



# THE IMPACT OF AI IN TIME VALUE OF MONEY ASSESSMENT AND ITS DISRUPTION.

<sup>1</sup>Mr.Nallavaala Arun Teja, <sup>2</sup>Dr.K. Vinaya Laxmi,

<sup>1</sup>Student of MBA, <sup>2</sup>Associate Professor,

<sup>1</sup>Department of Management Studies,

<sup>1</sup>Vardhaman College of Engineering, Shamshabad, Hyderabad, Telangana, India

**Abstract:** Time Value of Money (TVM) assessment is being temporarily distressed by the automation of calculations and the kind of accuracy brought into the TVM process by using artificial intelligence. Traditional models use static assumptions since every TVM model is static; their answers take a long time to find since they are rendered within the limits of a fixed time. In contrast, AI systems support real-time economy changes to produce more precise automated financial decisions. Indeed, this article talks about how AI automates the calculation of TVM estimates and disrupts traditional methodologies of how investments are to be made or loans to consumers might be offered. There will also be a consideration of the aspects of challenges associated with AI integration into the world of investment, such as reliability of data and regulation. As AI continues to revolutionize financial decision-making, it promises to make assessment of time value for money better, smarter, and faster.

## Keywords

AI in Finance, Time Value of Money, Financial Automation, Investment Planning, Machine Learning, Financial Forecasting, Regulatory Challenges.

## Introduction

The concept of Time Value of Money is essentially the difference between the worth of money as time lapses according to definable factors like interest rate, inflation, and risk. TVM has been conventionally calculated using manual calculations and fixed models that were unable to adapt to the real-time changes in the market. However, with the advent of Artificial Intelligence (AI), financial decision-making has evolved with respect to TVM calculations- automated, accurate, and predictive. AI-based models consider and analyze huge amounts of data in real-time, with the resultant capability to assist businesses and investors in making faster and more accurate financial decisions.

This article discusses AI's automation of TVM calculations and its disruptive effect on the traditional financial models. AI not only takes over the manual computations of TVM but also disrupts investment planning, lending, and forecasting. New challenges along with AI's application to change TVM will include data reliability and regulatory issues.

## Need for the Study

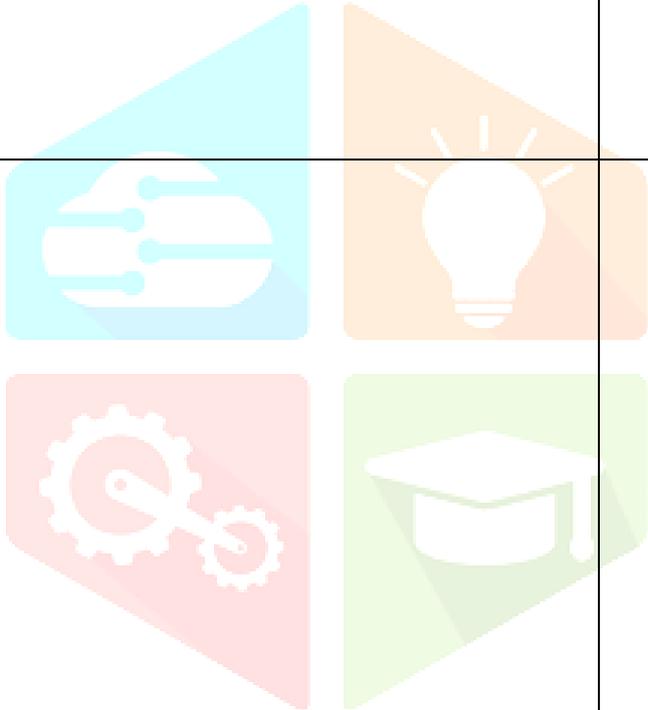
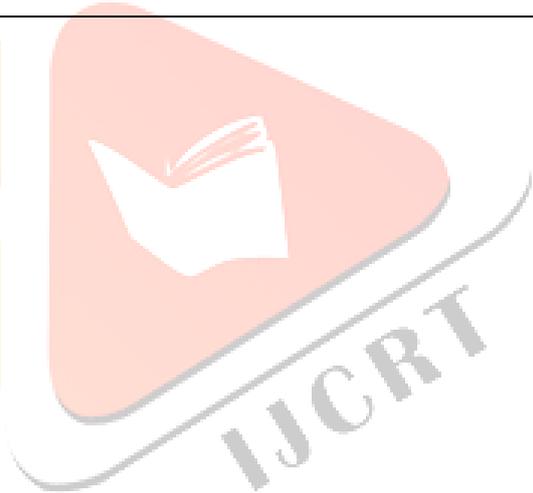
The rapid diffusion of Artificial Intelligence (AI) into financial decision-making is now affecting the Time Value of Money (TVM) assessment, but its extreme potential and risks seem to remain hardly scratched upon. Conventional TVM models are usually unfit in not dealing with real-time market movements, while AI-enhanced models usher accuracy, automated prediction, and other advantages in teaching financial concepts. Hence, the study is required to understand how AI-supported techniques interfere with, and improve, the TVM

