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ARTIFICIAL INTELLIGENCE AND FINANCIAL MARKET

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Abstract
This researched legal essay inclusively discusses about the scope and relevancy of Artificial Intelligence (AI) in financial market & Fin-tech Industry, specifically how AI implications are evolving the financial markets with its automated decision-making capabilities. Thus, the study involves AI concerned topics including, High-Frequency Trading (HFT), credit risk assessment, fraud detection, portfolio management, and sentiment analysis, while critically analysing their benefits and the legal challenges alongside to this, this essay raises critical questionable analysis about the Accountability, transparency and potential discrimination that could induced by the implications of AI. The study concludes the need for reasonable regulatory framework that could be reasonable to mitigate the concerns induced by AI but also not so strict that might hinder the development of Ai in the international financial market

Introduction
The financial markets for a long period of time were always dependent on market trends that were sometimes triggered due to interventions of illicit schemes like Ponzi or pumped and dump schemes[1], that had influenced the market for a period of long time, proving to be riskier for the low-income individuals to play their roles by investing their fortunes into the market to drive best investments for their savings. Thus, historically the unpredictability of the market was mostly compromised with many malicious factors which were less likely to be exposed by the authorities due, to the clever nature of manipulative tactics. However, with the innovation and development of AI (Artificial Intelligence), the market has been evolved into a more complex arena for all the stakeholder's interests. The usual market trends that influence the market decisions are now much likely to be influenced by the AI algorithms that are derived by the machine learning and automated techniques rather than compared to other conventional means. Thus, the world is evolving into new era of automated industrial revolution, which is empowered by AI, bringing innovation however with these innovative developments in the market, comes great challenges as well in order to ensure the fair competition in the ever-evolving financial industry.

This legal research article will try to figure and explore the relevancy of AI in today's existing financial markets, the legal frameworks that introduced and sat the standards of regulation for AI in order to mitigate all the challenges from AI associated to its impact on financial market, how the introduction of the AI has evolved today's financial

[1] Dhir, R. (2022, January 13). *Pump-and-Dump: Definition, How the Scheme is Illegal, and Types*. Investopedia. https://www.investopedia.com/terms/p/pumpanddump.asp

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Market Arena and primarily how existing financial regulations can cope with the legal and ethical challenges posed by the decisions that is influenced by the AI empowered algorithms and automated decision making.

1. Facts and Technology

With the beginning of Modern technological revolution after decades of ever growing evolution in the financial industry, the scope AI technology is rapidly adapting into the other forms of advanced technologies as well which prominently includes Machine learning (ML), Data analysis and natural language processing (NLP) empowering the AI with sufficient abilities to specialise in the decisions that potentially influences the market trends, paving its way Forword to the modern fin-tech corporate bodies to adapt and utilize the AI for their cause and to apply in the financial industry as-well.

3.1. High-Frequency Trading (HFT):

The ever-evolving modern tech revolution, lead to a unique innovation in the realm of financial market which is HFT. The HFT are usually AI empowered executing millions of trading commands which empowers the AI in analysing the trends inside the sphere of markets within the fraction of seconds, with a surprisingly fast speed. This innovation is potentially questionable with regards to its ethical implications considering its applications in the sphere of stock markets since Stock markets should act and provide a fair ground of competitions between the stock enlisted corporate bodies, in order to decide the trends of the market based on supply and demand principle and also Intrinsic value[2] of the stocks and not on the ground of market manipulation which HFT could potentially impact. Thus, the HFT Innovation is checked through carefully drafted regulatory framework around the developed countries by the AI Experts based on equitable and ethical business considerations for the best interest of the financial industry.

3.2. Credit Risk Assessment:

With the growing trends in the innovation of AI, the technique of Machine learning through AI is being widely utilized through its banking application of analysis by the banking and fintech bodies to evaluate and analyse the merits of the profiles or applications of potential loan applicants or banking consumers by analysing the big data of previous decisions on their Credit history and worthiness. [3] However, since this assessment of based on Machine learning method the previous data of the banking consumer is widely used by the AI model for such analysis and decisions that is being modelled to use could be questionable, since it could hold the prejudice against certain group of loan applicants and the new Newly developed AI empowered Credit risk assessment is amount to be subjected with the flag of same prejudice or biasness that usually impacts the loan applications of the people.

3.3. Fraud Detection:

AI is being widely used as a by many law enforcement authorities around the globe now by different anti-fraud counter measure, through which the application of AI is

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[2] Team, I. (2024, June 5). *Intrinsic Value Defined and How It's Determined in Investing and Business*. Investopedia. https://www.investopedia.com/terms/i/intrinsicvalue.asp#:~:text=and%20growth%20potential.-,What%20Is%20Intrinsic%20Value%3F,market%20price%20of%20an%20asset.

