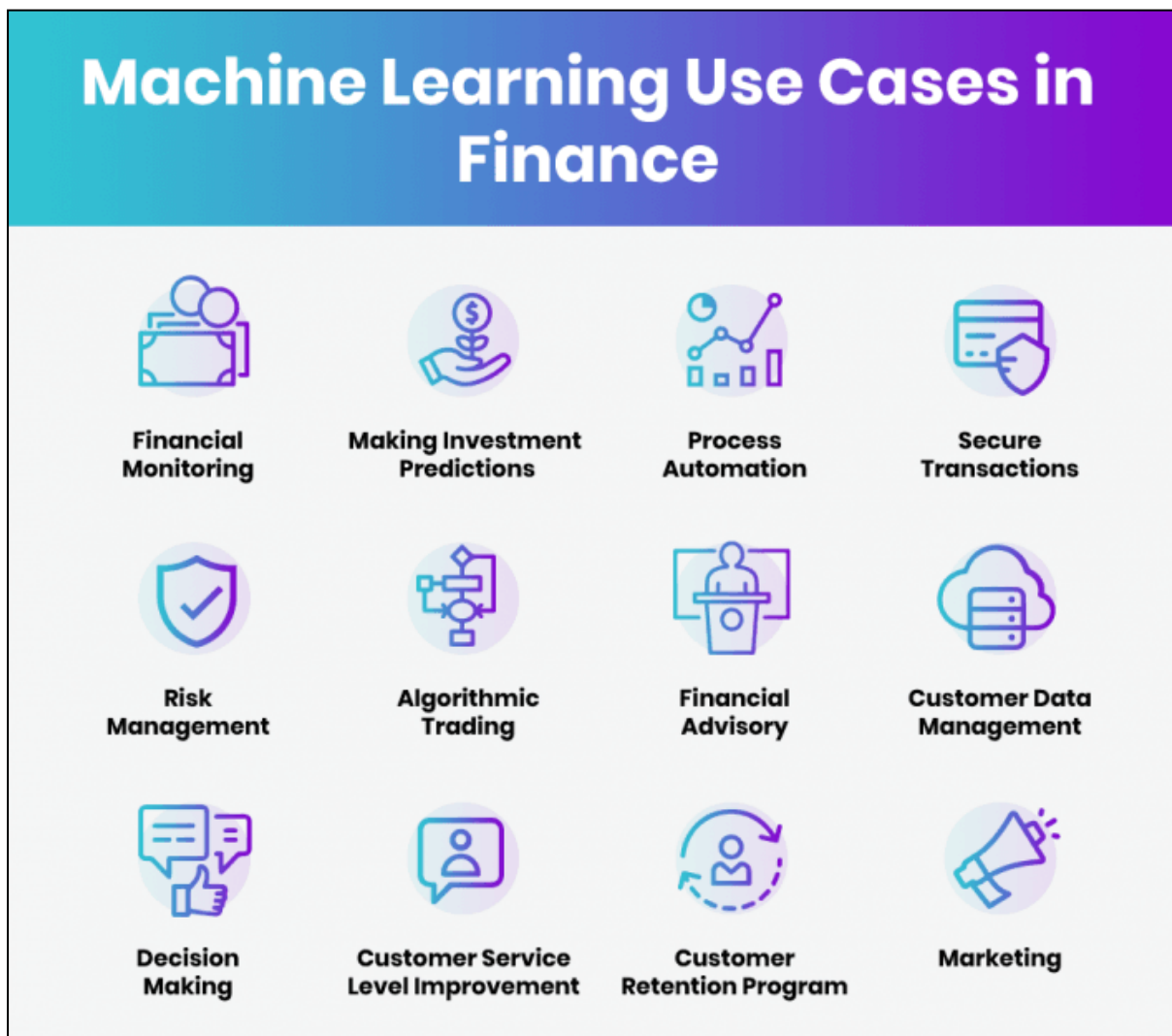


Figure 2: Machine learning cases in Finance

(Source: Ahmed 2021, p.78)

**B. Challenges of AI in Financial Forecasting**

AI has great potential to revolutionize financial forecasting. In addition to its ability to identify patterns and trends, AI can process large amounts of data in a short period of time, allowing for faster and more accurate predictions. However, AI algorithms have some associated challenges. First, AI requires a large amount of data to accurately predict future financial events. This data is often difficult to acquire, as it can come from various sources such as stock prices, economic forecasts, and other market indicators (Ahmed 2021). Additionally, it is important to have reliable, historical data and consistent data sources for accurate predictions.

Second, AI algorithms are often very complex and require a great deal of tuning and optimization to achieve the best results. Additionally, the data used to train AI algorithms is often biased and may lead to inaccurate predictions. Finally, financial forecasting is a complex and dynamic field, and AI algorithms are not yet able to accurately predict all possible scenarios. As a result, AI algorithms may not be able to accurately predict events

such as financial crises or market corrections. For this reason, human experts should still be involved in the financial forecasting process.