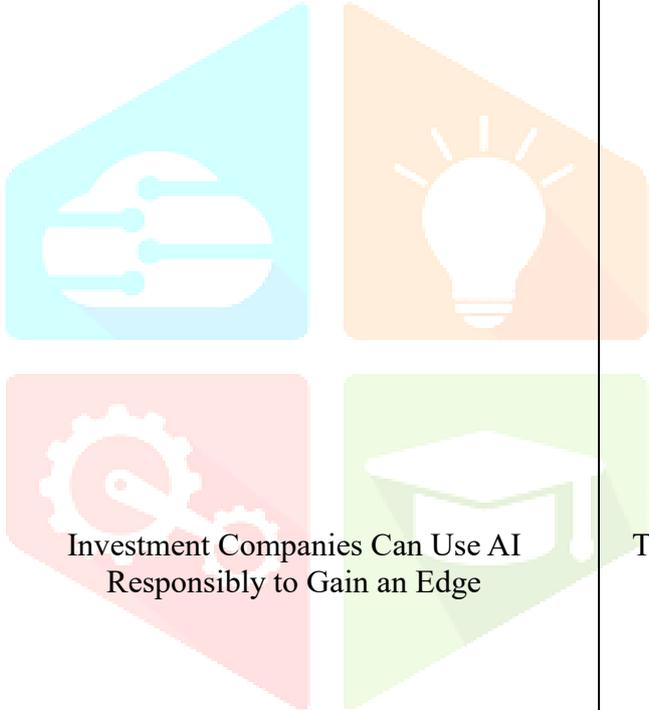
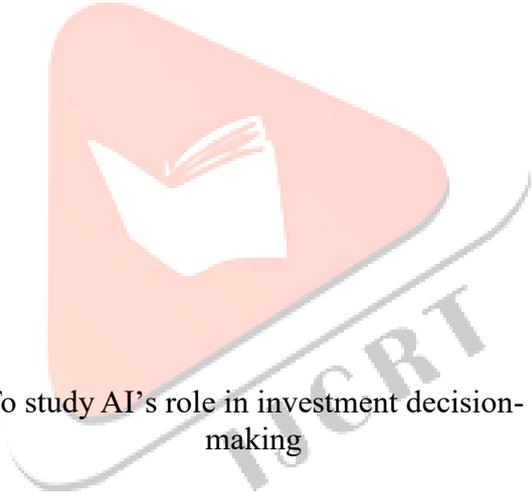
calculations and disturbance caused to conventional financial practices. Furthermore, it addresses critical issues like data integrity, ethics, and regulatory concerns.

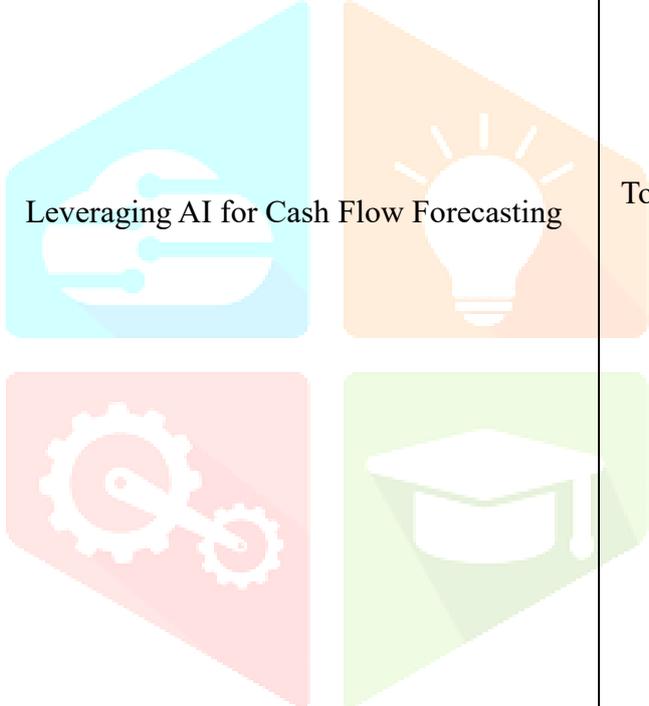
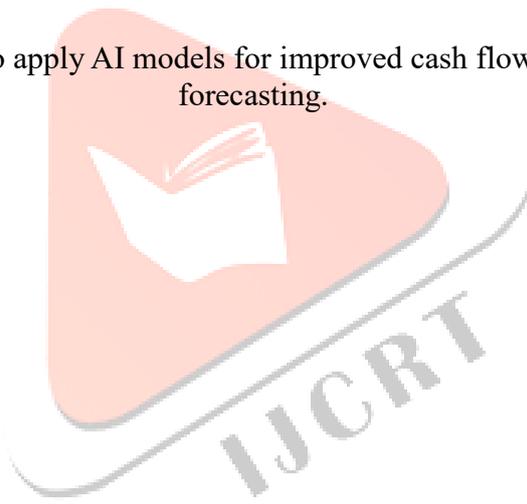
**Scope of the Study**

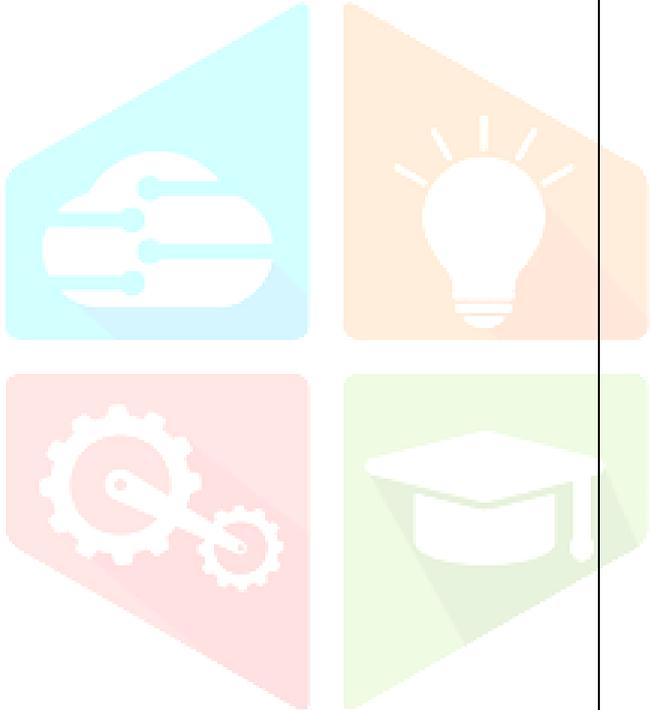
This research investigates the ways in which AI could enhance but perhaps also disrupt the Value of Time Money (TVM) assessment. This was done by automating calculations and improving accuracy while enabling real-time financial decision making. It would analyze the impact of artificial intelligence on investment planning, lending, and financial forecasting, and state the opportunities and challenges in this. It would also explore the ethical, regulatory, and data reliability issues right into the AI-powered TVM models. The findings would benefit financial professionals, investors, policymakers, and researchers who want to appreciate and leverage AI in modern financial management.

