

Artificial Intelligence in Finance: Examining the Impact of AI Tools on Portfolio Diversification in Emerging Markets

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Sample Size: 50

Analysis Tool: Percentage Analysis, Mean Analysis, Graphical Representation

ABSTRACT

Traditional portfolio management techniques have changed as a result of artificial intelligence (AI) being incorporated into financial markets, especially in emerging nations where information asymmetry and volatility are prevalent. The effect of AI technologies on portfolio diversification in emerging markets is investigated empirically in this study.

A descriptive and quantitative research design was used in the study. 50 respondents provided primary data using a standardized questionnaire that was disseminated using Google Forms. Investor awareness, uptake, and perceived efficacy of AI tools in risk assessment, diversification, and asset allocation were assessed by the questionnaire. Techniques for graphical depiction, mean score interpretation, and percentage analysis were used to examine the gathered data.

The results show that while there is a moderate level of awareness of AI capabilities, there is still little active reliance on AI for diversification decisions. Nonetheless, investors that employ AI-based tools report being able to identify non-correlated assets more easily and assessing risk more effectively. The report emphasizes that although AI technologies are still in the early stages of adoption in emerging economies, they have a favorable impact on portfolio diversification.

Keywords: Robo-Advisors, Emerging Markets, Portfolio Diversification, Artificial Intelligence, Asset Allocation, and Risk Management

INTRODUCTION

Diversification is emphasized as a way to lower unsystematic risk in traditional portfolio management theories, especially Modern Portfolio Theory (MPT). However, significant volatility, a lack of transparency, and structural inefficiencies frequently make classic diversification strategies less successful in emerging economies.

Artificial Intelligence's (AI) quick development has opened up new avenues for financial decision-making. Investors may analyze big datasets, find asset correlations, and optimize portfolio allocation with the use of AI-powered technologies like robo-advisors, algorithmic trading platforms, predictive analytics models, and AI-driven stock screeners.

Fintech adoption is rising in emerging nations including South Africa, Brazil, and India. But little is known about how much AI tools actually improve diversification methods. As a result, this study looks into how AI tools affect judgments about asset allocation, risk management, and portfolio diversification in emerging market environments.

LITERATURE REVIEW

Harry Markowitz (1952) laid the groundwork for portfolio diversification by introducing Modern Portfolio Theory (MPT), which emphasizes asset diversity as a means of optimizing risk-return. Modern financial markets demand dynamic analytical models, whereas MPT mostly depends on historical correlations.

According to Gu Shihao, Bryan Kelly, and Dacheng Xiu (2020), machine learning methods are more effective than conventional asset pricing models at forecasting returns, which enhances portfolio development tactics.

In comparison to traditional econometric models, Christian Krauss et al. (2017) shown that deep learning methods, such neural networks, greatly improve stock return forecasts.

After investigating deep learning applications in asset pricing, Leonid Chen, Markus Pelger, and Jason Zhu (2019) came to the conclusion that AI can identify nonlinear patterns that conventional diversification models can miss.

Additionally, by automating portfolio allocation and rebalancing choices, robo-advisory systems have been demonstrated to increase diversification among individual investors.

Despite these developments, there is still little empirical data regarding AI's application in developing nations. By employing structured statistical interpretation, this work seeks to close that gap.

RESEARCH METHODOLOGY

Research Design

The study investigates the connection between AI deployment and portfolio diversification effectiveness using a descriptive and quantitative research methodology.

Data Collection

A structured questionnaire disseminated via Google Forms was used to gather primary data. The survey included Likert-scale items that evaluated:

1. Knowledge of AI tools
2. AI usage frequency
3. AI dependence for diversification
4. Effects on risk control
5. Increased perceived diversification of the portfolio

Books, journals, research papers, and financial reports were the sources of secondary data.

Sample Size

Convenience sampling was employed. Fifty respondents, including both financial specialists and retail investors, made up the final sample.

Tools Used for Analysis

The following tools were utilized as SPSS was not utilized:

1. Analysis of Percentages
2. Comparative Evaluation
3. Visual Representation

DATA ANALYSIS AND RESULTS

Awareness and Acceptance

The results show that respondents' awareness of AI tools is moderate. But over half said they used AI-based portfolio management tools little or never at all. This implies a discrepancy between awareness and actual application.

Effects on Diversification

After utilizing AI tools, several respondents said their portfolio diversification has improved slightly to moderately. But a sizable portion reported no notable change, suggesting that emerging markets are still in the early stages of AI adoption.

Evaluation of Risk and Correlation of Assets

According to mean score analysis, respondents are somewhat in agreement that AI technologies enhance risk estimation and assist in identifying non-correlated assets. Although AI is acknowledged for its analytical powers, its use is still restricted.

Usage Frequency

When making investing decisions, most respondents use AI infrequently rather than frequently. This suggests that rather than being the main mechanisms for managing portfolios, AI tools serve more as auxiliary decision-support systems.

DISCUSSION

The findings suggest that, in emerging markets, AI tools have a beneficial but developing impact on portfolio diversification. AI is seen by investors as having strong analytical capabilities, especially when it comes to finding correlations and evaluating risk. However, its quantifiable impact is constrained by low adoption.

According to the study, AI is now employed more for information collecting than for automatically building portfolios. This phase of transition implies that investors continue to rely on conventional judgment-based decision-making even though they have faith in AI's analytical capabilities.

Adoption rates may also be impacted by moderate levels of digital literacy, limited expertise, and infrastructure limitations. As a result, AI's influence on diversification is currently incremental rather than revolutionary.

CONCLUSION

Although the impact is still modest, this study offers empirical evidence that artificial intelligence technologies have a positive impact on portfolio diversification in emerging economies.

Better asset allocation decisions are supported by AI, which also increases risk estimate and the identification of non-correlated assets. Low reliance and sparse frequent use, however, suggest that AI has not yet completely changed emerging economies' approaches to portfolio management.

According to the findings, AI is probably going to play a bigger role in portfolio diversification techniques as digital infrastructure advances and investor awareness rises.

To further assess AI's long-term effects, future research may include larger sample sizes, comparative studies across several growing markets, and sophisticated statistical modeling tools.

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