[3] LatentView, T. (2024, July 10). *AI Credit Scoring: The Future of Credit Risk Assessment*. LatentView Analytics. https://www.latentview.com/blog/ai-credit-scoring-the-future-of-credit-risk-assessment/

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being widely used to flag the potential frequent transaction that could be the abstract of some fraudulent activity or may inflict such illicit activity. [4] Thus, this potentially Fraudulent transaction can be flagged as suspicious, which usually initiate further compliances check and regulation to prevent the transection being consumed by any fraudster. It is also meaningful to initiate an investigation by the respective law enforcement bodies to cope the rapid increasing digital crime rate, that are harming the peoples trust in the digital financial services, leading to more room for the law enforcement bodies to mitigate such crimes earlier before it usually harm anyone.

3.4. Portfolio Management:

AI is widely empowering the portfolio management of traders and investors alike, for the purpose to gain maximum Return on investments (ROI) on their capital investments.[5] Thus, AI utilizes data analysis applications to drives its own empowered financial decision that are quick to decide and calculated more efficiently than compared to conventional means of human analysis which can be subjected to human error as well. However such AI driven involvement or implications in their respective investor portfolios invites the AI experts to consider the crucial measures to ensure that the decisions made by such data analyst AI features are enough accurate to depend on, another aspect to consider is who would be liable to any loss or damage in case the AI driven Portfolio management incurred an analysis that could be amounted to be false or erroneous, resulted in a catastrophic loss of the investment in the financial market.

3.5. Sentiment Analysis:

For decades marketing experts were introduced with the concept of Sentiment analysis especially due to the fact that its application is used widely to determine consumers interests by studying the underline emotions hidden in their communication, this critically helped the marketing experts to determine the success ratio of the new product that could be introduced in the financial market for efficient profit making purpose, mitigating the risks of having a loss in the market. Thanks to the innovation of AI, the modern Sentiment analysis is now empowered by the AI driven method of natural language processing (NLP), which plays a crucial role in determining and extracting emotions and abstracts of the consumers throughout online platforms to gain favourable market trending insights and understand the actual demands of the market without any speculations.[6] Thus, it's paved ways for AI driven strategic marketing that revolutionized the marketing techniques in the ever-growing financial market.

4. Analysis

In my careful critical analysis and study, my research held the opinion that all the existing financial regulations and statutes were not implemented considering the Implications and existence of AI in such a vast scale of advancement. Since AI is a recent development in the modern industrial revolution. This significance drawback of

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[4] *Understanding AI Fraud Detection and Prevention Strategies | DigitalOcean*. (n.d.). https://www.digitalocean.com/resources/articles/ai-fraud-detection

[5] Takyar, A., & Takyar, A. (2023, December 18). *AI for portfolio management: An overview*. LeewayHertz - AI Development Company. https://www.leewayhertz.com/ai-for-portfolio-management/

[6] Braoulias, N. (2024, November 22). *What Is AI Sentiment Analysis and How You Can Use It?* Mentionlytics. https://www.mentionlytics.com/blog/ai-sentiment-analysis/

existing financial Regulations poses challenges for the regulatory authorities to regulate the presence of AI inside the sphere of today's financial Market. So that, the innovation of the advanced AI could not be abused in terms of any sort of illegal market monopoly. Thus, the careful analysis of some of the notable financial regulations from the developed countries are as following:

4.1. USA

In USA Security and Exchange commission (SEC), is a regulatory authority that is responsible to regulate the Financial Markets within the jurisdiction of USA[7]. Through my careful analysis the Dodd-Frank Act[8] which was enacted to as a counter measure against the financial instability and sought to protect tax payers and investors against any potential financial crises, however it lacks any regulatory measure to deal any risk and ethical application associated with regards to AI existence in the financial market as its provisions are not sufficient enough to deal explicitly about AI. The modern innovation of AI and introduction to the financial market may trigger another financial crisis in the stock exchanges if it's not addressed by the legislators an AI policy maker expert.

4.2. European Union:

In European union EU's Markets in Financial Instruments Directive II (MiFID II) is the organizing legislation which is exercising the regulation over financial markets of Europe in terms of the transparency and the algorithms that are being utilized in the trading through the Innovation of AI and its introduction to the European markets. Specifically, the Article 17 (Algorithm Trading) of the act proposes notable regulatory measures to deal with the high-risk AI tools and algorithms that could be used in the Fin-tech industry and the Market.[9] However, there is a need of continuous review of such legislation as with passing time the Article 17 (Algorithm Trading) might not be enough to mitigate such risks associated with the AI that is being utilized in the market. Thus, a continuous review of such legislation is crucial to keep the pace with the growing risks associated with AI.

