A Comparative & Systematic Review of Literature on the Impact of Agentic AI on Selected Financial Services: Banking, Insurance & Investment

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Abstract

This review synthesizes research on "Comparative analysis of Agentic AI's impact across different financial services such as banking, insurance, and investment" to address the underexplored differential effects and governance challenges of agentic AI deployment. The review aimed to evaluate agentic AI applications and outcomes across sectors, benchmark architectural frameworks, identify ethical and regulatory challenges, compare productivity and risk management benefits, and analyze implementation barriers. A systematic analysis of multidisciplinary studies published up to mid-2024 was conducted, encompassing qualitative, quantitative, and bibliometric methodologies focused on agentic AI technologies in financial domains. Findings reveal substantial productivity gains and operational efficiencies predominantly in banking and investment, with insurance comparatively underrepresented; diverse architectural models such as multi-agent systems and cloud- based frameworks enable scalable, adaptive deployments; ethical concerns including bias, transparency, and regulatory compliance remain critical, necessitating layered governance and human-AI collaboration; and significant implementation barriers persist, notably workforce transformation, legacy system integration, and trust deficits. These findings collectively underscore the transformative potential of agentic AI while highlighting persistent gaps in empirical validation, standardized evaluation, and sector-specific comparative analyses. The review informs theoretical understanding and practical governance by emphasizing the need for interdisciplinary, longitudinal research and robust frameworks to optimize agentic AI integration and responsible innovation across financial services.

Keywords: *Agentic AI, Financial Services, Systematic LR, Banking, Insurance, etc.*

1.0 Introduction

Research on the comparative analysis of Agentic AI's impact across financial services such as banking, insurance, and investment has emerged as a critical area of inquiry due to its transformative potential in enhancing operational efficiency, decision-making accuracy, and customer personalization (Joshi, 2025; Heleen, 2025). The evolution of AI in finance has progressed from early expert systems to advanced autonomous agents capable of adaptive reasoning and goal-directed behavior (Herrmann & Masawi, 2022; Bandi et al., 2025). This progression has significant practical implications, with studies reporting productivity gains up to 80% in financial data tasks and cost reductions exceeding billions annually in call center automation (Joshi, 2025), (Bhogawar, 2025). The integration of Agentic AI addresses pressing industry demands for scalable, compliant, and innovative solutions, underscoring its social and economic relevance("Artificial Intelligence and Fintech: Red...", 2025) (Khan, 2024).

Despite these advances, the deployment of Agentic AI across diverse financial sectors faces unresolved challenges. Key issues include transparency, fairness, and regulatory compliance, which remain inadequately addressed in current implementations (Nayak, 2025; Pareek, 2025; Selvam, 2025). Moreover, the literature reveals a fragmented understanding of how Agentic AI differentially impacts banking, insurance, and investment domains, with limited comparative analyses available (Herrmann & Masawi, 2022; Hill et al., 2025) (Kumar, 2024). Controversies persist regarding ethical risks such as algorithmic bias and the balance between automation and human oversight (Raghuvanshi, 2025; Angela & Odewuyi, 2024). The consequences of these gaps are substantial, potentially undermining trust, exacerbating inequities, and impeding widespread adoption (Somu, 2025; Vettriselvan et al., 2025).

This review constructs a conceptual framework defining Agentic AI as autonomous, goal-driven systems integrating multi-agent collaboration, adaptive planning, and persistent memory(Bandi et al., 2025; Sapkota et al., 2025) (Bhat & Krishnan, 2025). It situates Agentic AI within the broader AI landscape, distinguishing it from traditional AI agents and generative models, and links these characteristics to their applications in financial decision-making and customer engagement(Bandi et al., 2025; Sapkota et al., 2025; Bhat & Krishnan, 2025). The framework guides the comparative analysis by aligning Agentic AI capabilities with sector-specific financial services challenges and opportunities.

The purpose of this systematic review is to synthesize current knowledge on Agentic AI's impact across banking, insurance, and investment sectors, identifying sectoral differences, challenges, and best practices. By addressing the identified knowledge gap, this study contributes a comprehensive, cross-sectoral understanding that informs both academic research and practical implementation strategies (Joshi, 2025; Hill et al., 2025). The review aims to support stakeholders in leveraging Agentic AI responsibly to enhance financial service delivery while mitigating ethical and regulatory risks (Shukla, 2025; Joshi, 2025).

This review employs a rigorous literature synthesis methodology, incorporating peer-reviewed articles, industry reports, and case studies published between 2022 and 2025. The inclusion criteria focus on studies that address Agentic AI frameworks, applications, and governance in the financial services sector. Analytical frameworks emphasize thematic comparison across sectors, ethical considerations, and performance metrics. The findings are organized to first present technological foundations, followed by sector-specific impacts, challenges, and future research directions (Bandi et al., 2025; Sawant, 2025; Allam et al., 2025).

2.0 Purpose and Scope of the Review

2.1 Statement of Purpose

The objective of this report is to examine the existing research on "Comparative analysis of Agentic AI's impact across different financial services such as banking, insurance, and investment." to synthesize current knowledge on how agentic AI technologies transform these sectors, identify sector-specific benefits and challenges, and evaluate the ethical and regulatory considerations associated with their deployment. This review is important as agentic AI represents a paradigm shift in autonomous decision-making and operational efficiency within financial services, yet its differential impact across banking, insurance, and investment remains underexplored. By systematically analyzing the literature, this study aims to provide a comprehensive understanding that informs stakeholders about best practices, governance frameworks, and future research directions to optimize agentic AI integration in diverse financial domains.

2.2 Specific Objectives:

- To evaluate current knowledge on agentic AI applications and outcomes in banking, insurance, and investment sectors.
- Benchmarking of existing agentic AI frameworks and architectures utilized across different financial services.
- Identification and synthesis of ethical, regulatory, and governance challenges in agentic AI deployment within financial domains.
- To compare productivity gains, risk management improvements, and customer engagement effects attributable to agentic AI across sectors.
- Deconstruct sector-specific implementation barriers and opportunities for agentic AI adoption in financial services.

2.3 Methodology of Literature Selection

2.3.1 Transformation of Query

We took the original research question — "Comparative analysis of Agentic AI's impact across different financial services such as banking, insurance, and investment."—and expand it into multiple, more specific search statements. By systematically expanding a broad research question into several targeted queries, we ensure that the literature search is both comprehensive and manageable

Below were the transformed queries we formed from the original query:

- Comparative analysis of Agentic AI's impact across different financial services such as banking, insurance, and investment.
- Investigating ethical frameworks and governance strategies for implementing Agentic AI in diverse financial services like banking, insurance, and investment.
- Investigating the ethical implications and regulatory challenges of Agentic AI implementation across banking, insurance, and investment sectors.

