Summary of "The Role of Artificial Intelligence in Finance: A Selective Review and Implications for Asia's Financial Stability"

Artificial intelligence (AI) is fundamentally altering the landscape of global finance. By seamlessly integrating predictive analytics with sophisticated automation, it has unlocked new frontiers in data-driven decision-making that were once considered futuristic. "The Role of Artificial Intelligence in Finance: A Selective Review and Implications for Asia's Financial Stability" and its accompanying Appendix present a systematic, data-driven exploration of 249 peer-reviewed studies published between 1990 and 2025. This synthesis examines how AI has revolutionized asset pricing and portfolio management, financial markets and institutions, and corporate finance and governance—culminating in an assessment of its implications for financial stability in Asia. The literature review's dual focus—on empirical applications and systemic consequences—provides both breadth and depth, offering a panoramic view of AI's current and future role in finance.

Research Scope and Methodology

We employ a quantitative bibliometric and qualitative literature review approach. Using the *Academic Journal Guide* of the United Kingdom's Association of Business Schools, we selected top-tier journals to ensure academic rigor.[16] Search terms were derived from 28 AI-related keywords (e.g., machine learning, neural networks, generative AI, natural language processing [NLP], and explainable AI) and 48 finance-related terms (e.g., asset pricing, corporate governance, systemic risk, credit scoring, and volatility forecasting).

From 94 sources, we identified 249 key publications spanning 1990–2025. **Table 1** summarizes these descriptive statistics, revealing both the maturity and dynamism of AI-finance scholarship. **Figure 19** reveals an exponential increase in publications about AI and finance after 2015, coinciding with the rise of deep learning, NLP, and large language models. This bibliometric surge reflects finance's rapid digital transformation and researchers' growing reliance on AI to decode nonlinear, high-dimensional market relationships.

Figure 20 portrays AI as a core "intelligence infrastructure" linking three major financial domains: (i) asset pricing and portfolio management, (ii) financial markets and institutions, and (iii) corporate finance and governance—all of which ultimately impact financial stability.

Table 1: Descriptive Statistics

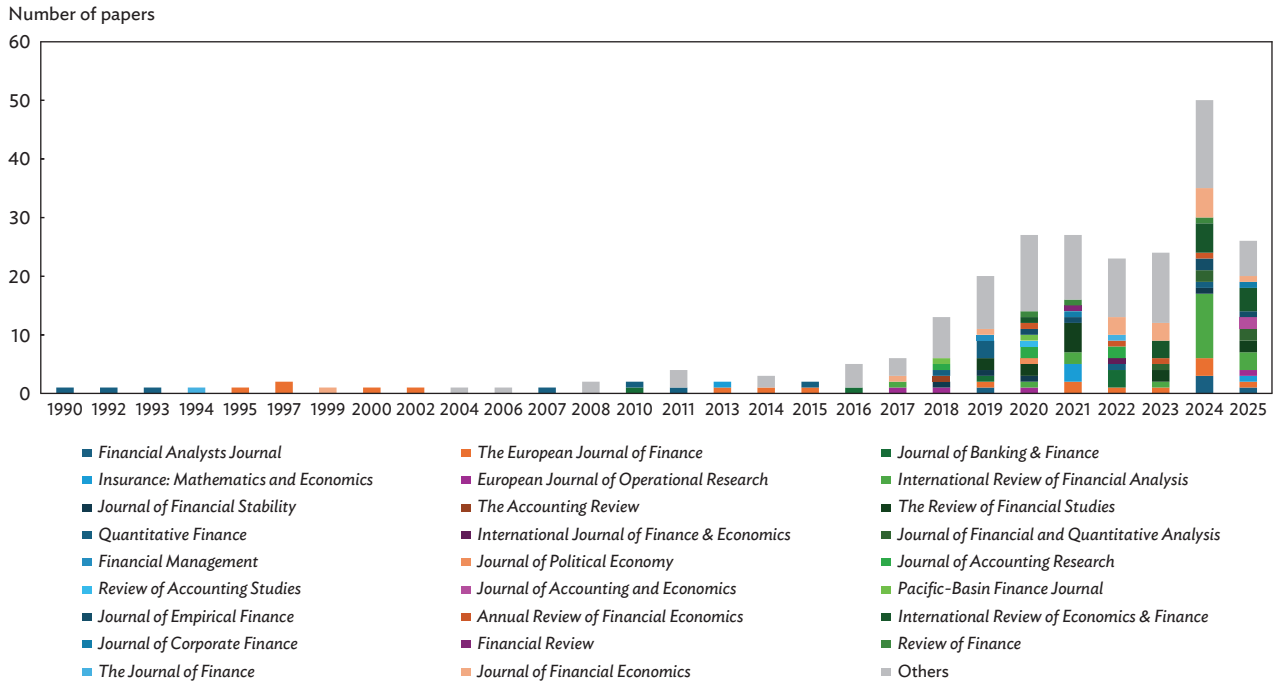
Description	Results
Panel A: Main Data Information	
Timespan	1990–2025
Sources (journals, books)	94
Number of Documents	249
Annual Growth Rate (%)	10.40
Average Age of Documents	6.21
Average Number of Citations per Document	55.46
Number of References	15,072
Panel B: Document Contents	
Number of Authors' Keywords	794
Panel C: Authors	
Number of Authors	683
Number of Authors of Single-Authored Docs	25
Number of Co-Authors per Document	2.87

