

# Artificial Intelligence as a Strategic Decision Support Tool: Toward Optimizing Financial Decision-Making Models under Uncertainty

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## Abstract

Artificial intelligence (AI) is reshaping financial decision-making processes by enhancing analytical precision, reducing uncertainty, and enabling data-driven strategies. This research proposes an AI-driven strategic decision-support framework to optimize financial decision models in complex, uncertain environments. The framework integrates predictive analytics and optimization algorithms to help financial managers and policymakers improve investment decisions, risk assessment, and resource allocation.

Building on decision-engineering principles, the study conceptualizes a hybrid model combining elements of machine learning, data analytics, and cognitive decision theory to strengthen the robustness and adaptability of strategic financial decisions. The proposed approach is structured to accommodate dynamic financial and market data, allowing for continuous improvement of forecasts and decision outcomes as new information becomes available.

Preliminary results suggest that AI-enhanced decision frameworks can improve forecasting reliability and strategic responsiveness, particularly in contexts characterized by volatility and incomplete information. This research contributes to the growing body of work at the intersection of artificial intelligence and financial management, offering both theoretical and practical insights for the design of intelligent financial systems. This conceptual study also lays the groundwork for a forthcoming empirical validation using financial datasets to evaluate the framework's robustness and adaptability.

**Keywords:** Artificial Intelligence; Decision-Making; Financial Models; Strategic Optimization; Fintech