2.3.2 Screening Papers

We then run each of the transformed queries with the applied Inclusion & Exclusion Criteria to retrieve a focused set of candidate papers for our always-expanding database of over 270 million research papers. During this process, we found 379 papers

Citation Chaining - Identifying Additional Relevant Works:

- Backward Citation Chaining: For each of the core papers, we examine its reference list to find earlier studies it draws upon. By tracing back through references, we ensure foundational work isn't overlooked.
- Forward Citation Chaining: We also identify newer papers that have cited each core paper, tracking how the field has built on those results. This uncovers emerging debates, replication studies, and recent methodological advances

A total of 83 additional papers were found during this process

2.3.3 Relevance Scoring and Sorting

We take our assembled pool of 462 candidate papers (379 from search queries + 83 from citation chaining) and impose a relevance ranking so that the most pertinent studies rise to the top of our final papers table. We found 448 papers that were relevant to the research query. Out of 448 papers, 50 were highly relevant.

3.0 Results

3.1 Descriptive Summary of the Studies

This section maps the research landscape of the literature on the Comparative analysis of Agentic AI's impact across different financial services, such as banking, insurance, and investment. The reviewed studies encompass a broad spectrum of agentic AI applications, ranging from autonomous financial advisories and personalized banking to risk management and regulatory compliance. Methodologies vary from qualitative thematic analyses and case studies to quantitative performance evaluations and bibliometric reviews, with a notable focus on ethical and governance challenges. This comparative analysis is crucial for understanding sector-specific impacts, architectural diversity, and implementation barriers, thereby addressing the research questions on differential effects, ethical frameworks, and operational outcomes of agentic AI in financial services.

Table 1: Descriptive Summary of the Papers

Study	Sectoral Impact Metrics	Ethical and Regulatory Compliance	Architectural Framework Diversity	Risk Management Effectiveness	Implementation Challenges and Adoption Barriers
(Joshi, 2025)	50-80% productivity gains in data tasks; strong in trading and risk management	Highlights workforce upskilling and regulatory compliance challenges	Examines LangGraph, CrewAI, AutoGen, IBM watsonx architectures	Multi-agent systems are effective in fraud detection and portfolio optimization	Workforce transformation and risk alignment issues noted
(Kumar, 2025)	Autonomous financial assistants improve personalized planning and portfolio rebalancing	Addresses security, ethical standards, and auditability in AWS-based systems	Proposes scalable, secure AWS cloud architecture integrating LLMs and orchestration	Supports multi-step financial tasks with risk-aware automation	Integration complexity and security concerns emphasized
(Bhogawar, 2025)	40-60% reduction in call handle time; 30% boost in resolution rates	Emphasizes compliance frameworks in voice AI automation	Focus on RAG-powered voice agents and hybrid human-AI collaboration	Fraud prevention and compliance automation in call centers	Adoption barriers include trust gaps and orchestration challenges
(Nayak, 2025)	Demonstrates superior performance in dynamic trading and credit scoring	Critically evaluates transparency, fairness, and robustness gaps	Discusses decision-theoretic and reinforcement learning models	Effective in credit scoring and fraud detection	Transparency and fairness remain major challenges
(Heleen, 2025)	AI enhances operational efficiency and customer experience across sectors	Discusses ethical concerns, including bias and regulatory uncertainty	Covers broad AI-powered technologies without specific frameworks	Improves fraud detection and regulatory compliance	Data privacy and algorithmic bias challenges highlighted

(Dileep et al., 2025)	AI and ML improve efficiency and creativity in banking, insurance, capital markets	Notes challenges in balancing technology and customer-centric approaches	Reviews diverse AI/ML applications without a detailed architectural focus	Fraud detection and customer relations enhancements reported	Implementation barriers include data quality and talent gaps
(Ogundimu, 2025)	AI improves risk assessment and decision-making in stockbroking and banking	Addresses explainability, bias, cybersecurity, and regulatory issues	Focus on machine learning and NLP applications in financial markets	Enhances credit scoring, fraud detection, and portfolio management	Regulatory and model transparency challenges noted
(Ajuwon et al., 2025)	AI transforms investment strategies and risk models with dynamic adaptation	Highlights ethical and regulatory challenges, including bias and accountability	Explores machine learning, NLP, and predictive analytics frameworks	Supports adaptive risk management and portfolio optimization	Ethical concerns and regulatory compliance are critical
(Herrmann & Masawi, 2022)	AI adoption is strongest in banking and investments; insurance underrepresented	Notes the lack of responsible AI governance in fintech and DeFi	Reviews evolutionary AI research trends without specific architectures	Focus on credit risk, compliance, and market making	Governance frameworks for responsible AI remain immature
(Pareek, 2025)	AI streamlines underwriting and claims in life insurance	Proposes fairness, transparency, and accountability testing framework	Applies Explainable AI and fairness metrics in insurance AI	Addresses bias in automated insurance decisions	Ethical testing and regulatory compliance emphasized
(Selvam, 2025)	AI improves personalized banking services like loan processing	Develops bias mitigation and fairness frameworks for banking AI	Uses explainable AI tools (SHAP, LIME) for transparency	Reduces algorithmic bias in credit assessment	Ethical AI integration is critical for trust and compliance

(Todupunuri, 2025)	Agentic and generative AI enhance decision-making and fraud detection in banking	Discusses ethical adoption fostering innovation and customer confidence	Highlights hybrid human-AI decision-making models	Fraud mitigation and personalized banking have improved	Integration and ethical adoption challenges identified
(Metha, 2025)	Autonomous AI agents enable real-time personalized financial negotiation	Examines socio-regulatory implications and trust models	Uses multi-agent reinforcement learning and economic dialogue theory	Enhances financial access and democratic financial interactions	Legal Accountability and trust remain concerns
(Bandi et al., 2025)	Reviews agentic AI definitions and applications across domains	Identifies ethical, security, and coordination challenges	Classifies architectural models and input-output mechanisms	Covers portfolio optimization and AML compliance	Highlights the need for standardized architectures and testing
(Sapkota et al., 2025)	Differentiates AI Agents and Agentic AI in financial applications	Discusses challenges like hallucination and coordination failure	Compares modular AI agents and multi-agent collaboration models	Notes risk of emergent behavior in agentic AI	Proposes solutions for robustness and explainability
(Sawant, 2025)	Quantitative analysis shows 34% task time reduction and 7.7% accuracy gain	Identifies data privacy and ethical concerns in deployment	Reports high scalability but integration complexity	Demonstrates improved resource utilization and decision accuracy	Skill gaps and legacy system integration challenges
(Somu, 2025)	AI automates cognitive tasks in lending, credit risk, and investment planning	Emphasizes inclusion, equity, and accountability in AI use	Focuses on human-AI collaboration in financial decision-making	Supports credit risk assessment and poverty alleviation	Workforce and technology adoption barriers discussed
(Samdani et al., 2023)	Agentic AI enables scalable, ethical autonomous financial advisories	Addresses security, legal, and ethical challenges in deployment	Examines flexible agentic AI systems for real-time advice	Improves financial decision quality and accessibility	Ethical and system challenges remain significant

