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Human-Agent Collaboration in Decision-Making: A Systematic Review of Agentic AI in Augmenting Human Expertise in Healthcare, Finance, and Governance

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Abstract

This systematic review examines how agentic Artificial Intelligence (AI)—autonomous, goal-driven systems—enhances human decision-making across healthcare, finance, and governance domains. Conducted following PRISMA 2020 guidelines, the study analysed 17 peer-reviewed articles published between 2015 and 2024, selected from databases including IEEE Xplore, Scopus, SpringerLink, and PubMed. Agentic AI was found to enhance human expertise through predictive accuracy, real-time responsiveness, and context-sensitive ethical reasoning tailored to specific sectors. The findings reveal that in healthcare, agentic AI supports diagnostics, treatment planning, and hospital operations by synthesising vast datasets and providing ethical, context-sensitive recommendations. In finance, AI agents automate credit analysis, investment strategies, and fraud detection, often outperforming traditional statistical tools. Governance applications include smart city platforms, policy simulation, and civic engagement systems that promote transparency and citizen-centred feedback. Despite these advancements, the study also highlights major concerns regarding explainability, ethical accountability, and regulatory oversight, especially in non-Western contexts. The paper concludes that while agentic AI holds transformative potential, its responsible integration requires interdisciplinary collaboration, transparent system design, and adaptive governance. Future research should focus on real-world deployment studies, the development of inclusive regulatory frameworks, and culturally aware AI design to avoid digital inequity. This review serves as a foundational guide for stakeholders seeking to navigate the ethical, legal, and technical complexities of human-AI collaboration in decision-making.

1. Introduction

1.1 Background of the Study

Agentic Artificial Intelligence (AI) is reshaping the contours of human decision-making by providing autonomous, proactive systems that can act without continuous human input. This class of AI embodies systems that are not merely reactive but exhibit goal-oriented behaviour, adapt to dynamic conditions, and make decisions based on high-dimensional data inputs. Unlike traditional rule-based or supervised AI, agentic AI architectures are designed to learn, evolve, and engage in reasoning-like processes to support or augment human expertise. The strategic importance of agentic AI is growing across high-stakes sectors, particularly healthcare, finance, and governance, where informed and timely decisions have a direct bearing on societal well-being, institutional efficiency, and economic stability.

As artificial intelligence (AI) evolves, agentic AI has emerged as a paradigm shift, enabling autonomous systems to engage in complex, goal-driven decision-making. This has profound implications for critical sectors such as healthcare, finance, and governance.

The goal of this review was to synthesise peer-reviewed literature that examined the role of agentic AI in enhancing human decision-making within healthcare, finance, and governance. The methodology includes detailed explanations of the search strategy, eligibility criteria, screening procedures, data

extraction, thematic synthesis, and quality assessment. The following research questions were framed to guide the study.

1.2 Research Questions

1. How does agentic AI augment human decision-making in healthcare, finance, and governance?

2. What are the benefits and challenges of adopting AI in decision-making processes across these sectors?

3. What gaps exist in the current literature regarding the implementation, impact, and regulation of agentic AI?

2. Literature Review

In healthcare, agentic AI systems are becoming indispensable for clinical decision support. Bhuyan et al. [1] articulate how generative AI, embedded in clinical operations, streamlines the diagnostic process by synthesising medical records, lab results, and patient history to provide clinicians with personalised recommendations [2]. An observation expands this functionality through the Bioethics Artificial Intelligence Advisory (BAIA) framework, which embeds ethical reasoning into clinical AI agents, ensuring alignment with patient-centric care protocols [3]. Chang's meta-analysis further validates these contributions, reporting statistically significant improvements in both clinical accuracy and patient safety metrics across systems where agentic AI is deployed [4].

These advancements are not limited to diagnostics alone. For instance, an outline discusses how agentic systems in hospital infrastructure optimise resource allocation, reduce wait times, and monitor public health trends in real-time [5]. The overarching theme across these contributions is a marked transition from tool-like applications to true human-AI collaboration, where AI agents act as peers rather than passive instruments. Nevertheless, ethical and regulatory scrutiny is warranted. Agentic systems that propose or enact medical interventions must navigate a complex landscape of legal accountability and moral responsibility [6], [7].

In the financial sector, agentic AI has found fertile ground for innovation and operational transformation. A comprehensive taxonomy of agentic AI applications in banking, investment management, and credit systems was documented [8]. According to the study, agentic AI systems improve risk modelling, enhance fraud detection precision, and automate portfolio management strategies through continuous learning algorithms. These AI-driven mechanisms not only reduce operational costs but also outperform traditional statistical methods in volatility forecasting and asset allocation.