Source: Authors' compilation.

This special section was written by Yang Zhang (associate professor of Business Economics) at the Faculty of Business Administration, University of Macau; Ziang Qiu (PhD student) at the University of Macau; Donghyun Park (director of Macroeconomics and Monetary Policy Management) at the South East Asian Central Banks Research and Training Centre; and Shu Tian (principal economist) at the Macroeconomics Research Division, Economic Research and Development Impact Department of the Asian Development Bank.

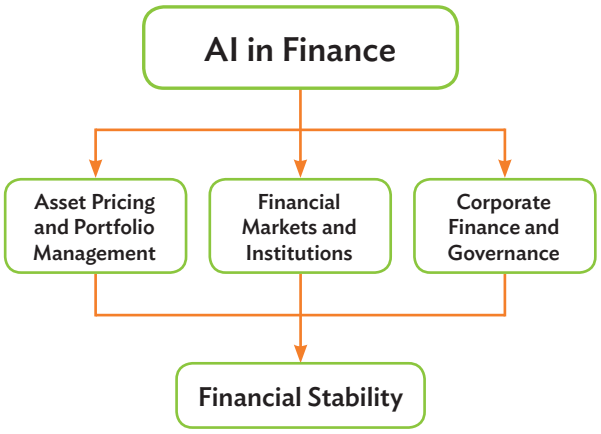
[16] The *Academic Journal Guide* (AJG) aims to assist in navigating the research landscape by providing well-supported, evidence-based information and data. It offers comprehensive details on a variety of journals across disciplines that are significant to business and management studies. The AJG's ratings derive from peer reviews, editorial assessments, and expert judgments, using statistical citation data for guidance. It then evaluates these metrics alongside insights from consultations conducted by the AJG's Scientific Committee, which engages with expert peers and scholarly associations to determine the relative prestige of journals within each field.

Figure 19: Number of Papers per Journal by Year of Publication



Source: Authors' compilation.

Figure 20: Conceptual Map of Artificial Intelligence's Roles in Finance



AI = artificial intelligence.
Source: Authors' illustration.

Artificial Intelligence in Asset Pricing and Portfolio Management

Traditional financial models, such as the capital asset pricing model and Fama–French factors, have long been constrained by linearity assumptions and limited data dimensions. Machine learning has revolutionized this paradigm. Studies like Gu, Kelly, and Xiu (2020) and Freyberger, Neuhierl, and Weber (2020) show that machine learning algorithms capture complex nonlinear relationships between firm characteristics, macroeconomic indicators, and historical returns, while consistently outperforming linear benchmarks.