(Kumar, 2024)	AI adoption in investment firms enhances innovation and competitive advantage	Highlights ethics, bias management, and regulatory transparency	Stresses multidisciplinary AI teams and data strategies	Supports portfolio management and risk mitigation	Cultural transformation and talent development are needed
("Artificial Intelligence and Fintech: Red...", 2025)	AI integration improves fintech operational efficiency and customer engagement	Discusses regulatory, ethical, and security considerations	Reviews AI applications in fintech without detailed architectures	Enhances fraud detection and credit scoring	Regulatory compliance and data privacy challenges
(Khan, 2024)	AI drives disruptive innovation in investment, risk, and customer service	Notes ethical, privacy, and regulatory implications	Covers machine learning and NLP applications broadly	Improves fraud detection and risk assessment	Responsible deployment requires ethical oversight
(Reddy, 2024)	Fintech innovations transform banking, finance, and insurance delivery	Addresses regulatory environment and financial inclusion	Examines AI and blockchain impacts on operational efficiency	Enhances risk management and personalized services	Regulatory adaptation and consumer trust challenges
(Kaur & Sdhana, 2025)	AI techniques outperform traditional methods in forecasting and portfolio management	Highlights transparency and legal challenges in AI use	Compares expert systems, neural networks, and hybrid AI	Improves credit evaluation and financial planning	Nonlinear behavior and model interpretability issues
(Parab, 2024)	Agentic AI automates data analytics improving decision accuracy	Discusses organizational adaptation and deployment strategies	Covers architectural considerations for autonomous insights	Enhances operational efficiency and reduces manual tasks	Implementation challenges include organizational readiness
(Manoharan & Darwish, 2024)	AI advances accuracy and efficiency in investment banking and insurance	Notes data quality and regulatory issues as barriers	Reviews ML and DL methods in financial applications	Supports fraud detection and portfolio optimization	Talent recruitment and explainability challenges

(Sanyaolu et al., 2024)	Fintech Innovations drive financial inclusion and operational efficiency	Discusses regulatory and ethical challenges in technology adoption	Reviews AI, blockchain, and digital payment system impacts	Improves personalized financial products and risk management	Technological agility and regulatory compliance needed
(Shukla, 2025)	Agentic AI yields 20-60% productivity gains with safety concerns	Proposes a multidimensional evaluation, including ethics and trust	Introduces a balanced framework for performance and robustness	Highlights fairness and harm-reduction metrics	Calls for human-in-the-loop and economic sustainability
(Raghuvanshi, 2025)	AI reshapes insurance fraud detection with bias and fairness concerns	Analyzes algorithmic bias and regulatory landscape	Examines ethical frameworks and bias mitigation techniques	Identifies disparate impacts in credit and insurance pricing	Emphasizes governance and fairness in AI deployment
(ADABARA et al., 2025)	Reviews agentic AI architectures and governance for security	Highlights threat models and accountability strategies	Surveys cross-layer architectural paradigms and governance	Addresses vulnerabilities in autonomous financial systems	Calls for adaptive, transparent, and accountable systems
(Wissuchek & Zschech, 2025)	Develops typology for agentic AI cognitive and environmental agency	Focuses on classification without direct ethical analysis	Provides ordinal framework for architectural comparison	Enables assessment of agency levels in financial AI	Supports anticipation of future agentic AI developments

(Joshi, 2025)	Analyzes governance tools for trustworthy agentic GenAI systems	Emphasizes ethical, transparent, and accountable frameworks	Reviews layered governance stacks and compliance automation	Addresses risk assessment and emergent behavior monitoring	Highlights interoperability and standards development
(Allam et al., 2025)	Qualitative analysis of agentic AI capabilities and governance	Discusses ethical risks, including bias and autonomy misalignment	Integrates technical and regulatory perspectives	Highlights explainability and human-AI collaboration	Recommends transparency and interdisciplinary innovation

(Farahani & Ghasemi, 2024)	AI reshapes finance business models, enhancing efficiency and innovation	Reviews AI tools in risk management and asset management	Discusses AI-driven predictive analytics and NLP applications	Improves decision-making and customer interactions	Emphasizes competitiveness and growth opportunities
(Angela & Odewuyi, 2024)	Focuses on mitigating AI bias from a diversity, equity, and inclusion lens	Proposes frameworks for transparency, accountability, and audits	Highlights inclusive data collection and bias-aware modeling	Addresses discriminatory outcomes in credit and loan decisions	Provides roadmap for equitable AI deployment
(Joshi, 2025)	Strategic framework for U.S. competitiveness in agentic AI governance	Examines governance, security, and interoperability challenges	Proposes layered architectures embedding governance	Discusses regulatory compliance and ethical oversight	Calls for international collaboration and standards
(Oke & Cavus, 2024)	Bibliometric analysis shows AI growth in investment, insurance, banking	Recommends integration of AI and human expertise	Provides overview of AI roles without architectural focus	Highlights fraud detection and risk management trends	Suggests need for balanced AI- human decision- making
("Comparative Analysis of Artificial Intel...", 2022)	AI as key disruptor in banking and finance employment and services	Discusses AI's impact on workforce and operational efficiency	Reviews AI environments and emerging technologies	Notes AI's role in risk management and customer experience	Highlights employment and integration challenges
(Sadok et al., 2023)	AI applications in banking, credit risk, and customer personalization	Identifies legal and ethical biases requiring regulatory adaptation	Reviews AI methods for risk intermediation and nowcasting	Addresses bias and fairness in banking AI systems	Calls for updated financial regulation
(Soni et al., 2025)	AI improves corporate finance, fraud detection, and credit scoring	Notes challenges in interpretability, privacy, and compliance	Covers machine learning and neural network applications	Enhances risk assessment and investor sentiment analysis	Regulatory and privacy concerns persist

(Mettrick, 2024)	AI enhances productivity and revenue in investment banking	Stresses governance frameworks to mitigate operational risks	Categorizes AI into predictive, anomaly detection, classification, GenAI	Supports fraud prevention and customer experience	Highlights need for deterministic AI models
(Raj, 2025)	AI adoption improves financial decision-making and risk management	Emphasizes AI governance and regulatory enforcement	Discusses AI readiness and performance monitoring	Enhances fraud detection and portfolio management	Workforce awareness and infrastructure investment are needed
(Bhat & Krishnan, 2025)	Reviews agentic AI lifecycle and impact on financial autonomy	Covers architectural and benchmarking considerations	Highlights agent negotiation and cognitive architectures	Demonstrates value creation in financial services	Identifies challenges in data and system integration
(Paleti, 2025)	AI and Reg-Tech transform global banking compliance and operations	Focuses on regulatory technologies and data governance	Examines AI-driven credit scoring and fraud detection	Enhances compliance management and real-time processing	Addresses regulatory complexity and data security
("Fusion of Artificial Intelligence and Bl...", 2023)	AI and blockchain applications in banking customer service and investment	Discusses adoption challenges including security and trust	Reviews chatbots and robo-advisors architectures	Supports fraud detection and portfolio management	Highlights ethical, privacy, and regulatory challenges
(Irfan et al., 2025)	AI transforms finance, auditing, and investment strategies	Addresses ethical and regulatory compliance challenges	Covers predictive analytics and automation frameworks	Improves fraud detection and portfolio optimization	Emphasizes re-skilling and ethical oversight
(Hill et al., 2025)	LLMs and agentic AI offer opportunities in African insurance markets	Discusses ethical and regulatory challenges in the local context	Highlights complexity of LLM and agentic AI frameworks	Supports insurance decision-making and risk assessment	Calls for inclusive and sustainable AI strategies
(Yang & Lee, 2024)	GenAI enhances personalized financial advisory consumer perceptions	Examines ethical and authenticity concerns in AI advice	Uses service-dominant logic and AI acceptance models	Improves customer engagement and personalized investment	Highlights consumer trust and adoption factors

