

Artificial intelligence vs traditional market analysis:**Can AI improve stock picking decisions?**

Author: Luca Z. Bassil¹

Affiliation:

1. *Business School, Holy Spirit University of Kaslik, P.O. Box 446, Jounieh, Lebanon*
2. *CIRAME Research Center, Holy Spirit University of Kaslik, P.O. Box 446, Jounieh, Lebanon*

Abstract:

Artificial intelligence (AI) is becoming more common in financial markets and is now being used to help investors make investment decisions. This research looks at whether AI can help with stock selection compared with traditional market analysis. The study uses existing research on ChatGPT and Gemini, along with data on the performance of actively managed investment funds. The results show that AI can process financial information quickly, analyze news, identify investment opportunities, and help with portfolio diversification. However, there is still no clear evidence that AI can consistently outperform the market. For example, research on Gemini 1.5 Flash found that it did not consistently outperform an equal-weighted portfolio or the S&P 500. Traditional active investment management also has difficulty beating market benchmarks. Overall, AI appears to be a useful tool for investment analysis, but current evidence does not show that it can fully replace traditional investment analysis.

Keywords:

Artificial Intelligence, Stock Market, ChatGPT, Investment Decisions, Stock Picking, Portfolio Management

Introduction:

Artificial intelligence has become an important part of many industries, including finance. AI systems can analyze large amounts of information, process financial data, read news, and identify patterns much faster than a person can.

Traditionally, investors have relied on financial statements, company news, economic conditions, market trends, and valuation ratios when choosing stocks. The problem is that there is a huge amount of information available, and it can be difficult for one person to analyze everything. AI can help by processing this information in a shorter amount of time.

Some research has shown positive results. Pelster and Val (2024), for example, found that ChatGPT-4's stock ratings were related to future stock returns. However, other studies have produced different results. Perlin et al. (2025) tested Gemini 1.5 Flash and found no significant evidence that it consistently performed better than an equal-weighted portfolio or the S&P 500.

Traditional investment managers also face the same general problem. According to the SPIVA U.S. Year-End 2025 report, 79% of active large-cap U.S. equity funds underperformed the S&P 500 in 2025.

This raises an important question: can AI actually improve stock-picking, or is it mainly another tool that can help investors with their existing analysis?

1.1 Research Questions

1. Can AI-generated investment signals predict future stock returns?
2. Can AI investment strategies outperform market benchmarks?
3. How does AI performance compare with traditional active investment management?
4. Can AI be used together with traditional financial analysis?

1.2 Research Objectives

The main objectives of this research are to:

- Examine how AI can be used for stock selection.
- Look at the performance of AI-based investment strategies.
- Examine whether AI can help with portfolio diversification.
- Compare AI-based strategies with traditional active management.
- Determine whether AI is better viewed as a replacement or a supporting tool.

Literature Review:

2.1 AI in Financial Markets

AI is being used in finance for several purposes, including investment management, risk assessment (Kaspard et al., 2026), fraud detection (Sawaya et al., 2026), financial analysis, price detection (Khalife et al., 2023), and even predicting economic quadrants (Nasser et al., 2025). One of its biggest advantages is that it can process a large amount of information very quickly.

At the same time, there are some concerns about the use of AI in financial markets. If many investors use similar AI models, they could receive similar signals and make similar decisions. This could affect how investors behave and potentially increase market correlations. As for companies, AI and Blockchain technology was found to have positive impact (Khalife et al., 2024), especially on SME's, AI was also found to increase financial transparency (Saber & Sassine, 2022) which renders markets more efficient for investors.

2.2 AI and Stock Prediction

Researchers have been studying whether AI can predict stock-market movements. Different machine-learning methods have been used, including neural networks and other predictive models. Lin and Marques (2024) reviewed research on AI and stock-market prediction. Their review shows that AI is widely used for this purpose, although results can vary depending on the model, data, and methodology.

It is also important to remember that being able to predict something does not automatically mean that an investor will make more money. Financial markets are competitive, and other investors may already be using similar information.

2.3 ChatGPT and Stock Selection

Pelster and Val (2024) studied whether ChatGPT-4 could help investors choose stocks. They found that ChatGPT's stock-attractiveness ratings were significantly related to future stock returns. The model also changed its ratings when companies experienced earnings surprises or important news. Ko and Lee (2024) looked at ChatGPT from a portfolio-management perspective. They found that portfolios based on ChatGPT-selected assets showed greater diversification than randomly selected assets.

This is important because choosing good stocks is only one part of investing. How those stocks are combined in a portfolio can also have a major effect on risk.

