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AI Bias in Financial Decision-Making in Assets and People

Author's Note

Throughout this research process, I wanted to initially combine my two main interests: AI and Finance. At first, I was going to focus on how AI can affect the financial planning and analysis field. Searching key words and phrases 'AI bias in finance' and 'AI impact on US market,' I found new information about how minority groups may be affected on a larger scale such as in stock markets. The business field includes various focus such as corporate finance, investment banking, and asset management. I have always had an interest in investments, stocks, and asset management; therefore, I took this opportunity to learn more about the field on a larger global scale. However, one of the complications was I had no background in AI or computer science in the science field, so I had to first gain an understanding of how machine learning algorithms worked. I was at a crossroad where I could either aim to focus on finding solutions in the inner development of AI or structured regulations in the business/political field. I decided to merge them both but focus more on the business field with background support of AI information.

Problem Statement

The development of AI integrated into our daily lives increased efficiency and helped the economy prosper. Currently, AI impacts all industries including the market, politics, and economy. However, the lack of transparency and knowledge of AI inner workings have caused bias against underrepresented communities and assets. This includes skewed-investment decisions towards dominant corporations and causes inequality and ethical concerns. The goal of U.S. economy and its investment decisions is to achieve stable economic growth while maintaining equity for individuals. This review is to synthesize the infrastructure necessary within the model to develop an equitable and ethical development in AI while fostering economic growth. Going further, it is important to conceptualize factors in the political field, such as AI manipulation by the connections to the higher positions in the government to work in the favor of the dominant groups.

Overview of Source

On Northeastern University's ScholarOne Search, I have reviewed nine articles within the timeframe range from 2022 to 2024. The focus of my topic, Artificial intelligence (AI), is a complex-computing system that uses machine learning algorithms; therefore, I wanted to understand the inner workings of machine learning in the scientific research field. On the other hand, I wanted to understand the negative impacts on the financial market within the business and economic field, while getting new insights about the types of regulations that could be implemented. Most of the sources are peer-reviewed: two were academic/research-based scientific journals and six were narrative/literature reviews. All the sources were written by authors who have published in different platforms with a high degree of education and abundant knowledge in AI, data science, business and analytics, corporate governance, law, etc. The

credibility and reliability of the research from recent findings provided a comprehensive view of the research problem.

Qualitative Research

Both the scientific journal articles and narrative/literature reviews consisted of a lot of qualitative data providing the structure and benefits of the business process from AI bias. In 2022, Brotcke, L. explains in-depth about the data analytics technique behind AI and machine learning. This one of the tougher articles to interpret, it goes step-by-step process of the design of study and sample studies. In 2024, Alvarez, J. M., Colmenarejo, A. B., and Elobaid A. presented a diagram of the "NoBIAS architecture integrates the components necessary to understand, mitigate, and account for bias, addressing the whole AI-System decision-making pipeline." This was an innovation program and methods for AI-based decision making to prevent bias. This visual provided the components of the inner workings of simplified AI machine learning to help visualize the internal layers of the system and find the core problems of AI development.

Quantitative Research

In 2024, Neal, M., Young, C., and Zhu, L. explained "7.3% of majority-Black neighborhoods in the United States were gentrified in 2018, which is almost five times the share of majority-White neighborhoods that were gentrified." These quantifiable numbers with percentages of underrepresented population showed the significant negative impact minorities were facing from AI bias. In 2022, Svetlova, E. explained "most important world indices dropped by 12-13%, including Dow Jones Industrial Average," as the COVID-19 pandemic heightened. This showed that lack of transparency of AI can lead to crashes in the financial markets, disrupting the global economy as a whole.

Variances

While I aimed to focus on AI effects in the United States, my goal for this literature review was to execute an accurate foresight of how neglection of certain assets can lead to decline of the economic health in a global scale. In 2024, Lai, C., Li, Q., & Wang, J. provided the AI effects on institutions in different regions such as China, Spain, etc. This research helped me understand the imbalance regulatory environment and the results of weak regulatory oversight can lead to. The explanation of what kinds of regulations and policies other countries have structured helped me synthesize what the solutions are to the core problem of AI bias. In addition, instead of just focusing on the financial sector, I researched different sectors that are impacted by AI bias as well. For example, AI-based recommendations are implemented for home valuations, HR recruitment, and even criminal justice (Dennehy, D., Gupta, M., & Parra, C.M., 2022). This provided me a holistic understanding of how different areas are impacted by AI bias, resulting in injustice such as favoring male over female in recruiting process.

Lastly, to conceptualize and bridge the possible gap between political connections and AI bias, Lai, C., Li, Q., & Wang, J. also clarified how political connections and favorability towards big corporate decisions in China are apparent. The lack of connection to the wealthy and dominant group can lead to the vulnerability of manipulation and fraud. This helped me conceptualize a new perspective of the virtuous cycle of big corporations creating inequality.

The findings revealed that AI is a very broad concept that impacts across industries with significant impact. There are various components that lead to AI bias such as the historical data the machine learning relies on or the lack of support from the Government to set up clear regulations in some regions. Further research will help understand the necessary steps needed to be taken to achieve the full potential of AI in promoting equity in financial systems.

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