(Xu et al., 2025)	LLM-powered agentic AI automates enterprise workflows	Addresses security, trust, and multi-agent collaboration	Presents emerging architectures and evaluation frameworks	Supports the supply chain and productivity optimization	Identifies trust gaps and decision uncertainty challenges
(Ahmed et al., 2024)	AI trends in fintech improve risk assessment and customer service	Discusses regulatory and ethical considerations	Reviews AI applications in fintech ecosystems	Enhances fraud prevention and investment strategies	Emphasizes data security and privacy compliance
(Vettriselvan et al., 2025)	AI enhances banking customer service, fraud detection, and risk management	Reviews GDPR, CCPA, and ethical AI integration strategies	Highlights cloud-native AI architectures and virtual assistants	Improves predictive analytics and fraud prevention	Addresses data privacy and algorithmic bias challenges

3.2.1 Sectoral Impact Metrics:

1. 30 studies found significant productivity gains and operational efficiencies in banking, insurance, and investment, with improvements ranging from 20% to 80% in task completion and decision accuracy (Joshi, 2025; Bhogawar, 2025; Sawant, 2025).
2. Banking and investment sectors show stronger AI adoption and impact compared to insurance, which remains underrepresented in some studies (Herrmann & Masawi, 2022) (Hill et al., 2025).
3. Agentic AI enhances personalized financial planning, portfolio management, and fraud detection, contributing to improved customer experiences and operational scalability (Kumar, 2025; Todupunuri, 2025; Yang & Lee, 2024).

3.2.2 Ethical and Regulatory Compliance:

1. 28 studies emphasize the critical need for fairness, transparency, and accountability frameworks to mitigate bias and ensure ethical AI deployment across financial sectors (Pareek, 2025; Selvam, 2025; Raghuvanshi, 2025).
2. Regulatory compliance challenges include adapting to GDPR, CCPA, and emerging fintech regulations, with calls for continuous monitoring and auditability (Vettriselvan et al., 2025) (Joshi, 2025).
3. Ethical concerns such as algorithmic bias, data privacy, and explainability are recurrent themes, with proposed solutions including Explainable AI and fairness-aware learning (Angela & Odewuyi, 2024) (Selvam, 2025).

3.2.3 Architectural Framework Diversity:

1. 25 studies classify diverse agentic AI architectures, including multi-agent systems, cloud-based orchestration, reinforcement learning, and hybrid human-AI models (Joshi, 2025; Kumar, 2025; Sapkota et al., 2025).
2. Frameworks like LangGraph, CrewAI, and AWS Lambda enable scalable, secure, and adaptive agentic AI deployments tailored to sector-specific needs (Joshi, 2025; Kumar, 2025).
3. Typologies and evaluation frameworks support understanding of cognitive agency levels and performance metrics, aiding future system design (Bandi et al., 2025) (Wissuchek & Zschech, 2025).

3.2.4 Risk Management Effectiveness:

1. 27 studies report agentic AI's effectiveness in fraud detection, credit scoring, and portfolio risk mitigation, often outperforming traditional methods (Nayak, 2025; Ogundimu, 2025; Ajuwon et al., 2025).
2. Multi-agent systems and RAG-powered voice AI demonstrate substantial improvements in compliance and operational risk reduction (Bhogawar, 2025; Shukla, 2025).
3. Ethical risk management remains a challenge, with ongoing efforts to balance automation benefits against fairness and robustness concerns (Raghuvanshi, 2025; ADABARA et al., 2025).

3.2.5 Implementation Challenges and Adoption Barriers:

1. 29 studies identify workforce transformation, skill gaps, and integration with legacy systems as major barriers to agentic AI adoption (Joshi, 2025; Sawant, 2025; Raj, 2025).
2. Security vulnerabilities, trust deficits, and regulatory uncertainties complicate deployment, requiring robust governance and human-AI collaboration (Bhogawar, 2025; ADABARA et al., 2025) (Allam et al., 2025).
3. Organizational readiness, data quality, and cultural change are critical factors influencing successful implementation across financial sectors (Dileep et al., 2025) (Kumar, 2024) (Sanyaolu et al., 2024).

4.0 Critical Analysis and Synthesis

The literature on agentic AI's impact across banking, insurance, and investment sectors reveals a rapidly evolving field marked by significant technological advancements and promising applications. However, the body of research also exhibits notable gaps, particularly in empirical validation, ethical governance, and sector-specific comparative analyses. While many studies emphasize productivity gains and operational efficiencies, there is a recurrent concern regarding transparency, fairness, and regulatory compliance. The integration of agentic AI with human oversight and the development of robust governance frameworks emerge as critical themes for responsible deployment. Overall, the literature provides a foundational understanding but calls for more nuanced, interdisciplinary, and longitudinal research to fully capture agentic AI's transformative potential and challenges across financial services.

Table 2: Critical Analysis and Synthesis of Papers

Aspect	Strengths	Weaknesses
Technological Frameworks and Architectures	The literature offers comprehensive surveys and typologies of agentic AI frameworks, detailing architectures such as LangGraph, CrewAI, and multi-agent systems that enable dynamic task decomposition and autonomous decision-making, particularly in banking and investment contexts(Joshi, 2025) (Bandi et al., 2025; Sapkota et al., 2025). These frameworks demonstrate significant productivity improvements and scalability across financial domains(Joshi, 2025) (Sawant, 2025).	Despite detailed architectural descriptions, there is a lack of standardized frameworks and interoperability guidelines, which hinders cross-sector adoption and comparative benchmarking(Joshi, 2025) (Joshi, 2025). Many studies focus on conceptual or prototype stages without extensive real-world validation, limiting practical applicability(Todupunuri, 2025) (Sawant, 2025).
Sector-Specific Applications and Outcomes	Research highlights distinct applications of agentic AI in banking (fraud detection, personalized financial planning), insurance (claims processing, underwriting), and investment (portfolio optimization, autonomous trading), showing measurable benefits such as reduced task completion times and enhanced customer engagement(Joshi, 2025) (Pareek, 2025) (Metha, 2025) (Hill et al., 2025). Studies also report significant	The insurance sector remains underrepresented compared to banking and investment, with fewer empirical studies and case analyses, leading to an incomplete understanding of agentic AI's sectoral impact(Herrmann & Masawi, 2022) (Hill et al., 2025). Cross-sector comparative analyses are limited, often lacking direct benchmarking of productivity or risk management gains(Herrmann & Masawi, 2022) (Kumar, 2024).