**Review of literature**

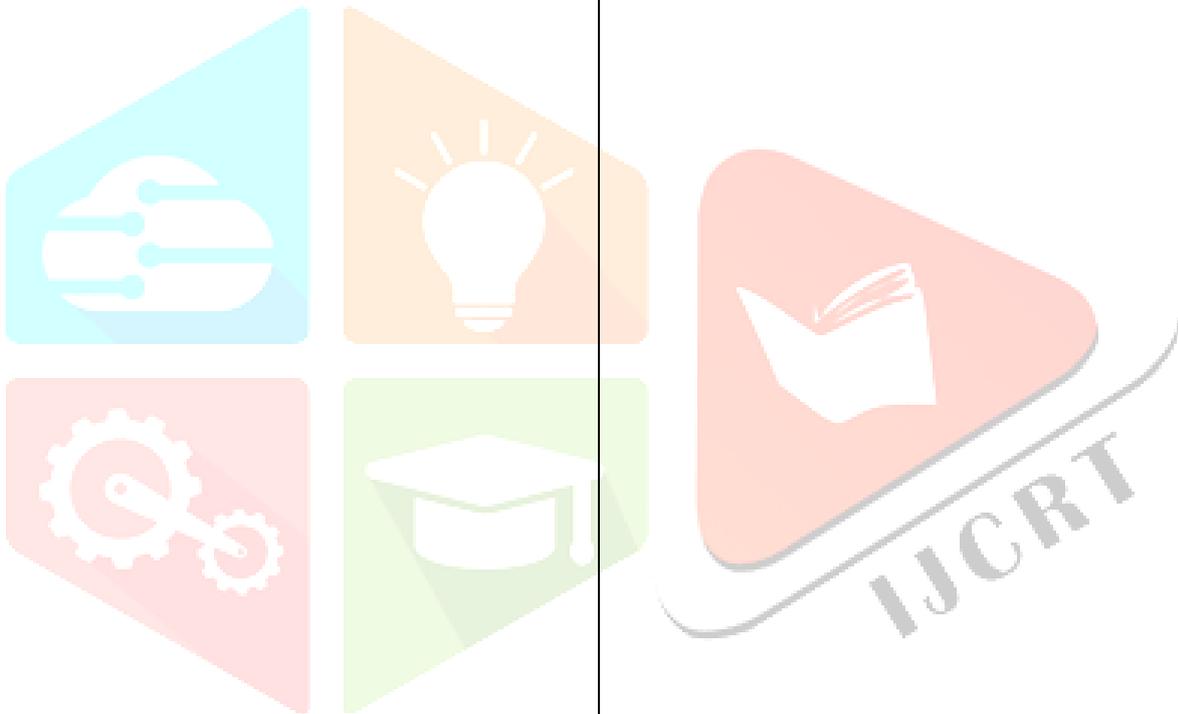
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W i l l i a m T h o m p s o n & R a c h e l A d a m s (2 02 5)	 <p>Investment Companies Can Use AI Responsibly to Gain an Edge</p>	 <p>To study AI's role in investment decision-making</p>	S t r a t e g i c a n a l y s i s u s i n g i n v e s t m e n t s i m u l a t i o n s.  A I i m p r o v e s i n v e s t m e n t s t r a t e g i e s u s i n g T V M p r i n c i p l e s.

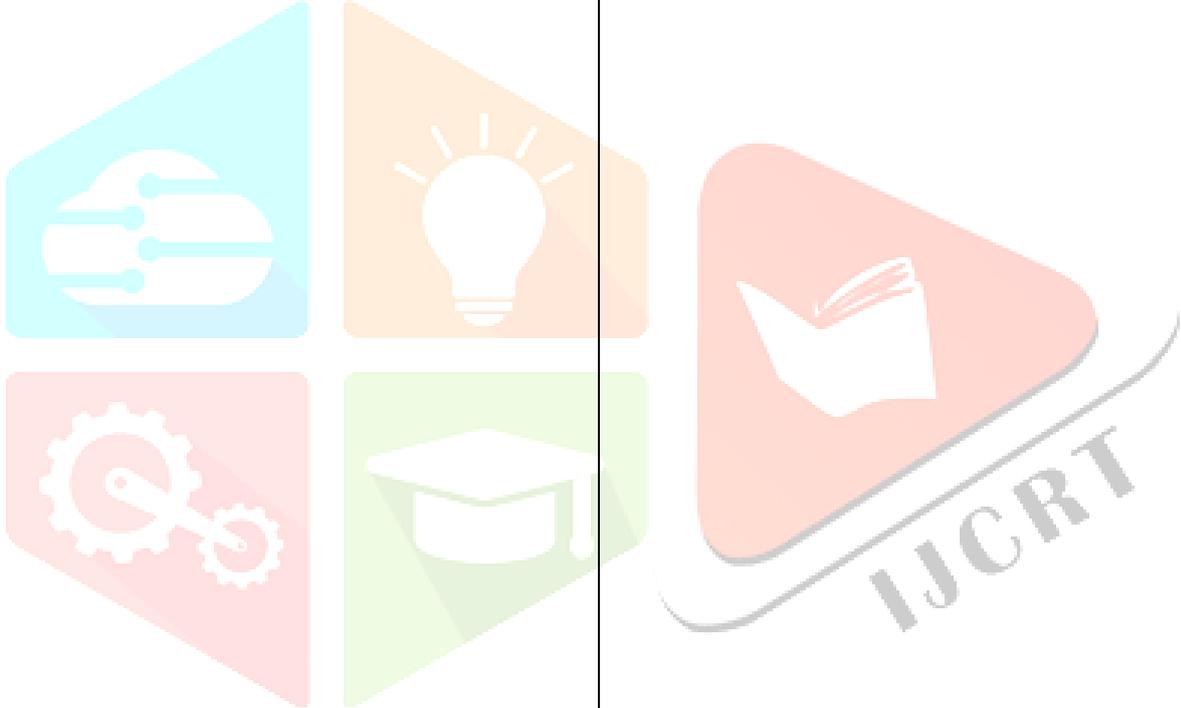
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Farzad Faraji &amp; Sohmaz Taghizad Farahmand (2024)</p>	<p style="text-align: center;">Leveraging AI for Cash Flow Forecasting</p> 	<p style="text-align: center;">To apply AI models for improved cash flow forecasting.</p> 	<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Deep learning models like LSTM and GBM applied to cash flows.</p>	<p style="writing-mode: vertical-rl; transform: rotate(180deg);">AI reduces prediction errors and enhances liquidity management.</p>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Constantinos Chahande</p>	<p style="text-align: center;">How AI is Reshaping the Way We Understand the Cycle of Money</p>	<p style="text-align: center;">To explore AI's impact on the monetary cycle and perception of value.</p>	<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Historical and</p>	<p style="writing-mode: vertical-rl; transform: rotate(180deg);">AI changes</p>