**V. Post COVID-19: Impact of AI in Financial Management, Risk and Forecasting**

**A. Benefits of AI in Post COVID-19 Era**

The COVID-19 pandemic has caused a drastic change in the way businesses and governments operate (Moosavi et al. 2022). Artificial intelligence (AI) has become a key technology for managing the crisis, as it can help to quickly diagnose and track the virus, anticipate future outbreaks, and reduce the spread. AI can also be used to monitor and track people who have been exposed to the virus and to alert health officials or family members if further action is needed. AI can also be used to provide personalized medical advice and recommendations to individuals, reducing the need for physical contact and helping to reduce the burden on healthcare systems.

AI can also be used to automate certain processes, such as production, transportation, and logistics. This will help businesses become more efficient and cost effective while keeping their employees safe (Tsuji 2022). AI can also be used to analyze and interpret large amounts of data in order to detect patterns and develop predictions. This will reduce the strain on customer service teams and enable businesses to provide more personalized services. AI can also be used to provide insights into customer behaviour and preferences in order to better target their marketing efforts. AI can also be used to help governments manage the crisis. AI can be used to detect fraud and suspicious activity, as well as to automate the process of providing financial support to those who need it. It can also be used to automate administrative tasks, freeing up time for civil servants to focus on more important tasks. In summary, AI can be used in a variety of ways to help manage the crisis and create a safer and more efficient post COVID-19 world.

**B. Challenges of AI in Post COVID-19 Era**

Artificial Intelligence (AI) has been playing a significant role in helping us to cope with the crisis (Shahzad et al. 2023). AI technology has been used to assist with health care, logistics, business operations, and social media. However, with the increased reliance on AI, there are a number of challenges that need to be addressed.

Artificial Intelligence	Augmented Intelligence
Only computers machine based systems are involved	There’s combined involvement of machines of humans
Processing and final output is fully machine dependant	Processing and finally output is only partially machine dependant.
The results tend to be biased inappropriate for real life use.	The results trend to be more appropriate for human use due to human involvement in the process
Is expected to compete with human jobs in future	Is expected to bring better human opportunities in future

Table 2: difference of artificial and augmented Intelligence

(Source: made by the author)

First, the development and deployment of AI systems need to be done in a secure and responsible manner. Without adequate security and safety measures, AI systems are vulnerable to malicious attacks and misuse. Second, AI systems need to be able to cope with the dynamic nature of the current environment (Majeed and Hwang 2022). With rapidly changing economic conditions, AI systems must be able to adapt quickly and accurately to the changing environment. Third, AI systems need to be able to handle increasing data volumes and provide trustworthy insights. This requires a combination of high-performance computing and data analytics capabilities. Finally, AI systems need to be able to interact with humans in an ethical and transparent manner. This requires the development of AI systems that are capable of understanding and respecting human values.

## ■ MATERIAL AND METHODOLOGY

This study on Artificial Intelligence in Financial Management, Risk and Forecasting: Perspectives from the Post COVID-19-Era will employ a qualitative research methodology. This methodology is particularly suitable for this study as it will provide an in-depth exploration and analysis of the subject. The study will collect data through literature review and semi-structured interviews (Asokan et al. 2022). The literature review will include academic and industry sources on the topics of AI, financial management, risk and forecasting. This will provide a comprehensive understanding of the current state of the technologies, their potentials and applications in the post-COVID-19 era. The semi-structured interviews will be conducted with industry experts, such as financial analysts and AI experts. This will provide valuable insights into the current challenges and opportunities in the field of AI-based financial management, risk and forecasting. The interviews will also allow for a critical evaluation of the current state of the technology and its potentials.

The collected data will then be analyzed using qualitative data analysis techniques. This will involve coding the data and examining it for patterns and themes. The results of this analysis will be used to draw conclusions risk and forecasting, as well as the opportunities and challenges that exist in the post-COVID-19 era. Overall, this study will provide a comprehensive understanding of the field of AI in financial management, risk and forecasting in the post-COVID-19 era. The results of this study will be useful for businesses and financial institutions looking to capitalize on the potentials of AI-based solutions.



Figure 3: Usage of AI in Finance

(Source: made by the author)

## ■ RESULTS

The study on Artificial Intelligence in Financial Management, Risk, and Forecasting: Perspectives from the Post COVID-19-Era explored the implications of AI technology in the post-pandemic financial management, risk, and forecasting. The study concluded that AI has a great potential to revolutionize the way financial management is done in the future.

The study identified the need for more effective, efficient, and automated approaches to financial management and risk assessment in the post-COVID-19 era (Yi et al. 2022). AI technology can be used to automate financial management processes, such as credit risk assessment and portfolio optimization. AI-driven decision-making tools can help financial managers make better decisions by providing more accurate financial forecasts.