	operational cost savings and improved risk management(Bhogawar, 2025) (Ajuwon et al., 2025).	
Ethical, Regulatory, and Governance Challenges	Several papers critically address ethical concerns, including algorithmic bias, transparency, accountability, and fairness, proposing frameworks incorporating Explainable AI and continuous monitoring to mitigate risks(Pareek, 2025) (Selvam, 2025; Raghuvanshi, 2025) (Angela & Odewuyi, 2024). Governance models emphasizing layered compliance, real-time monitoring, and human-AI collaboration are identified as essential for trustworthy deployment(Shukla, 2025) (ADABARA et al., 2025) (Joshi, 2025) (Allam et al., 2025).	Despite recognition of ethical and regulatory challenges, many studies rely on secondary data or conceptual frameworks without empirical validation of governance effectiveness(Todupunuri, 2025) (Shukla, 2025). Regulatory compliance remains a moving target, with fragmented standards across jurisdictions and insufficient integration of responsible AI principles in practice(Herrmann & Masawi, 2022) (Vettriselvan et al., 2025). The literature often lacks detailed discussion on how to operationalize ethical frameworks in diverse financial contexts.
Productivity and Risk Management Benefits	Quantitative analyses demonstrate substantial productivity gains (up to 80% time reduction in data tasks) and improvements in risk assessment accuracy across banking and investment sectors(Joshi, 2025) (Sawant, 2025) (Raj, 2025). Agentic AI's ability to automate complex workflows, such as fraud detection and portfolio rebalancing, enhances operational efficiency and decision quality(Bhogawar, 2025) (Ajuwon et al., 2025) (Irfan et al., 2025).	The reported benefits are predominantly derived from case studies or simulations, with limited longitudinal data to assess sustained impact or unintended consequences(Bhogawar, 2025) (Sawant, 2025). There is a scarcity of comparative studies evaluating agentic AI's effectiveness relative to traditional AI or human-only processes across sectors(Herrmann & Masawi, 2022) (Kumar, 2024). Additionally, workforce transformation challenges and skill gaps are underexplored in depth(Joshi, 2025) (Somu, 2025).
Implementation Barriers and Workforce Transformation	The literature identifies key barriers including integration difficulties with legacy systems, data privacy concerns, and the need for workforce upskilling(Joshi, 2025) (Sawant, 2025) (Kumar, 2024). Hybrid human-AI models are proposed to balance automation with ethical oversight, supporting smoother adoption(Todupunuri, 2025) (Allam et al., 2025). Studies emphasize the importance of multidisciplinary teams and cultural readiness for successful implementation(Kumar, 2024).	Empirical evidence on overcoming implementation barriers is limited, with many studies offering theoretical recommendations rather than tested strategies(Todupunuri, 2025) (Somu, 2025). The socio-technical aspects, such as consumer acceptance and cultural attitudes toward agentic AI, receive insufficient attention(Todupunuri, 2025) (Allam et al., 2025). Furthermore, the impact on employment and organizational structures remains underexamined("Comparative Analysis of Artificial Intel...", 2022).

Evaluation Metrics and Performance Assessment	Some research advances balanced evaluation frameworks that incorporate technical performance, robustness, safety, and human-centered interaction metrics, addressing gaps in current narrow benchmarks(Joshi, 2025) (Shukla, 2025) (Bandi et al., 2025). These frameworks aim to capture multidimensional aspects of agentic AI effectiveness and trustworthiness.	Evaluation efforts are often fragmented and lack consensus on standardized metrics, complicating cross-study comparisons(Shukla, 2025) (ADABARA et al., 2025). There is a notable deficiency in real- world validation of these frameworks, with limited data on long-term sustainability, fairness, and economic impacts(Shukla, 2025) (ADABARA et al., 2025). The complexity of measuring emergent behaviors and coordination failures in multi-agent systems remains a challenge(Sapkota et al., 2025).
Integration of Agentic AI with Generative AI and Hybrid Models	Emerging studies highlight the synergistic potential of combining agentic AI with generative AI to enhance operational decision-making and customer-facing services, particularly in banking (Todupunuri, 2025). This integration addresses fragmented adoption and fosters more coherent, scalable innovation.	Research on hybrid models is predominantly conceptual and lacks empirical validation, with limited exploration of integration challenges such as data privacy, explainability, and regulatory compliance (Todupunuri, 2025). The broader applicability of such hybrid approaches across insurance and investment sectors is not well documented(Todupunuri, 2025).

5.0 Thematic Review of Literature

The literature on agentic AI's impact across banking, insurance, and investment sectors reveals several dominant themes. Major insights focus on the transformative role of agentic AI architectures and frameworks in enhancing operational efficiency, decision-making, and customer engagement across financial services. Ethical and regulatory considerations emerge as critical cross-cutting issues, addressing fairness, transparency, and governance challenges inherent to autonomous AI deployment. Additionally, sector-specific analyses highlight differential productivity gains, risk management improvements, and implementation barriers, illustrating nuanced impacts within each financial domain.

Theme	**Appears In**	**Theme Description**
Agentic AI Architectures and Frameworks	23/50 Papers	Research extensively surveys agentic AI architectures, frameworks, and multi-agent systems, highlighting their capabilities in autonomous decision-making, collaborative workflows, and dynamic task orchestration in financial services such as trading, investment, and risk management. Key frameworks discussed include LangGraph, CrewAI, and AWS-based implementations, emphasizing scalability, state management, and integration with large language models (LLMs) to automate complex financial tasks while addressing technical deployment challenges(Joshi, 2025)(Kumar, 2025)(Bandi et al., 2025)(Sapkota et al., 2025)(Xu et al., 2025).
Ethical, Regulatory, and Governance Challenges	22/50 Papers	Ethical concerns such as algorithmic bias, transparency, accountability, and fairness are widely reported, especially regarding credit scoring, insurance underwriting, and personalized banking. Studies emphasize the need for robust governance frameworks, compliance with regulations like GDPR, and implementation of explainable AI (XAI) methods to foster trust and mitigate risks. Recent governance models propose layered architectures integrating compliance automation and real-time monitoring to manage socio-technical risks of agentic AI Deployment (Nayak, 2025; Pareek, 2025) (Selvam, 2025; Raghuvanshi, 2025) (ADABARA et al., 2025; Joshi, 2025; Vettriselvan et al., 2025).
Productivity Gains and Risk Management Improvements	20/50 Papers	Agentic AI adoption yields marked productivity enhancements, including significant reductions in task completion time (up to 80%) and improvements in accuracy for fraud detection, credit risk assessment, and portfolio optimization. Multi-agent systems show particular promise in complex environments such as algorithmic trading and compliance monitoring. Risk management benefits include dynamic, adaptive models that outperform traditional approaches while enabling real-time decision support(Joshi, 2025; Bhogawar, 2025; Ogundimu, 2025; Ajuwon et al., 2025; Sawant, 2025; Farahani & Ghasemi, 2024; Soni et al., 2025).
Sector-Specific Applications and Impact	18/50 Papers	Literature differentiates the impact of agentic AI across banking, insurance, and investment sectors, noting banking's emphasis on fraud detection, customer personalization, and credit risk scoring; insurance's focus on claims automation and ethical AI testing; and investment's use of autonomous portfolio management and negotiation agents. Emerging sector-specific use cases include autonomous financial advisors, generative AI in banking, and AI-driven underwriting in insurance, illustrating tailored benefits and challenges in each domain(Dileep et al., 2025; Todupunuri, 2025)(Samdani et al., 2023; Kumar, 2024; Bhat & Krishnan, 2025)(Hill et al., 2025; Yang & Lee, 2024).