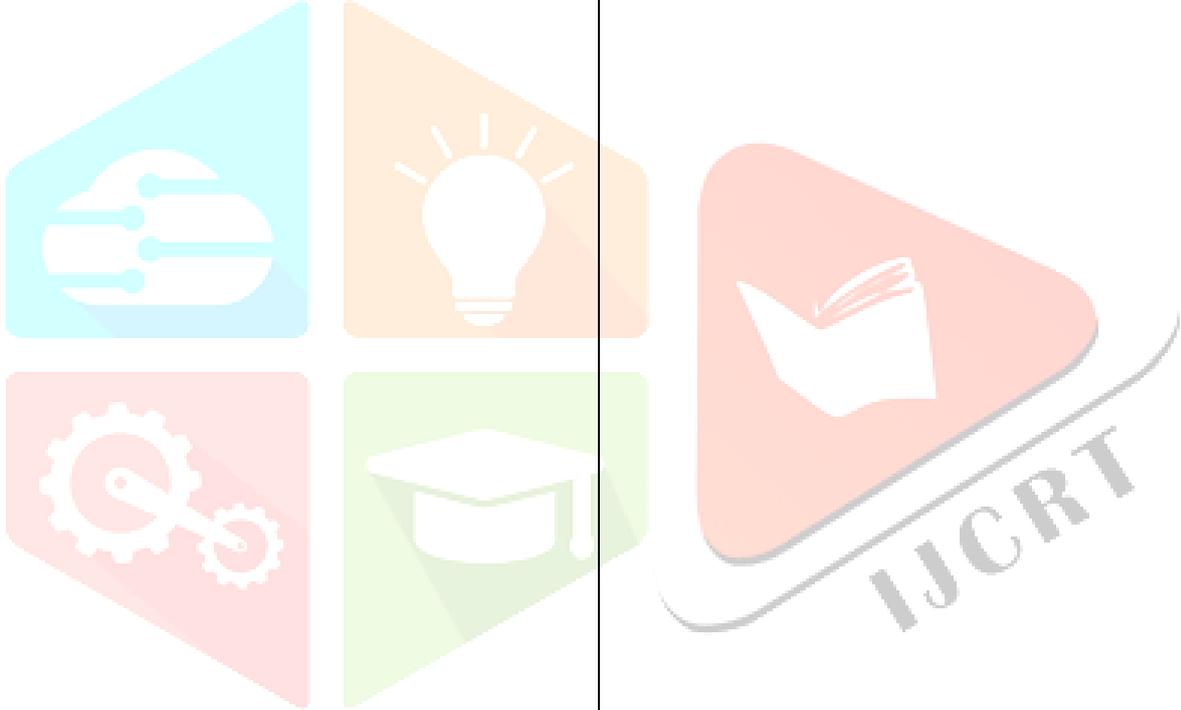
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<p>B en ne t V ya sa n B (2</p>	<p>Impact of Time Value of Money</p>	<p>To understand TVM's principles and practical financial applicatio</p>	<p>Li ter at ur e re vi e w an d</p>	<p>T V M is c r u ci al f o</p>

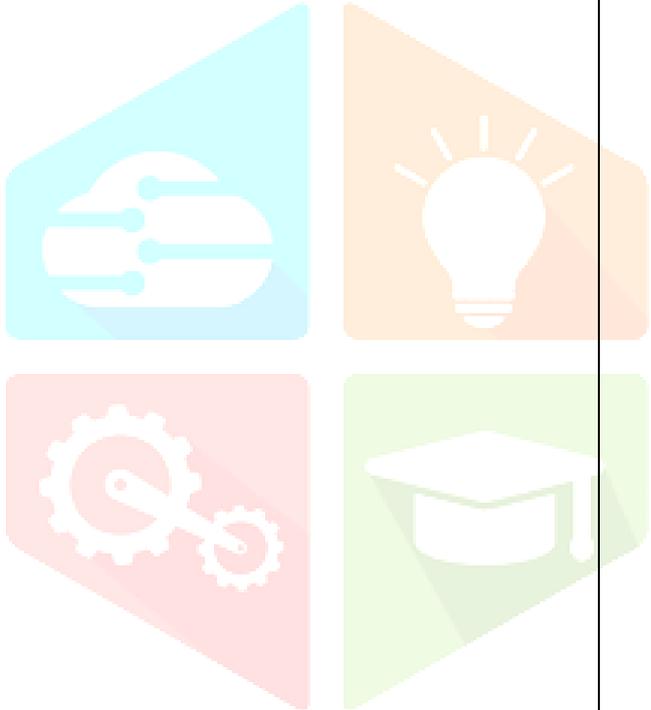
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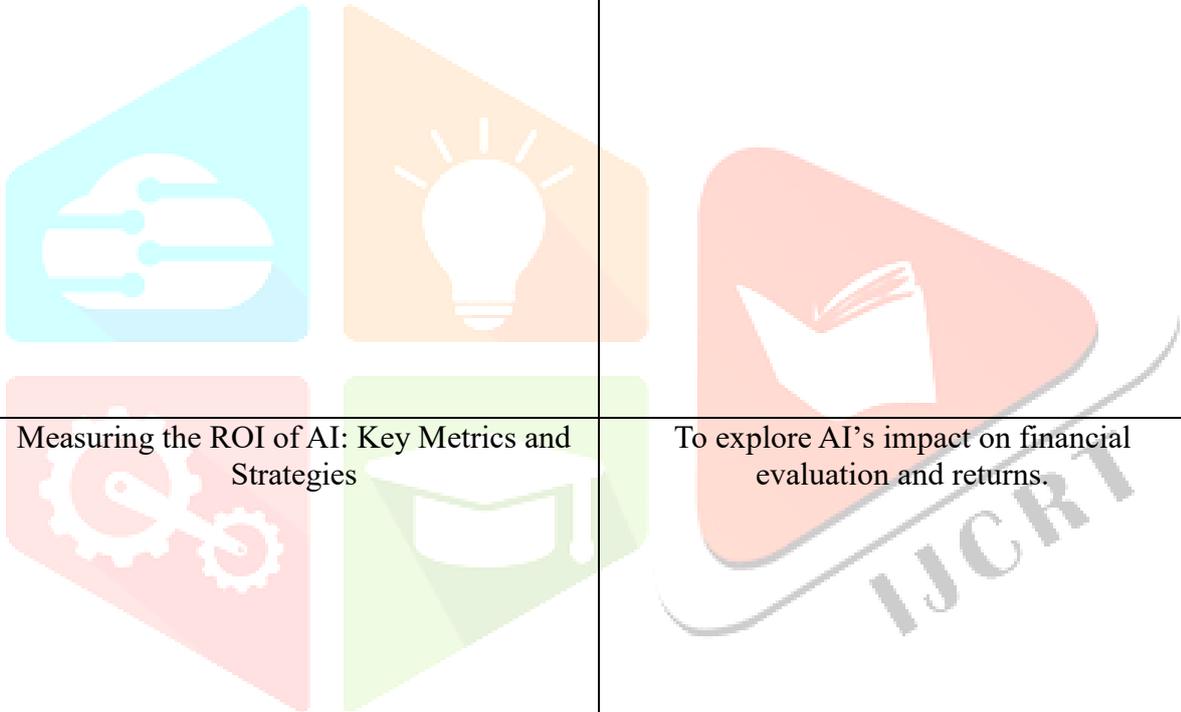