Neural networks, random forests, and gradient boosting models identify hidden factors and predict equity returns with unprecedented accuracy. For example, Azevedo and Hoegner (2023) reveal that machine-learning-driven factor models can produce monthly returns surpassing traditional approaches, while Chen, Pelger, and Zhu (2024) demonstrate that deep neural networks yield superior Sharpe ratios and pricing precision.

AI also extends predictive power to volatility forecasting. Neural and convolutional networks outperform the heterogeneous autoregressive model in capturing nonlinear market dynamics (Christensen, Siggaard, and Veliyev 2023). Beyond equities, AI improves bond return prediction (Bianchi, Büchner, and Tamoni 2021) and foreign exchange modeling (Colombo, Forte, and Rossignoli 2019), enhancing global market efficiency.

Portfolio management, once dominated by the Markowitz mean-variance model, now benefits from machine learning's capacity to process massive datasets and dynamic inputs. Bradrania and Pirayesh Neghab (2022) and Aboussalah et al. (2024) integrate reinforcement learning and convolutional architectures into asset allocation, generating adaptive, robust portfolios that self-correct based on real-time market information.

AI also powers robo-advisors and automated trading. Uhl and Rohner (2018) document cost reductions up to 4.4% annually compared with human-managed portfolios. Meanwhile, Kaniel et al. (2023) show neural networks can identify outperforming mutual funds, while Manahov and Urquhart (2021) highlight AI's ability to model investor behavior in cryptocurrency markets.

Overall, these studies illustrate a paradigm shift from rule-based finance to data-driven, learning-based finance—where AI enables dynamic optimization, real-time prediction, and personalized investment strategies.

Artificial Intelligence in Financial Markets and Institutions

Bankruptcy Prediction and Fraud Detection

AI's predictive and pattern recognition capabilities have revolutionized risk management. Machine learning algorithms such as support vector machines, random forests, and Bayesian networks have surpassed traditional regression models in detecting early signs of financial distress or fraud. Mselmi, Lahiani, and Hamza (2017) achieved 94% accuracy in forecasting bankruptcies among French firms using hybrid support vector machines, while Cao et al.'s (2022) Bayesian model for firms in the United States achieved superior accuracy versus deep learning benchmarks.

In fraud detection, Bao et al. (2020) and Chen et al. (2017) demonstrated that raw financial and textual data analyzed by AI outperform ratio-based methods. NLP-powered systems can even detect narrative inconsistencies in annual reports, an innovation extended by Zhang and Liu (2024) to firms in the People's Republic of China using word embeddings, achieving 77% accuracy.

AI's real-time monitoring capabilities enable banks and regulators to identify anomalies and mitigate systemic risk. However, challenges persist, including class imbalance (with fraud cases being rare) and data manipulation through adversarial obfuscation.

Sentiment Analysis

AI-driven sentiment analysis transforms how markets process unstructured data from news headlines to tweets. Early research from Antweiler and Frank (2004) relied on Naïve Bayes classifiers, but modern systems deploy long short-term memory networks, bidirectional encoder representations from transformers, and transformer architectures.

Empirical findings demonstrate significant predictive power: Bartov, Faurel, and Mohanram (2018) linked Twitter sentiment to firm-level earnings surprises; Ke, Kelly, and Xiu (2019) showed that machine-readable news signals improve return forecasts; and Cathcart et al. (2020) applied sentiment analytics to sovereign debt, linking news tone to credit spreads.

Crucially, Bertomeu et al. (2025) found that the "temporary ban of ChatGPT" in Italy reduced AI-related information efficiency—fewer analyst forecasts and slower market responses—highlighting how AI tools themselves shape capital market behavior.