Implementation Barriers and Workforce Transformation	15/50 Papers	The adoption of agentic AI faces challenges, including integration with legacy systems, skill gaps, data privacy concerns, and organizational resistance. Workforce transformation is highlighted as a critical factor, necessitating upskilling and hybrid human-AI collaboration models to ensure effective deployment and acceptance. Studies advocate for strategic talent development and cultural change to realize agentic AI's full potential in financial institutions (Joshi, 2025; Somu, 2025; Kumar, 2024) (Manoharan & Darwish, 2024) (Raj, 2025).
AI-Driven Customer Engagement and Personalization	14/50 Papers	Agentic AI enhances customer experiences through personalized financial planning, empathetic interactions, and autonomous negotiation capabilities. Research reveals positive consumer perceptions linked to AI authenticity and continuous improvement in AI recommendations, which foster higher engagement and trust in financial advisory services. These developments mark a shift toward more human-like and responsive AI-driven financial solutions (Kumar, 2025; Todupunuri, 2025; Metha, 2025; Yang & Lee, 2024).
Evaluation Metrics and Performance Assessment	11/50 Papers	Studies propose multidimensional evaluation frameworks for agentic AI, combining technical metrics (task success, latency) with sociotechnical dimensions such as ethical compliance, human trust, robustness, and economic sustainability. Novel indicators like goal-drift scores and harm- reduction indices are introduced to comprehensively assess system reliability and fairness in financial applications(Joshi, 2025)(Bandi et al., 2025)(Shukla, 2025).
Fintech Integration and Disruptive Innovation	11/50 Papers	The convergence of agentic AI with fintech innovations accelerates transformation in financial services, enhancing operational efficiency, risk management, and regulatory compliance. Fintech platforms leverage AI for democratized financial products and services, though they face challenges in regulatory adaptation and consumer trust. Fintech-driven AI adoption is reshaping competitive dynamics and enabling broader financial inclusion("Artificial Intelligence and Fintech: Red...", 2025)(Reddy, 2024)(Sanyaolu et al., 2024)(Ahmed et al., 2024).
Emerging Technical and Security Challenges	8/50 Papers	Technical issues, including security vulnerabilities, adversarial risks, and system robustness, are increasingly scrutinized. Cross-layer threat models and governance strategies are proposed to secure agentic AI against emergent behaviors and coordination failures. The dynamic and autonomous nature of these systems requires adaptive oversight mechanisms beyond traditional static policies(ADABARA et al., 2025)(Joshi, 2025)(Xu et al., 2025).

Bias Mitigation and Diversity, Equity, and Inclusion (DEI)	7/50 Papers	Addressing algorithmic bias and promoting DEI in financial AI systems is a growing research focus. Frameworks emphasizing bias-aware data collection, fairness-aware algorithms, and continuous auditing are recommended to reduce discriminatory outcomes and ensure equitable financial access. Case studies highlight successful strategies for embedding fairness and transparency in AI-driven financial decision-making(Selvam, 2025; Raghuvanshi, 2025) (Angela & Odewuyi, 2024).

6.0 Agreement and Divergence Across Studies

There is a broad consensus that agentic AI significantly enhances productivity, risk management, and customer engagement across banking, insurance, and investment sectors, with demonstrated operational efficiencies and autonomous decision-making benefits. Ethical and regulatory compliance challenges, such as transparency, bias, and accountability, are widely acknowledged, although approaches to mitigation and governance frameworks vary. Architectural frameworks for agentic AI also share common elements like multi-agent collaboration and goal-driven autonomy but differ in specific design emphases and application domains. Divergences mainly arise from sector-specific implementation barriers, contextual focuses (e.g., geographic or technology-specific), and the maturity of AI adoption in each financial domain, leading to different perspectives on workforce transformation and integration challenges.

Comparison Criterion	**Studies in Agreement**	**Studies in Divergence**	**Potential Explanations**
Sectoral Impact Metrics	Most studies agree on substantial productivity gains and operational efficiencies in banking, insurance, and investment due to agentic AI, reporting gains from 20% to 80% in data task processing and reductions in handle times (Joshi, 2025) (Bhogawar, 2025) (Ajuwon et al., 2025) (Sawant, 2025) (Bhat & Krishnan, 2025). Risk management improvements are noted across credit scoring, fraud detection, and portfolio optimization (Joshi, 2025) (Ogundimu, 2025) (Sadok et al., 2023) (Irfan et al., 2025).	Some studies emphasize differential impact; for example, insurance AI adoption and impact appear less mature and underrepresented compared to banking and investment sectors (Herrmann & Masawi, 2022) (Hill et al., 2025). The extent of gains varies with sector-specific applications like voice AI in call centers (financial services) versus autonomous negotiation agents (banking) (Bhogawar, 2025) (Metha, 2025).	Differences in sector maturity, AI application scope, and measurement focus (quantitative vs. qualitative) explain variations. Insurance's slower adoption and unique challenges contribute to its relative underrepresentation.

Ethical and Regulatory Compliance	There is consensus on the critical importance of addressing fairness, transparency, accountability, and regulatory compliance in deploying agentic AI, with shared emphasis on frameworks incorporating Explainable AI, bias mitigation, and governance models (Pareek, 2025) (Selvam, 2025) (Raghuvanshi, 2025) (Joshi, 2025) (Vettriselvan et al., 2025). Hybrid human-AI oversight is widely supported to ensure ethical deployment (Joshi, 2025) (Samdani et al., 2023) (Allam et al., 2025).	Divergences appear in the granularity and sector-specific approaches; for instance, life insurance research stresses fairness and accountability with tailored frameworks (Pareek, 2025), whereas banking studies focus more on compliance alignment and data privacy (Vettriselvan et al., 2025). Some highlight regional regulatory gaps, such as in Africa's insurance sector (Hill et al., 2025), or U.S.-specific governance challenges (Joshi, 2025) (Joshi, 2025).	Variation stems from sector-specific ethical risks, regional regulatory environments, and the evolving nature of AI governance tools. Different research aims (framework development vs. empirical case studies) also influence focus areas.
Architectural Framework Diversity	Studies agree on core characteristics of agentic AI architectures: autonomy, multi-agent collaboration, goal-directed reasoning, and integration with LLMs and external tools (Joshi, 2025; Bandi et al., 2025) (Sapkota et al., 2025; Wissuchek & Zschech, 2025) (Xu et al., 2025). Frameworks emphasize modularity, orchestration layers, and dynamic task decomposition.	Disagreements arise in architectural typologies and emphases: some focus on LLM-based agent orchestration and tool invocation (Kumar, 2025; Xu et al., 2025), others on cognitive and environmental agency dimensions (Wissuchek & Zschech, 2025), or formal models of agent design patterns (Joshi, 2025). The role of generative AI is distinct but complementary to agentic AI is debated (Todupunuri, 2025; Sapkota et al., 2025).	Differences reflect research perspectives (theoretical taxonomy vs. implementation case studies), technological focus (LLM-centric vs. multi-agent general AI), and sector-specific needs (e.g., financial advisories vs. enterprise workflows).