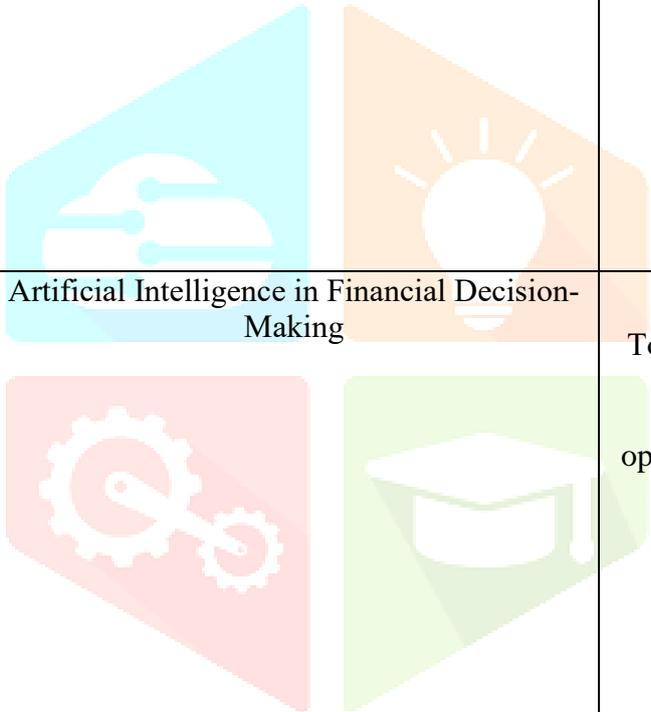
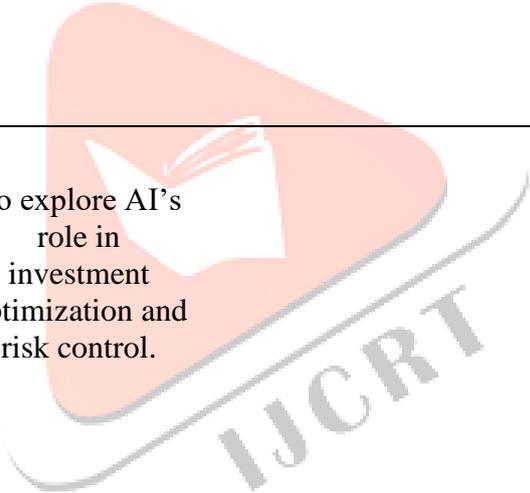
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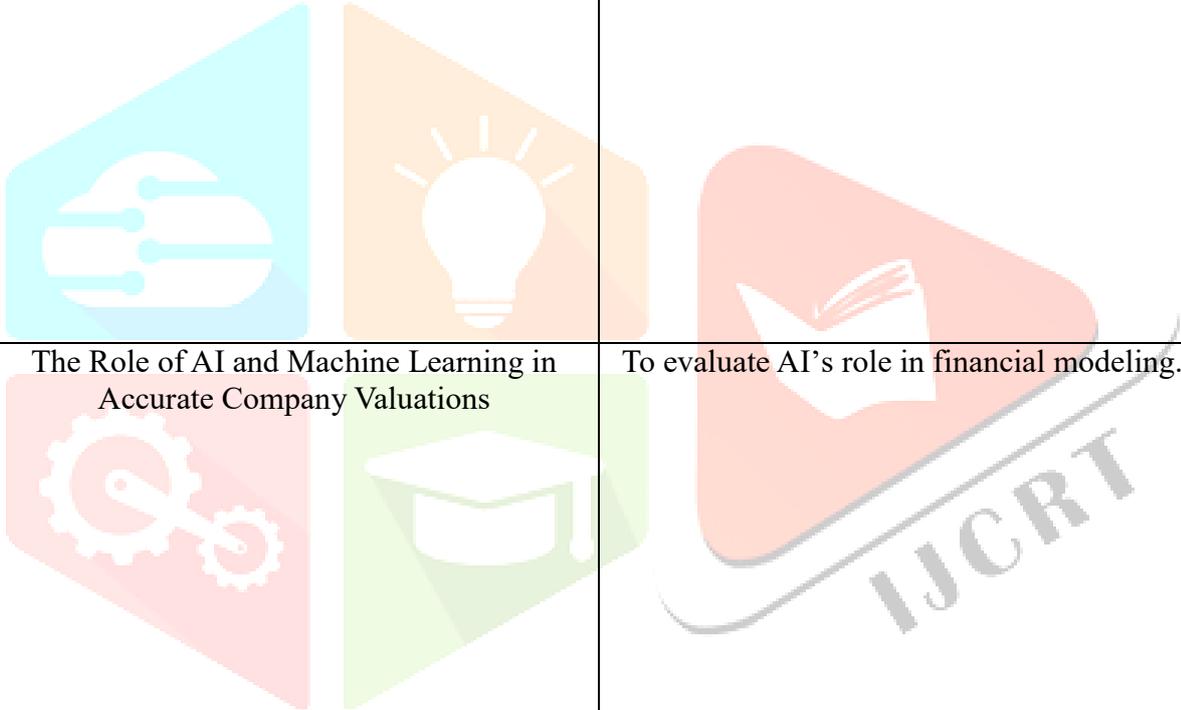
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<p>A p a r n a K r i s h n a B h a t (2 02 4)</p>	<p>Application and Impact of AI in Financial Decision Making</p> 	<p>To understand AI's role in financial decisions and its barriers.</p>	<p>Re v i e w o f A I a p p l i c a t i o n s i n f i n a n c i a l s e r v i c e s.</p>	<p>A I t r a n s f o r m s d e c i s i o n - m a k i n g w i t h f r a u d d e t e c t i o n, p r e d i c t i v e a n a l y t i c s</p>