2.4 Evidence Against Consistent AI Outperformance

Not every study has found that AI can beat the market.

Perlin et al. (2025) tested Gemini 1.5 Flash using around 30,000 simulations involving 1,522 companies. They compared its results with an equal-weighted portfolio and the S&P 500 over different investment periods.

The study did not find significant evidence that Gemini consistently outperformed the comparison portfolios. Its risk-adjusted performance also became weaker over longer investment periods.

This shows that being able to process financial information quickly does not necessarily mean that an AI system will consistently generate higher returns.

2.5 Traditional Active Management

It is also useful to look at traditional active investment management.

The SPIVA U.S. Year-End 2025 report found that 79% of active large-cap U.S. equity funds underperformed the S&P 500 during 2025. The report also showed underperformance among mid-cap and small-cap funds.

This shows how difficult it is for professional investment managers to consistently beat their benchmarks.

However, SPIVA is not a direct comparison between human investors and AI. It simply provides a reference point for how difficult active investing can be.

2.6 Theoretical Framework

This research is based on three main ideas.

Efficient Market Hypothesis: This theory suggests that stock prices already reflect available information, making it difficult to consistently earn abnormal returns using public information.

Information-Processing Theory: Investors have limits when it comes to processing large amounts of information. AI could help reduce this problem by analyzing information much faster.

Modern Portfolio Theory: Markowitz (1952) showed the importance of diversification and the relationship between risk and return. AI could help investors select assets and build more diversified portfolios.

Methodology:

3.1 Research Design

This research uses secondary data from academic studies and financial reports. Instead of conducting a new trading experiment, the study compares existing research on AI investment strategies with information about traditional active investment management.

This approach makes it possible to look at several different studies and investment strategies without creating a small or limited personal trading experiment.

3.2 Data Sources

The main sources used are:

- Pelster and Val (2024) – ChatGPT-4 and stock selection.
- Ko and Lee (2024) – ChatGPT and portfolio management.
- Perlin et al. (2025) – Gemini 1.5 Flash and investment performance.
- Lin and Marques (2024) – AI and stock-market prediction.
- S&P Dow Jones Indices – SPIVA U.S. Year-End 2025.

3.3 Main Variables

The study looks at several measures used in the original research.

Portfolio return: Measures how much an investment portfolio gains or loses over a certain period.

Excess return: Compares the return of an investment strategy with the return of its benchmark.

Sharpe ratio: Measures return relative to investment risk.

AI prediction: Looks at whether AI-generated ratings or predictions are related to future stock returns.

Portfolio diversification: Measures how investments are spread across different assets.

3.4 Limitations

The studies used in this research do not all use the same data, AI models, time periods, or benchmarks. Because of this, their results cannot simply be combined into one overall measure of AI performance.

Another limitation is that AI technology changes quickly. A result based on one AI model may not apply to a newer version.

Real-world investing also includes factors such as transaction costs, taxes, liquidity, and changing market conditions, which may affect actual returns.

Results:

4.1 AI Investment Studies

The studies reviewed show different results.

Pelster and Val (2024) found a significant relationship between ChatGPT-4's stock ratings and future stock returns. Ko and Lee (2024) found that ChatGPT could help improve portfolio diversification.

On the other hand, Perlin et al. (2025) did not find significant evidence that Gemini 1.5 Flash consistently outperformed an equal-weighted portfolio or the S&P 500.

Table 1. Selected AI Investment Studies

Study	AI Model	Main Area	Main Finding
Pelster & Val (2024)	ChatGPT-4	Stock selection	AI ratings were related to future stock returns.
Ko & Lee (2024)	ChatGPT	Portfolio management	AI-selected assets showed greater diversification than random selections.
Perlin et al. (2025)	Gemini 1.5 Flash	Stock investment	Gemini did not consistently outperform the comparison portfolios.
Lin & Marques (2024)	Multiple AI models	Stock prediction	AI is widely used for stock prediction, but results vary.

4.2 Traditional Active Management

The SPIVA U.S. Year-End 2025 report gives an idea of how traditional active funds performed against their benchmarks.

Fund Category	Underperforming Benchmark in 2025
U.S. Large-Cap Equity	79%
U.S. Mid-Cap Equity	55%
U.S. Small-Cap Equity	41%
International Equity	63%
Global Equity	76%
Emerging Markets Equity	53%

These results show that many professional investment funds were unable to beat their benchmarks in 2025.