4.3. Internationally:

In the realm of international sphere, efforts are proposed duly, and organizations are formed such as in my view Financial Stability Board (FSB)[10], which is a prominent international body which is responsible to conduct surveys in different global financial systems, and it proposes recommendations accordingly. The FSB have already issued a report recently especially *the Financial Stability Implications of Artificial Intelligence*[11], which revisits the 2017 FSB report on *AI and machine learning in*

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[7] https://www.sec.gov/

[8] H.R.4173 — 111th Congress (2009-2010) https://www.congress.gov/bill/111th-congress/house-bill/4173/text

[9] *Article 17 Algorithmic trading | European Securities and Markets Authority*. (n.d.). https://www.esma.europa.eu/publications-and-data/interactive-single-rulebook/mifid-ii/article-17-algorithmic-trading

[10] Financial Stability Board. (n.d.). *Financial Stability Board*. https://www.fsb.org/

[11] *The Financial Stability Implications of Artificial Intelligence*. (2024, November 25). Financial Stability Board. https://www.fsb.org/2024/11/the-financial-stability-implications-of-artificial-intelligence/

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financial services[12]. Thus, their recent report expresses concerns to some notable extent, especially regarding to the existing regulatory frameworks to address the vulnerabilities in the financial markets which could be triggered with implications of AI leading to potential financial crise and loss of capitals for the growing corporate bodies. It propounds for more measures and work on the development regulatory framework to deal with AI Implications and to address the growing risks associated with it. Thus, a vacuum for international cooperation needs to be addressed Aswell in order to cope with the systematic risks associated with the implication of AI in the financial market.

5. Discussion

As this revolutionary innovation of AI is emerging and is continuously on a faster pace of development, the existing regulations and policies may not be enough sufficient to deal or mitigate with the anticipated risks associated with AI. This Section Explores, brief analysis on what should be kept in consideration by the policy maker and legislators to mitigate with the anticipated risks associated with AI while drafting any legislation, to check and regulated the application AI in the financial market:

5.1. Accountability of AI?

Since AI is mode of algorithm self-sufficient and is capable of independent decision-making programming, it may make a decision that could be rational according to its programming, but it may inflict, a harm or a damage to its user or anyone associated directly or indirectly by the decision of Ai. Thus, the accountability in such a scenario of harm or mistake is questionable and the legislators must determine who to be blamed or who has the liability to compensate the aggrieved who has incurred a harm or damage, since AI itself is not a legal person and is not capable to compensate the damages or even subjected to be punished under any penal provision.

However, to address the concern of liability I believe regulations must be based on a tiered liability model[13]. In which, liability should be imposed among all the stakeholders based on their roles and responsibilities in the development of AI decision making body or that specific command of generated by the AI model.

5.2. Transparency of AI?

Considering the innovation and advancement of the technology of the AI models are mostly hard to explain considering immense structure of number of Algorithms which are being performed for its functions; thus, it could hinder and impact any procedure of determining the issue or liability within the AI model paving the way for hindering not just its transparency but also compliances and regulations, which are necessary to ensure for the safe and ethical use of AI models by the peoples,. This is also known as "black box" nature of the AI which critically raises concerns about transparency, accountability, and regulatory compliance that needs to be addressed by any legislative framework.

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[12] *Artificial intelligence and machine learning in financial services*. (2017, November 1). Financial Stability Board. https://www.fsb.org/2017/11/artificial-intelligence-and-machine-learning-in-financial-service/

[13] Buiten, Miriam. (April 2023) Volume 48, 105794, *The law and economics of AI liability* https://www.sciencedirect.com/science/article/pii/S0267364923000055

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However, the regulatory effort such as of like MiFID II (In European Union) outlines emphasizes on transparency in algorithmic trading and financial advice. Which could ensure algorithmic transparency which could comply with the law and remove any concerns about transparency.

There should be a push for Explainable AI (XAI),[14]which purpose should be to make the complex structure of AI and its decision making to be interpreted by the humans, which may address concern related to the transparency of AI and its legal implications.

5.3. Discrimination and biasness by AI?

AI is being trained by immense data to make Automated decisions through Machine learning method. Considering this, the odds of discrimination might be greater considering that the data used to train AI could unjustifiably be biased to certain group of people due to the past biasness and discrimination on any ground[15]. In such scenario the biasness of AI is questionable.

