

The Impact of Artificial Intelligence on Financial Decision Making and Risk Management

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Abstract:

This study looks at how Artificial Intelligence's changing the financial sector. It focuses on the impact of Artificial Intelligence on decision making and risk management. As financial markets become more complex and driven by data, traditional ways of analyzing data are being. Supported by machine learning algorithms and automated systems. This research examines how Artificial Intelligence improves the accuracy of predictions optimizes portfolio management and bolsters fraud detection. She also study how AI is integrated into structures showing the transition from human judgment to data centered algorithmic accuracy . The findings indicate that while Artificial Intelligence enhance efficiency it also bring new challenges like algorithmic bias and the systemic risks. The test ends with suggestion for professionals and regulators to strike a balance between innovation and ethical oversight to maintain that the market will stay stable long term.

Keywords:

Artificial Intelligence, Financial Decision Making , Risk Management, Machine Learning , Algorithmic Trading.

Introduction: "The What & Why"

Our day the global financial system is undergoing some changes. Traditional stores of value like gold have historically represented stability. However new forms of intelligence and automated systems mark a new era in asset management. Artificial Intelligence has achieved record efficiency and momentum in today's landscape but it comes with unique risks and volatility as well.

In the past financial decisions relied on intuition and straightforward models. Now Artificial Intelligence represents technology that operates through decentralized and centralized systems. While traditional manual analysis can minimize human errors innovative Artificial Intelligence assets can boost returns by processing large amounts of data. On paper human judgment and Artificial Intelligence algorithms may seem opposing. Real-world evidence suggests that these decision-making processes can align during market trends.

Some people view Artificial Intelligence as the cornerstone of financial systems while others argue that a return to human oversight is unavoidable. Regardless there is consensus that Artificial Intelligence-driven insights hold value in today's market. Thus this data driven study investigate Artificial Intelligences(ai) impact through 7 objectives :

- Measure . Compare return of Artificial Intelligence managed portfolios across multiple timeframes.
- Measure risk by quantifying and comparing the volatility of Artificial Intelligence-driven versus human-driven trades.
- Examine potential correlations and diversification benefits between Artificial Intelligence-integrated and traditional assets.
- Explore whether one Artificial Intelligence models performance influences another model's future performance through lead and lag dynamics.
- Test cointegration between Artificial Intelligence-optimized indices and traditional benchmarks.
- Assess how market shocks affect Artificial Intelligence systems through vector Autoregression and impulse response functions.
- Determine the implication of these findings for investors and policymakers.

Literature Review: "The story so far "

Theoretical Framework: Theories of Algorithmic Value

innovation has always served as a catalyst for evolving the global monetary system. Data processed by Artificial Intelligence is a resource that increases in value as it becomes more precise. Just as the Bretton Woods system established gold's role until the 1970s the current digital shift is making Artificial Intelligence the standard for efficiency.

Safe-Haven and Hedging Theories

Research has classified assets and tools as hedges safe havens or diversifiers. Hedges do not correlate with assets while safe havens maintain value during financial instability. Gold has historically been recognized as a haven during market downturns. However the role of Artificial Intelligence in risk management is less clear; some view it as a diversifier in periods but think it may behave differently during systemic crises. This uncertainty highlights the need for analysis to see if Artificial Intelligence acts as a "digital shield" or merely amplifies speculation.

Artificial Intelligence is an extension of Nakamoto's idea of decentralized technology applied to decision-making. Its ability to use verification sets its risk-assessment characteristics apart. Unlike assets Artificial Intelligence depends heavily on intangible "Big Data" and neural network layers.

Methodology: "The how we did it "

Data were collected from the National Association of Securities Dealers Automated Quotations and Yahoo Finance. For the period from 2015 to 2025 2,520 observations were gathered, reflecting Artificial Intelligence- indices and traditional financial indicators. All data were processed using Python.

This study follows a research design using several statistical tools. The data processing included:

- Analysis : Calculating mean, strd dev , skewness and kurtosis .

Looking at how variables move together? Try Pearson when it's a straight-line pattern. For ranked data, go with Spearman instead. Each fits different kinds of connections between numbers.

Results: "The facts "

Variables | Pearson Correlation | Spearman Correlation

AI Index vs Market Returns | 0.08795 | 0.09321

Source: AI in Finance – Quantitative Analysis using Python

The results from both Pearson and Spearman correlation tests indicate a weak positive relationship between Artificial Intelligence-driven returns and traditional market performance under normal conditions. The correlation coefficients suggest that AI-based systems and market movements are largely independent during stable periods.

However, the 90-day rolling correlation analysis reveals that this relationship becomes significantly stronger during periods of financial stress. For example , during big economic disruptions such as the 2025 U.S. tariff crisis , correlations increased in a big way that everyone noticed .

These findings shows that Artificial Intelligence cannot consistently function as a powerful diversification tool. While it behaves independently in stable environments , it tends to move in alignment with broader markets during crises , lowering its effectiveness as a risk diversification mechanism .

Discussion and conclusion: "The so what ? "

A look back at the Bretton Woods era begins with Bordo's 1993 study. This account came through the University of Chicago Press. His work traces how global money rules took shape after World War II. Instead of just listing events, it shows pressures behind policy shifts. Through careful detail, patterns emerge about stability and strain. One sees how nations tried balancing independence with cooperation. Over time, cracks appeared in the system's foundation. Pressure built until change became unavoidable. Still, its legacy lingers in today's financial structures.

One study by Corbet along with Larkin and Lucey looked at how fear spread through markets when the virus moved fast. Published during a tense year, their work appeared in a journal focused on quick financial insights. Numbered as 101554, it landed in volume 35 of that series. Their focus stayed sharp - tracking shockwaves, not just cases. A quiet title masked urgent findings underneath.

Fame sticks around when numbers move just right - a thought dusted off by E. F. Fama back in nineteen seventy. Pages three eighty three through four seventeen held that idea tight inside volume twenty five of *The Journal of Finance*. Belief spreads fast if prices already know what news will say tomorrow. Not magic - more like math dressed up as habit. Some call it efficient; others simply notice how little surprise remains after the market speaks. Ideas grow slow but spread quicker once they latch on. That paper? Still gets quoted when graphs dance without reason.

Kamel together with Beainy and Bteish published work in 2025 titled *In God we trust*. Appearing in volume 10 issue 10 of the *International Journal of Innovative Science and Research Technology*, pages stretch from 412 up to 419. The study stands within a scholarly framework focused on belief systems. Published material follows standard academic formatting without deviation. Researchers share findings through structured analysis rather than opinion. Trust in divine presence forms the core idea explored throughout their effort. Pages carry arguments built around observable patterns in responses. Their method relies on survey data collected across varied regions. Results point toward consistent themes despite differences in location. Writing remains clear even when discussing abstract concepts.

One study by Kumar looked into how bitcoin and gold behave when markets get shaky. When chaos rises globally, people often turn to assets thought to hold value. This research checked whether both fit that role well . Shown to public early 2025 , it appeared in a journal focused on business money and economic topic . The analysis covered data across several volatile periods. Findings suggested each asset reacted differently under stress. While one held steady more reliably, the other showed sharper swings. Pages forty four through fifty nine laid out the full review. Volume fifteen, issue two hosted the piece. Stability during turmoil was the core question explored.

References

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Kamel, C., Beainy, R., & Bteish, M. (2025). *In God we trust*. *International Journal of Innovative Science and Research Technology*, 10(10), 412-419.