Consumer Risk and Financial Inclusion

AI-based credit scoring integrates alternative data such as mobile usage, e-commerce patterns, and transaction histories, enabling access to credit for previously unbanked populations (Björkegren and Grissen 2018). Random forests and deep learning methods outperform logistic models in predicting defaults (Butaru et al. 2016, Albanesi and Vamossy 2019).

However, algorithmic bias remains a pressing issue. Fuster et al. (2022) show that Black and Hispanic borrowers face disproportionately higher AI-driven loan rejections, while Dobbie et al. (2021) suggest that optimized models can still achieve fairness without sacrificing profitability.

These findings underscore AI's dual nature: It can enhance accuracy and inclusion or amplify social inequities depending on data governance and model transparency.

Artificial Intelligence in Corporate Finance and Governance

Corporate Outcomes and Performance

AI's applications extend to firm valuation, disclosure, and innovation. Babina et al. (2024) find that firms adopting AI report higher growth and innovation intensity. Research by Bao et al. (2020) and Brown, Crowley, and Elliott (2020) demonstrates that machine learning techniques can effectively detect earnings manipulation and linguistic obfuscation in financial reports. These methods are now gaining traction as tools for regulatory scrutiny.

AI also feeds back into corporate communication: As Cao et al. (2023) mentioned, companies increasingly tailor disclosures for algorithmic readers ("machine-friendly" filings), demonstrating how AI influences not only analysis but also corporate behavior itself.

Executive and Governance Analytics

AI enables novel measurement of intangible managerial traits. NLP-based analyses of CEO letters and earnings calls reveal that managerial confidence and sentiment correlate with firm outcomes (Du et al. 2019). Computer vision further quantifies nonverbal cues: Dávila and Guasch (2022) found that body language affects valuation and investor perceptions.

These advancements contribute to "datafied governance," where machine learning quantifies leadership quality, culture, and risk-taking behavior (Li et al. 2021). AI thus becomes both a mirror and a metric for organizational behavior.

Implications for Financial Stability

AI's integration into financial systems amplifies both efficiency and fragility. The reviewed literature identifies five interlinked risk dimensions: (i) systemic risk transmission, (ii) micro-prudential resilience, (iii) regulatory technology, (iv) market structure evolution, and (v) data-model-infrastructure dependence.

Specifically, our literature review devotes special attention to Asia's heterogeneous financial ecosystems, where AI-driven innovation coexists with uneven regulatory readiness. For instance, the People's Republic of China, with centralized data governance, leverages AI for real-time systemic monitoring but concentrates risk due to model homogenization—80% of bank risk models depend on dominant tech providers (Wang, Huang, and Hong 2024). In India, the integration of AI into its Unified Payments Interface reduces fraud by 50% yet exacerbates algorithmic exclusion, with rural borrowers facing 24% higher rejection rates (Anil and Misra 2022). Furthermore, Southeast Asian economies, particularly Malaysia and Indonesia, apply AI to Shariah-compliant finance and fintech inclusion, but they suffer from regulatory fragmentation and skill shortages (Arsyad, Kharisma, and Wiwoho 2025).

Ultimately, Asia must reconceptualize AI not merely as a regulatory target but as a co-evolutionary governance substrate to harness its benefits while containing continent-wide contagion risks.

Conclusion

The literature reviewed paints a complex picture: AI is simultaneously a stabilizing intelligence and a source of adaptive fragility. On the one hand, it enhances efficiency, expands inclusion, and improves predictive precision across virtually every financial subfield. On the other hand, it concentrates power, embeds bias, and amplifies systemic linkages.

Given that AI's transformation of finance is already a reality, the critical task now is to adapt our governance frameworks. The goal is to steer this change toward outcomes that bolster financial stability and ensure equity.

The synthesis concludes that Asia, with its rapid digitalization and institutional diversity, is uniquely positioned to lead in AI governance innovation. If coordinated effectively, the region's experience could offer a global blueprint for balancing technological dynamism with systemic resilience.

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