The study also highlighted the need for a better understanding of the potential risks associated with AI technology. AI technology can be used to detect and prevent financial fraud and also to identify potential investment opportunities, which could help financial managers and investors make better decisions. However, AI technology also poses potential risks such as data privacy, cyber security, and algorithmic bias.

The study concluded that AI technology could be a powerful tool for financial management, risk, and forecasting in the post-COVID-19 era (Li et al. 2022). However, it is important to understand the potential risks associated with AI technology and to ensure that the appropriate safeguards are in place. The study also identified the need for more research into the potential uses of AI in financial management, and how to ensure that AI technology is used responsibly and ethically.

## ■ DISCUSSION

The study on Artificial Intelligence in Financial Management, Risk and Forecasting: Perspectives from the Post-COVID-19 Era provides an insight into the current and future trends in the use of AI in the financial sector. This paper provides a comprehensive analysis of the current and emerging trends in the use of AI in financial management, risk and forecasting post-COVID-19.

The paper first looks at the current state of AI in financial management in the post-COVID era. It notes that the pandemic has presented a unique opportunity to leverage AI to improve risk management, forecasting, and financial decision-making. AI can be used to reduce the amount of manual effort required to process huge amounts of data, thus making financial decisions more efficient and accurate. AI can also be used to help identify potential risks and provide better forecasting capabilities.

The paper then looks at the potential AI applications in the financial sector in the post-COVID era. It notes that AI can be used to identify potential risks in the market, as well as to provide better forecasting capabilities (Ozkan-Ozen and Ozbiltekin-Pala 2022). AI can also be used to automate processes, such as credit scoring and fraud detection, to improve efficiency and accuracy. AI can also be used to improve customer experience, such as providing personalized financial advice.

Finally, the paper looks at the benefits and challenges of using AI in the financial sector. It notes that AI offers a variety of benefits, such as improved accuracy, efficiency, and cost savings. However, the paper also notes that there are some challenges associated with using AI, such as data privacy and trust issues.

Overall, this paper provides a comprehensive overview of the current and emerging trends in the use of AI in financial management, risk and forecasting in the post-COVID-19 era (Sakya et al. 2022). The paper highlights the potential benefits and challenges of using AI in the financial sector, as well as the current and future applications of AI in the sector. It is a useful resource for anyone interested in understanding the potential of AI in the financial sector.

## ■ CONCLUSION

The study on Artificial Intelligence in Financial Management, Risk and Forecasting from the Post COVID-19-Era has revealed that AI has the potential to revolutionize the way financial management is conducted going forward. AI can help automate processes, identify patterns, and offer predictive analytics to help financial managers make better decisions. Additionally, AI can help reduce risks associated with financial management by providing insights into potential threats and helping to prevent them. Additionally, AI can help financial managers make more accurate forecasts and identify opportunities.

Overall, this study has demonstrated the potential of AI in financial management and the importance of understanding how AI can help financial managers adapt and benefit from the changes brought about by the post-COVID-19 era. The implementation of AI in financial management will likely lead to increased efficiency, improved decision making, and enhanced risk management. As such, financial managers should begin to explore the opportunities that AI can bring in order to remain competitive in the post-COVID-19 era.

**■ Limitations of the study**

The study of Artificial Intelligence in Financial Management, Risk and Forecasting has certain limitations. Firstly, the scope of the study is limited to the post COVID-19-era, and thus, the results may not be applicable to other eras. Secondly, this study does not consider the impact of other external factors such as economic trends and political environment on financial management and risk forecasting. Thirdly, the study does not address the use of AI technologies in other areas such as customer service, fraud detection and cybersecurity. Fourthly, the study does not consider the ethical and legal implications of using AI technologies in financial management. Lastly, the study does not address the potential risks associated with the use of AI technologies in financial management, risk and forecasting, such as data privacy, accuracy and reliability of predictions, and the potential for algorithmic bias.

**■ Suggestions for future work**

Future advancements in the field of Artificial Intelligence (AI) in financial management, risk and forecasting in the post-COVID-19 era can be wide-ranging. Firstly, AI algorithms can be used to develop more accurate and reliable forecasting tools which can help financial institutions to better assess and measure the impacts of the pandemic on the markets. These AI-based models can also be used to identify potential areas of risk and to predict future economic trends. This could assist with making better-informed strategic decisions. Secondly, AI can be used to develop more advanced financial risk management systems which can help to identify and mitigate risks in a more efficient and effective manner. AI can also be used to develop automated trading systems which can help to improve the efficiency and accuracy of financial transactions. Finally, AI can be used to create intelligent financial advice systems which can help to provide tailored advice based on individual needs and preferences. This will help to ensure that people are making the most appropriate decisions when it comes to their finances.



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