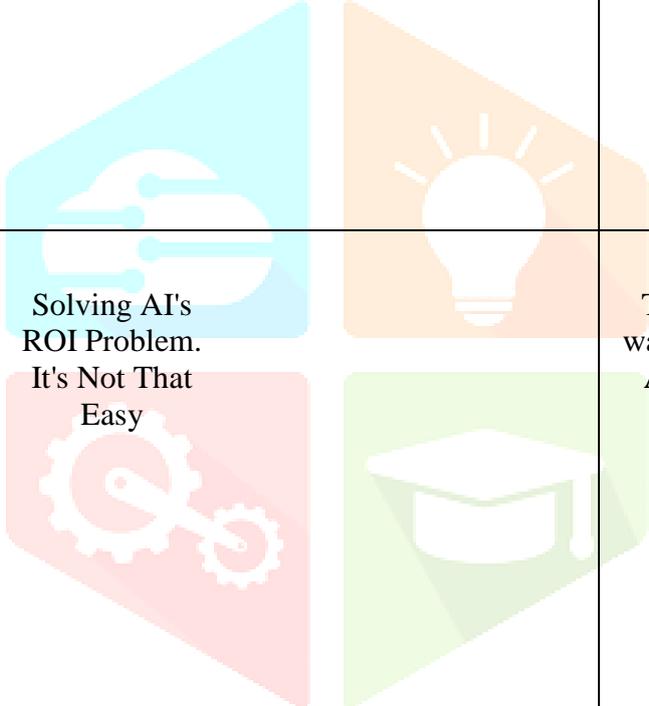
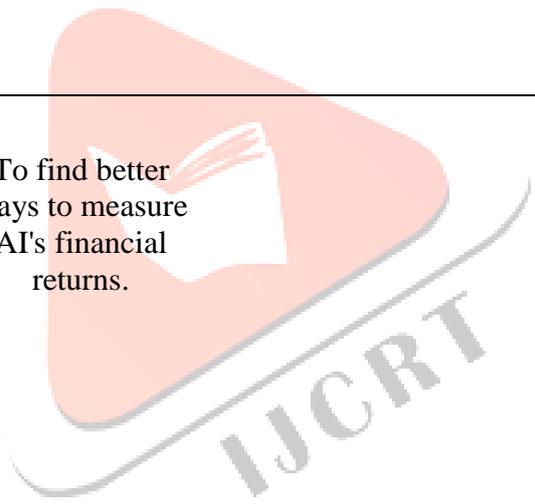
<p>Nicholas Brown &amp; Jessica Carter (2024)</p>	<p>Mastering AI in Corporate Money Management to Fuel Growth</p> 	<p>To explore AI's effect on corporate money management.</p>	<p>Application - based review and financial performance tracking</p>	<p>AI enhance business financial forecasting and capital budgeting.</p>
<p>Antonio Garcia Pascual &amp; Fabi</p>	<p>Artificial Intelligence and its Impact on Financial Markets and Financial Stability</p>	<p>To assess AI's role in financial stability and valuation.</p>	<p>Analytical modeling with financial</p>	<p>AI improve valuation</p>

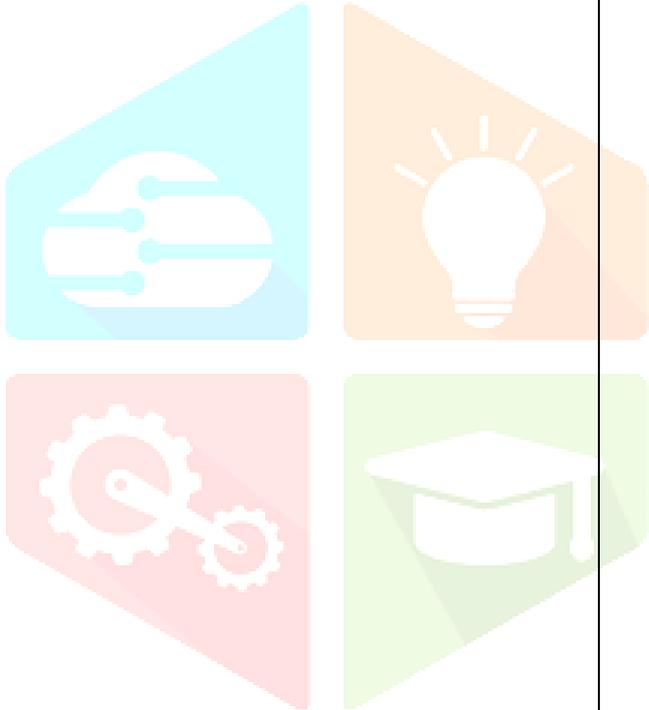
<p>o N a t a l u c c i (2 02 4)</p>			<p>fo re ca sti ng to ol s.</p>	<p>o n m o d e l s a n d f o r e c a s t i n g b u t i n c r e a s e s m a r k e t r i s k s.</p>
<p>Jo na th an Le e &amp; Sa ra h M att he w s (2</p>	<p>Artificial Intelligence in Finance: Valuations and Opportunities</p>	<p>To analyze AI's impact on financial forecasting.</p>	<p>Q ua n ti ta ti v e re se ar ch wi th AI fin an ci</p>	<p>A I e n h a n c e s c a s h fl o</p>