However, legislative efforts should be reviewed carefully with the same pace as the AI is being updated continuously, and the legislation and policy makers should clearly provide clear framework of the measures to take before the training of the AI bodies which are ought to be used especially in credit assessments in the specific sphere of Fin-tech Industry. A proper framework of Annual Audit of AI should be encouraged to be introduced, for the AI models by their Institutions to mitigate biasness and identify discriminatory approaches.

6. Conclusion

To conclude this, AI adaptation in in financial market should be assessed with careful precision as it should be regulated with duly regulated legal framework to prevent any abuse of AI. However, the regulatory measures must be established in such a way that it promotes the innovation of artificial intelligence in market and not to discourage its innovation that might prevent AI from achieving its best limit to assist the financial market for the better welfare of the Financial Market. However, for market stability we must reconsider the 2010 "Flash Crash," which was caused by algorithmic trading,[16] to mitigate with such financial scenario regulators must encourage the use of real time surveillance of AI empowered trading algorithms. This approach is essential especially for the imposition of "circuit breakers" which can cease all the trading in the market during such extreme incident or volatility. Lastly, a global cooperation is necessary to ensure cooperation considering the scope of financial market which is now international due to globalization.

7. References

A. Dhir, R. (2022, January 13). *Pump-and-Dump: Definition, How the Scheme is Illegal, and Types*. Investopedia.https://www.investopedia.com/terms/p/pumpanddump.asp

[14] IBM. *What is explainable AI?* https://www.ibm.com/topics/explainable-ai

[15] IBM. *Shedding light on AI bias with real world examples.* https://www.ibm.com/think/topics/shedding-light-on-ai-bias-with-real-world-examples

[16] Team, C. (2023, December 21). *2010 Flash Crash*. Corporate Finance Institute. https://corporatefinanceinstitute.com/resources/equities/2010-flash-crash/

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Vol.03 No.03 (2025)

B. Team, I. (2024, June 5). *Intrinsic Value Defined and How It's Determined in Investing and Business*. Investopedia.https://www.investopedia.com/terms/i/intrinsicvalue.asp#:~:text=and%20growth%20potential.-,What%20Is%20Intrinsic%20Value%3F,market%20price%20of%20an%20asset.

C. LatentView, T. (2024, July 10). *AI Credit Scoring: The Future of Credit Risk Assessment*. LatentView Analytics. https://www.latentview.com/blog/ai-credit-scoring-the-future-of-credit-risk-assessment/

D. *Understanding AI Fraud Detection and Prevention Strategies | DigitalOcean*. https://www.digitalocean.com/resources/articles/ai-fraud-detection

E. Takyar, A., & Takyar, A. (2023, December 18). *AI for portfolio management: An overview*. LeewayHertz - AI Development Company. https://www.leewayhertz.com/ai-for-portfolio-management/

F. Braoulias, N. (2024, November 22). *What Is AI Sentiment Analysis and How You Can Use It?* Mentionlytics. https://www.mentionlytics.com/blog/ai-sentiment-analysis/

G. https://www.sec.gov/

H. H.R.4173 — 111th Congress (2009-2010) https://www.congress.gov/bill/111th-congress/house-bill/4173/text/

I. *Article 17 Algorithmic trading | European Securities and Markets Authority*. https://www.esma.europa.eu/publications-and-data/interactive-single-rulebook/mifid-ii/article-17-algorithmic-trading

J. Financial Stability Board. (n.d.). *Financial Stability Board*. https://www.fsb.org/

K. *The Financial Stability Implications of Artificial Intelligence*. (2024, November 25). Financial Stability Board. https://www.fsb.org/2024/11/the-financial-stability-implications-of-artificial-intelligence/

L. *Artificial intelligence and machine learning in financial services*. (2017, November 1). Financial Stability Board. https://www.fsb.org/2017/11/artificial-intelligence-and-machine-learning-in-financial-service/

M. Buiten, Miriam. (April 2023) Volume 48, 105794, *The law and economics of AI liability* https://www.sciencedirect.com/science/article/pii/S0267364923000055/

N. IBM. *What is explainable AI?* https://www.ibm.com/topics/explainable-ai/

O. IBM. *Shedding light on AI bias with real world examples.* https://www.ibm.com/think/topics/shedding-light-on-ai-bias-with-real-world-examples

P. Team, C. (2023, December 21). *2010 Flash Crash*. Corporate Finance Institute. https://corporatefinanceinstitute.com/resources/equities/2010-flash-crash/