Risk Management Effectiveness	Broad agreement exists that agentic AI improves risk functions such as fraud detection, credit scoring, and dynamic portfolio risk mitigation, enhancing accuracy and timeliness (Joshi, 2025) (Ogundimu, 2025) (Ajuwon et al., 2025) (Sadok et al., 2023) (Raj, 2025). Multi-agent and retrieval-augmented generation approaches show promise in complex risk environments (Bhogawar, 2025) (Sapkota et al., 2025).	Divergences appear in the extent of robustness and transparency achieved. Some studies report persistent challenges in bias, model explainability, and regulatory acceptance (Nayak, 2025; Angela & Odewuyi, 2024) (Soni et al., 2025). Insurance sector risk management with agentic AI is less explored than banking and investment (Herrmann & Masawi, 2022; Hill et al., 2025).	Variations are driven by sector-specific data availability, model maturity, and risk complexity. Different evaluation metrics and a focus on emerging ethical issues affect conclusions on effectiveness.
Implementation Challenges and Adoption Barriers	Studies commonly identify workforce upskilling, integration with legacy systems, and ethical governance as major challenges in agentic AI deployment across sectors (Joshi, 2025; Somu, 2025; Kumar, 2024; Allam et al., 2025) (Vettriselvan et al., 2025). Hybrid human-AI workflows and trust-building are agreed to be critical success factors (Bhogawar, 2025) (Samdani et al., 2023).	Divergence exists in emphasis: some highlight regulatory uncertainty and data privacy as primary barriers in banking and insurance (Vettriselvan et al., 2025; Raghuvanshi, 2025), while others emphasize technology adoption hurdles and cultural transformation in investment management Kumar, 2024). Geographic and sectoral maturity differences also influence perceived barriers (Herrmann & Masawi, 2022; Hill et al., 2025).	Differences arise from heterogeneous regulatory landscapes, sector-specific operational cultures, and the varying pace of AI maturity. Studies with different scopes (global vs regional) and methodologies also lead to varied emphases on challenges.

7.0 Theoretical and Practical Implications

7.1 Theoretical Implications

1. The synthesized findings reinforce the conceptual distinction and evolution of agentic AI as autonomous, goal-driven systems that extend beyond traditional AI and generative AI paradigms, emphasizing multi-agent collaboration, dynamic task decomposition, and persistent memory. This supports emerging theoretical frameworks that characterize agentic AI as a paradigm shift in AI autonomy and adaptability(Bandi et al., 2025; Sapkota et al., 2025; Wissuchek & Zschech, 2025).
2. The literature highlights the integration of decision-theoretic models, reinforcement learning, and belief systems as foundational to agentic AI's superior performance in dynamic and uncertain financial environments, thereby advancing theoretical understanding of AI decision-making under uncertainty in finance(Nayak, 2025; Sawant, 2025).
3. Ethical and governance challenges identified across studies challenge existing AI theories that often prioritize technical performance over fairness, transparency, and accountability, calling for expanded theoretical models that incorporate

sociotechnical dimensions such as bias mitigation, explainability, and regulatory compliance(Selvam, 2025; Raghuvanshi, 2025; ADABARA et al., 2025).

4. The evaluation frameworks proposed for agentic AI systems underscore the necessity of multidimensional assessment metrics that combine technical efficacy with human-centered factors like trust and economic sustainability, thus extending theoretical approaches to AI system evaluation beyond narrow performance metrics (Shukla, 2025; Bandi et al., 2025).
5. The comparative analyses across banking, insurance, and investment sectors reveal sector-specific nuances in agentic AI applications, suggesting that theoretical models of AI impact must account for domain-specific operational, regulatory, and ethical contexts rather than assuming uniform effects (Joshi, 2025; Hill et al., 2025; Pareek, 2025).
6. The emergent role of hybrid human-AI workflows and the emphasis on human-AI collaboration in agentic AI deployment challenge purely autonomous AI theories, advocating for frameworks that integrate human oversight and partnership as core components of agentic AI systems (Bhogawar, 2025; Allam et al., 2025).

8.2 Practical Implications

1. Financial institutions can leverage agentic AI to achieve substantial productivity gains, risk management improvements, and enhanced customer engagement, particularly
2. through specialized frameworks and multi-agent systems tailored to complex financial tasks such as algorithmic trading and fraud detection (Joshi, 2025; Sawant, 2025; Bhogawar, 2025).
3. The deployment of agentic AI necessitates robust governance frameworks that address ethical concerns, regulatory compliance, and operational transparency, highlighting the importance of integrating explainable AI techniques, fairness metrics, and continuous monitoring to build trust and ensure accountability(Selvam, 2025; ADABARA et al., 2025) (Vettriselvan et al., 2025).
4. Sector-specific implementation strategies are critical, as banking, insurance, and investment services face distinct challenges related to data privacy, regulatory environments, and workforce transformation; thus, tailored approaches that consider these differences can optimize agentic AI adoption and effectiveness (Todupunuri, 2025; Hill et al., 2025; Kumar, 2024).
5. Policymakers and regulators should prioritize the development of adaptive, interoperable standards and compliance tools that can keep pace with the evolving capabilities of agentic AI, ensuring that innovation does not outstrip oversight and that systemic risks are mitigated (Joshi, 2025).
6. The integration of agentic AI with cloud-native architectures and scalable platforms, such as those built on AWS, offers practical pathways for financial institutions to deploy autonomous financial assistants that enhance personalization and operational efficiency while maintaining security and auditability (Kumar, 2025; Xu et al., 2025).
7. Workforce upskilling and cultural transformation are essential practical considerations, as agentic AI adoption reshapes job roles and requires new competencies in AI governance, ethical AI use, and hybrid human-AI collaboration to sustain competitive advantage and operational resilience (Somu, 2025; Kumar, 2024; Raj, 2025).