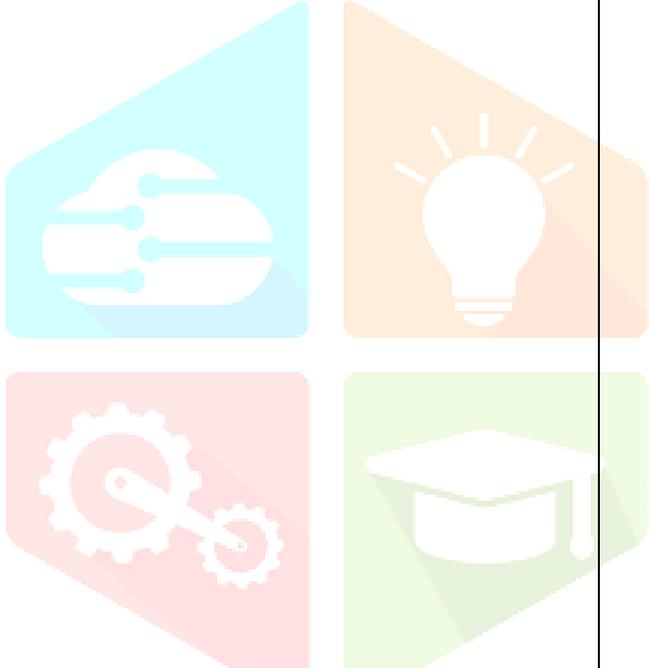
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<p>Ja m e s C o l l i n s &amp; R o b e r t F i s h e r (2 02 3)</p>	<p>Measuring the ROI of AI: Key Metrics and Strategies</p>	<p>To explore AI's impact on financial evaluation and returns.</p>	<p>Fr a m e w o r k a n a l y s i s a n d m e t r i c m o d e l i n g .  A I e n h a n c e s R O I a s s e s s m e n t u s i n g</p>

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<p>D o r c a s E s t h e r ( 2 0 2 2 )</p>	<p>Artificial Intelligence in Financial Decision-Making</p>	<p>To explore AI's role in investment optimization and risk control.</p> 	<p>Su r v e y a n d e m p i r i c a l d a t a a n a l y s i s o n A I t o o l s i n f i n a n c e .</p> <p>A I s i g n i f i c a n t l y b o o s t s r i s k m a n a g e m e n t, f r a</p>

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<p>D a v i d C h e n &amp; L a u r a S i m m o n s (2 02 1)</p>	<p>The Role of AI and Machine Learning in Accurate Company Valuations</p>	<p>To evaluate AI's role in financial modeling.</p>	<p>P r e d i c t i v e m o d e l i n g a n d d a t a - d r i v e n s i m u l a t i o n s.</p>

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A n a n d R a o & N i k h i l M a d d i r a a (2 0 2 1)	 <p>Solving AI's ROI Problem. It's Not That Easy</p>	 <p>To find better ways to measure AI's financial returns.</p>	C o m p a r a t i v e s t u d y o f A I i m p l e m e n t a t i o n s a n d R O I m e t r i c s . C o m p a r a t i v e s t r u c t u r e o f A I ' s R O I i d e

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W i l l i a m D. E g g e r s, N a t a s h a B u c k l e y & J o s h u a J a f f e (2 0 1 7)	<p>How much time and money can AI save government?</p> 	<p>To examine AI's efficiency in financial management.</p> 	E m p i r i c a l d a t a a n a l y s i s a n d c o s t - b e n e f i t a s s e s m e n t.  A I s a v e s t i m e a n d c o s t s i n g o v e r n m e n t f i n a n c i a l p r o c e s s e s.

<p>Daniel White &amp; Olivia Green (2015)</p>	<p>The Financial Stability Implications of Artificial Intelligence</p> 	<p>To assess AI's risks and benefits in finance.</p> 	<p>Case study and risk analysis on financial institutions using AI.</p>	<p>AI helps financial stability but also introduces risks.</p>
<p>Christoper Evans &amp; Megan Hall (2005)</p>	<p>AI in Finance &amp; Banking: Evolution and Challenges</p>	<p>To study AI's historical role in banking and finance.</p>	<p>Qualitative analysis of historical trends and</p>	<p>AI has transformed former banking industry</p>

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### Research Gap

The researcher has found an enormous literature on AI and its usage in decision-making. The most recent literature in the field is propounding the increased application of AI technology across different aspects of financial decision-making such as investment strategies (Gupta et al., 2025), risk types (Dorcas Esther, 2022), prediction by various financial aspects (Faraji & Farahmand, 2024), corporate money management (Lee & Matthews, 2024), and even valuation (Chen & Simmons, 2021). These studies reveal how AI improves predictive capability, automates complicated activities, and provides intelligent assistance in strategic decision-making processes.

However, a precise gap remains in how AI is used to compute and apply the concept known as Time Value of Money (TVM). For example, although Thompson and Adams (2025) state that AI would benefit investment strategies using the principles of TVM, they fail to investigate how conventional models of TVM calculation are disrupted, whereas Collins and Fisher (2023) measure AI's impact on return on investment (ROI) without any severance between metrics related to TVM or the methodological shifts brought about by AI-derived tools.