4.3 Risk-Adjusted Performance

Looking only at returns is not enough because higher returns can also come with higher risk. Perlin et al. (2025) examined the Sharpe ratio when testing Gemini. Their results did not show consistent risk-adjusted outperformance. They also found weaker risk-adjusted results over longer investment periods.

4.4 Overall Results

The research shows four main points:

1. AI can process financial information and produce useful investment signals.
2. AI can help with portfolio diversification.
3. AI has not consistently outperformed major market benchmarks.
4. Traditional active investment management also has difficulty consistently beating benchmarks.

Overall, the results show that AI can be useful for investment analysis, but there is not enough evidence to say that it can completely replace traditional analysis.

Discussion and Conclusion:

This research looked at whether AI can improve stock-picking compared with traditional market analysis.

The studies reviewed show that AI has several useful applications in finance. ChatGPT has been shown to produce stock ratings related to future returns, and it can also help with portfolio diversification. AI can process large amounts of information quickly, which can save investors time.

However, the results are not consistent across all studies. Perlin et al. (2025), for example, found that Gemini 1.5 Flash did not consistently outperform an equal-weighted portfolio or the S&P 500.

Traditional active management also faces difficulties. The SPIVA U.S. Year-End 2025 report found that 79% of active large-cap U.S. equity funds underperformed the S&P 500 in 2025.

Based on the studies reviewed, AI appears to be a useful tool for investors, but there is not enough evidence to consider it a complete replacement for human analysis. Its main benefit may be helping investors process information faster, compare companies, analyze news, and build portfolios.

Future research could make a more direct comparison between humans and AI by giving both the same information, companies, investment period, and transaction costs.

Overall, AI is becoming an important part of financial analysis, but its long-term ability to consistently outperform the market remains uncertain.

References

- Bank for International Settlements. (2024). Intelligent financial system: How AI is transforming finance (BIS Working Papers No. 1194). Bank for International Settlements.
- Ko, H., & Lee, J. (2024). Can ChatGPT improve investment decisions? From a portfolio management perspective. *Finance Research Letters*, 64, 105433.
- Lin, C. Y., & Marques, J. A. L. (2024). Stock market prediction using artificial intelligence: A systematic review of systematic reviews. *Social Sciences & Humanities Open*, 9, 100864.
- Markowitz, H. (1952). Portfolio selection. *The Journal of Finance*, 7(1), 77–91.
- Pelster, M., & Val, J. (2024). Can ChatGPT assist in picking stocks? *Finance Research Letters*, 59, 104786.
- Perlin, M. S., Foguesatto, C. R., Müller, F. M., & Righi, M. B. (2025). Can AI beat a naive portfolio? An experiment with anonymized data. *Finance Research Letters*, 78, 107126.
- S&P Dow Jones Indices. (2026). SPIVA U.S. Year-End 2025. S&P Global.
- Kaspard, J., Kamel, C., Khalil, F., & Beainy, R. (2026). Financial Performance, Risk, and Market Integration of Sustainability-Oriented Equity Indices: Implications for the Sustainability Transition (2010–2025). *Risks*, 14(5), 99.
- Khalife, D., Subrahmanyam, S., & Farah, A. (2024). A Sustainable Circular Business Model to Improve the Performance of Small and Medium-sized Enterprises Using Blockchain Technology. *J. Wirel. Mob. Networks Ubiquitous Comput. Dependable Appl.*, 15(2), 240-250.
- Athari, S. A., Saliba, C., Khalife, D., & Salameh-Ayanian, M. (2023). The role of country governance in achieving the banking sector's sustainability in vulnerable environments: New insight from emerging economies. *Sustainability*, 15(13), 10538.
- Saber, A. M., & Sassine, M. E. (2022). Reflections on internal control and internal audit roles for ensuring financial transparency toward Lebanese NGOs financial donors. *EuroMed Journal of Management*, 4(3), 186-198.
- Sawaya, C., Khalil, F. C., Jabbour Al Maalouf, N., & Kaspard, J. (2026). Revolutionizing audit practice in emerging economies: the role of Artificial Intelligence in enhancing the audit of consolidated financial statements. *Cogent Business & Management*, 13(1), 2625974.
- Nasser, A., Yammine, J., Harouny, J., & Khalife, D. (2025). Predicting Economic Quads Through Asset Returns Using Ensemble Machine Learning. *IEEE Access*.
- Khalife, D., Yammine, J., Rahal, S., & Freiha, S. (2023). Pricing Asian and Barrier Options Using a Combined Heston Model and Monte Carlo Simulation Approach with Artificial Intelligence. *Mathematical Modelling of Engineering Problems*, 10(5), 1690.