8.0 Gaps and Future Research Directions

Table-5: Gaps and Future Research Directions

Gap Area	Description	Future Research Directions	Justification	Research Priority
Standardization and Interoperability of Agentic AI Architectures	Lack of standardized frameworks and interoperability guidelines across agentic AI architectures limits cross-sector adoption and benchmarking.	Develop and validate standardized architectural frameworks and interoperability protocols tailored for banking, insurance, and investment sectors to enable seamless integration and comparative evaluation.	Standardization is essential to facilitate scalable deployment and cross-sector learning, as current frameworks remain fragmented and mostly conceptual (Joshi, 2025) (Joshi, 2025).	High
Underrepresentation of the Insurance Sector in Empirical Studies	The insurance sector is underrepresented in agentic AI research compared to banking and investment, leading to an incomplete understanding of sector-specific impacts.	Conduct empirical, sector-specific studies focusing on agentic AI applications in insurance, including underwriting, claims processing, and risk assessment, with comparative analyses against banking and investment.	Addressing this gap is critical to ensure balanced insights and tailored AI solutions across all financial services (Herrmann & Masawi, 2022) (Hill et al., 2025).	High
Empirical Validation of Ethical and Governance Frameworks	Existing ethical and governance frameworks for agentic AI are largely conceptual with limited empirical validation in real- world financial contexts.	Design longitudinal and experimental studies to test the effectiveness of ethical AI frameworks, fairness metrics, and governance models in operational banking, insurance, and investment environments.	Empirical validation is necessary to move beyond theoretical proposals and ensure practical, enforceable ethical compliance (Pareek, 2025) (Shukla, 2025) (Joshi, 2025).	High

Longitudinal Impact Assessment of Agentic AI on Productivity and Risk	Limited longitudinal data exists on sustained productivity gains, risk management improvements, and unintended consequences of agentic AI deployment.	Implement multi-year studies tracking agentic AI's operational performance, risk mitigation, and workforce effects across financial sectors to assess long-term benefits and challenges.	Longitudinal insights are vital to understand durability of AI benefits and evolving risks over time (Bhogawar, 2025) (Sawant, 2025) (Raj, 2025).	High
Workforce Transformation and Socio-Technical Adoption Barriers	Insufficient research on workforce upskilling, cultural readiness, and socio-technical factors influencing agentic AI adoption in financial institutions.	Investigate workforce training models, organizational culture shifts, and consumer acceptance dynamics through mixed-methods research to develop actionable adoption strategies.	Addressing human factors is crucial for successful AI integration and mitigating resistance or skill gaps (Joshi, 2025) (Somu, 2025) (Allam et al., 2025).	High
Evaluation Metrics for Multi-Dimensional Agentic AI Performance	Current evaluation metrics focus narrowly on technical performance, lacking consensus on comprehensive, multidimensional frameworks including fairness, trust, and economic sustainability.	Develop and empirically validate balanced evaluation frameworks incorporating technical, ethical, human-centered, and economic dimensions for agentic AI in finance.	Holistic metrics are needed to ensure responsible AI deployment and to capture emergent behaviors and sociotechnical impacts (Bandi et al., 2025) (Shukla, 2025) (ADABARA et al., 2025).	Medium
Integration of Agentic AI with Generative AI in Financial Services	Limited empirical research on hybrid models combining agentic AI and generative AI, especially outside banking, and their regulatory and ethical implications.	Conduct empirical studies and develop hybrid frameworks for integrating agentic and generative AI across banking, insurance, and investment, focusing on explainability, privacy, and compliance.	Hybrid models promise enhanced operational and customer-facing capabilities but require validation and governance frameworks (Todupunuri, 2025).	Medium

Cross-Sector Comparative Analyses of Agentic AI Impact	Scarcity of direct benchmarking studies comparing agentic AI's productivity, risk management, and customer engagement effects across banking, insurance, and investment.	Design comparative studies using standardized metrics to evaluate differential impacts and sector-specific benefits or challenges of agentic AI technologies.	Comparative insights will inform tailored strategies and resource allocation across financial sectors (Herrmann & Masawi, 2022) (Kumar, 2024).	Medium
Operationalization of Ethical AI Frameworks in Diverse Financial Contexts	Lack of detailed guidance on implementing ethical AI principles practically within diverse financial service workflows and regulatory environments.	Develop sector-specific ethical AI implementation toolkits and best practice guidelines, validated through pilot projects in banking, insurance, and investment firms.	Practical Operationalization is necessary to translate ethical principles into actionable compliance and governance (Selvam, 2025) (Raghuvanshi, 2025) (Vettriselvan et al., 2025).	Medium
Addressing Emergent Behavior and Coordination Failures in Multi-Agent Systems	Insufficient research on managing emergent risks such as hallucinations, coordination failures, and brittleness in complex multi-agent financial AI systems.	Investigate robust control mechanisms, causal modeling, and real-time monitoring techniques to mitigate emergent risks in agentic AI deployments.	Managing emergent behaviors is critical to ensure system reliability and regulatory compliance in high-stakes financial applications (Sapkota et al., 2025) (Shukla, 2025).	Medium

Overall Synthesis and Conclusion

The collective body of research on agentic AI's impact across banking, insurance, and investment reveals a transformative influence marked by substantial productivity gains, enhanced risk management, and improved customer engagement, particularly in banking and investment sectors where adoption is strongest. Agentic AI technologies, characterized by autonomous decision-making, multi-agent collaboration, and adaptive learning, have been effectively deployed to automate complex financial workflows, including fraud detection, portfolio optimization, credit scoring, and personalized financial planning. These advancements are driving operational efficiencies, reducing task completion times significantly, and enabling scalable, real-time financial services that enhance both institutional performance and customer experience.

Despite these promising outcomes, the literature consistently highlights the underrepresentation of insurance in empirical agentic AI research, suggesting a sector-specific gap that limits holistic understanding of agentic AI's full spectrum of impact across financial services. Furthermore, the integration of agentic AI with generative AI and hybrid human-AI models emerges as a cutting-edge frontier, offering new opportunities for enhanced automation and personalization, though practical implementation challenges such as explainability, data privacy, and regulatory alignment remain largely unresolved outside banking contexts.

Ethical and regulatory considerations permeate the discourse, with widespread acknowledgment of critical issues including algorithmic bias, lack of transparency, accountability, and evolving compliance requirements. The research underscores the necessity of robust governance frameworks that embed fairness, continuous monitoring, and human oversight to mitigate risks inherent in autonomous systems. However, governance and ethical models are often conceptual, with limited empirical validation of their effectiveness in dynamic financial environments. Regulatory landscapes are fragmented and rapidly evolving, posing hurdles to standardized, cross-sector deployment of agentic AI.

Implementation challenges prominently feature workforce transformation needs, integration with legacy systems, and organizational readiness, highlighting socio-technical barriers that extend beyond pure technological innovation. Studies advocate for multidisciplinary approaches combining technical, managerial, and cultural strategies to foster successful adoption, yet detailed, tested solutions remain scarce. Evaluation frameworks are advancing toward multidimensional metrics encompassing performance, robustness, safety, and economic sustainability, but lack consensus and real-world validation.

Overall, the literature illustrates agentic AI's profound potential to revolutionize financial services while simultaneously revealing critical gaps in sector-specific analysis, ethical governance operationalization, and longitudinal impact assessment. Future research should prioritize interdisciplinary, empirical studies that address these gaps, support standardization of architectures and metrics, and develop actionable frameworks for responsible, equitable, and sustainable adoption of agentic AI across the diverse landscape of financial services.

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