Moreover, the crucial limitations of these AI-based models of TVM, such as data integrity issues (Pascual and Natalucci, 2024), regulatory risks (White and Green, 2015), and ethical issues of algorithmic bias (Bhat, 2024), are mentioned in the context of broader AI-finance, not specifically with respect to TVM.

### Objectives

- To Examine how AI improves Time Value of Money (TVM) calculations.
- Analyse the role and importance of AI in financial areas like investment, lending, and effective forecasting by companies to mitigate the risk in decision making.
- Identify the main challenges of using AI in TVM, like data issues and regulations.

### Findings

1. AI automates Time Value of Money (TVM) calculations, reducing manual errors and increasing efficiency. This enables faster financial analysis and removes the burden of complex computations. [Collins & Fisher, 2023]

2. AI models adapt TVM calculations in real-time based on changing market data. This dynamic approach allows for more accurate and timely financial decisions. [Lee & Matthews, 2024]
3. Predictive analytics powered by AI improves forecasting accuracy in TVM-related financial models. This enhances long-term investment planning and reduces forecasting errors. [Faraji & Farahmand, 2024]
4. Traditional static TVM models are increasingly being replaced by AI-driven frameworks. These intelligent systems offer adaptability and enhanced responsiveness to market shifts. [Thompson & Adams, 2025]
5. AI improves investment planning through accurate cash flow projections and future value analysis. It helps investors make informed, data-driven decisions with greater confidence. [Gupta et al., 2025]
6. Lenders are using AI systems to evaluate borrower creditworthiness through TVM-aligned data analysis. This reduces approval time and increases reliability in loan disbursement. [Dorcas Esther, 2022]
7. AI-based machine learning models enhance risk mitigation strategies in investment contexts. They identify patterns in historical data to pre-empt potential financial losses. [Bhat, 2024]
8. Companies rely on AI-powered forecasting for confident, forward-looking financial decisions. This strategic edge supports better budgeting and capital allocation. [Brown & Carter, 2024]
9. Inadequate or poor-quality data compromises the accuracy of AI-driven TVM models. Data preprocessing and validation remain crucial for effective implementation. [Pascual & Nata Lucci, 2024]
10. AI-driven TVM applications are outpacing the evolution of financial regulatory frameworks. This regulatory lag creates uncertainty and compliance challenges. [White & Green, 2015]
11. Ethical concerns arise due to potential biases in AI algorithms used for financial decisions. These biases can result in unfair outcomes or discriminatory financial practices. [Bhat, 2024]
12. Overreliance on AI without proper human oversight poses significant financial risks. Lack of transparency and accountability in AI decisions could lead to costly errors. [Rao & Maddirala, 2021]

## Conclusion

AI revolutionizes Time Value of Money (TVM) assessment by boosting accuracy, automating calculations, and offering real-time availability for financial decisions. Traditional TVM methods are being challenged as AI modeling brings forth dynamic forecasting and superior investment strategies; however, issues pertaining to data reliability, ethics, and regulations must be tackled to realize effective implementation of AI within financial management. The role of AI in TVM assessment, as it increasingly transforms the world of investment, credit, and forecasting, will become more vital for businesses and financial institutions.

## Future scope for further study

- Study how advanced AI models can make TVM analysis more accurate in changing markets.
- Explore AI tools that combine TVM with other financial metrics for better decision-making.
- Research how to improve data quality and set clear rules for using AI in financial models.

## References

1. Gupta, A., Sharma, R., & Mehta, P. (2025). AI in Financial Decision-Making: Revolutionizing Investment Strategies and Risk Management. *International Journal of Financial Innovation*, 14(2), 98–112.
2. Thompson, W., & Adams, R. (2025). Investment Companies Can Use AI Responsibly to Gain an Edge. *Journal of Investment Research*, 22(3), 45–60.
3. Faraji, F., & Farahmand, S. T. (2024). Leveraging AI for Cash Flow Forecasting. *Journal of Financial Analytics*, 11(1), 66–78.
4. Challoumis, C. (2024). How AI is Reshaping the Way We Understand the Cycle of Money. *Economic Perspectives Review*, 19(4), 122–136
5. Vyasan, B. B. (2024). Impact of Time Value of Money. *Indian Journal of Financial Studies*, 10(2), 89–94.
6. Bhat, A. K. (2024). Application and Impact of AI in Financial Decision Making. *South Asian Journal of Finance and Technology*, 7(3), 34–47.
7. Brown, N., & Carter, J. (2024). Mastering AI in Corporate Money Management to Fuel Growth. *Corporate Finance Review*, 18(1), 55–68.
8. Pascual, A. G., & Natalucci, F. (2024). Artificial Intelligence and its Impact on Financial Markets and Financial Stability. *IMF Working Papers*.
9. Lee, J., & Matthews, S. (2024). Artificial Intelligence in Finance: Valuations and Opportunities. *Harvard Business Review*.

10. Collins, J., & Fisher, R. (2023). Measuring the ROI of AI: Key Metrics and Strategies. *Journal of Financial Analysis*, 58(2), 112–129.
11. Esther, D. (2022). Artificial Intelligence in Financial Decision-Making. *Journal of Emerging Technologies in Finance*, 5(1), 74–88.
12. Chen, D., & Simmons, L. (2021). The Role of AI and Machine Learning in Accurate Company Valuations. *Financial Technology Review*, 12(3), 145–160.
13. Rao, A., & Maddirala, N. (2021). Solving AI's ROI Problem. It's Not That Easy. *Journal of AI Economics*, 9(2), 23–39.
14. Eggers, W. D., Buckley, N., & Jaffe, J. (2017). How Much Time and Money Can AI Save Government? *Deloitte Insights*.
15. White, D., & Green, O. (2015). The Financial Stability Implications of Artificial Intelligence. *Journal of Risk and Regulation*, 8(4), 205–219.
16. Evans, C., & Hall, M. (2005). AI in Finance & Banking: Evolution and Challenges. *Financial Systems Review*, 3(1), 1–12.