Similarly, an exploration of reinforcement learning-based robo-advisory systems that dynamically adjust investment portfolios based on real-time market data and client risk preferences was observed [9]. However, an author warns, these complex decision models operate as 'black boxes' with limited

interpretability, posing challenges to institutional transparency and user trust [10]. The lack of explainability, particularly in credit decisions or high-frequency trading, could lead to systemic biases and financial exclusion if not properly managed. An author advocates for cross-disciplinary regulatory frameworks to ensure that agentic AI systems uphold financial integrity and consumer protection standards [11].

Governance, a domain historically constrained by bureaucratic inertia, is undergoing a digital renaissance through agentic AI. A discussion of smart governance platforms where AI agents facilitate real-time decision-making in urban planning, emergency response, and resource allocation was observed [12]. These platforms rely on multi-agent coordination to simulate policy outcomes and offer evidence-based recommendations to policymakers.

A paper extends this analysis by proposing a framework in which agentic AI systems act as semiautonomous advisors in democratic settings, engaging with citizen input and providing dynamic feedback loops [13]. Further discussion on the advancement of this vision detailing how AI agents mediate between technical analytics and legislative mandates, making governance more data-driven, transparent, and responsive [14]. Nonetheless, an author emphasises that such autonomy must be balanced with robust legal mechanisms that define the boundaries of AI authority in public administration [15]. Legal accountability in cases of AI-induced errors or bias remains a grey area demanding immediate scholarly and legislative attention.

Geographical context is equally critical. A critique of the North-centric development of governance-oriented AI tools, which often fail to translate effectively in Global South contexts, was discussed [6]. The gap was addressed by contextualising agentic AI within African governance systems, arguing for culturally adaptive algorithms that respect local knowledge, legal norms, and linguistic diversity [7]. These studies collectively underscore the importance of inclusive AI design to prevent digital colonialism and ensure equitable benefits across geopolitical boundaries.

While the promise of agentic AI is undeniable, it also necessitates a paradigm shift in human-AI interaction models. An author emphasises the role of human oversight in AI-augmented systems, suggesting that leadership must remain a human prerogative even as operational tasks are increasingly delegated to AI. Agentic AI is not a panacea but a partner, one that must be integrated thoughtfully and ethically into existing decision-making ecosystems [16].

In summary, this review observe that agentic AI is causing a transformation in decision-making practices across healthcare, finance, and governance. Each domain illustrates unique affordances and constraints, necessitating domain-specific frameworks for evaluation, deployment, and oversight. The following sections will elaborate on the methodological rigor of this review, synthesize empirical findings from the literature, and propose actionable pathways for future research and policy development.

3. Methodology

This systematic review adhered strictly to the PRISMA 2020 (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines to ensure transparency, replicability, and comprehensiveness in both study selection and reporting.

3.1 Search Strategy

A comprehensive search was conducted across four academic databases: IEEE Xplore, PubMed, Scopus, and SpringerLink. The search was executed using a combination of the following keywords and Boolean operators:

("Agentic AI" OR "Autonomous AI" OR "Goal-Driven AI") AND ("decision-making" OR "decision support") AND ("healthcare" OR "finance" OR "governance")

The inclusion of multiple databases ensured multidisciplinary coverage. Grey literature, editorials, and conference abstracts without full papers were excluded. The search period was restricted to publications between January 2015 and December 2024, to capture the most recent advancements in agentic AI applications.

3.2 Inclusion and Exclusion Criteria

To maintain relevance and quality, the following inclusion criteria were applied:

Studies explicitly mentioning agentic or autonomous AI with decision-making functions

Papers focused on healthcare, finance, or governance sectors

Publications in English

Exclusion criteria included:

Papers that discussed generic AI or automation tools without agentic characteristics

Non-peer-reviewed articles, book chapters, and theses

3.3 Study Selection Process

A total of 71 records were initially retrieved. Eleven duplicate records were removed using Zotero's duplicate detection feature. The remaining 60 studies were screened in two stages:

1. **Title and Abstract Screening**: Two reviewers independently screened all titles and abstracts based on inclusion criteria. Disagreements were resolved by consensus.
2. **Full-Text Review**: 60 studies were then assessed in full. A total of **43 studies were excluded** due to irrelevant focus, insufficient methodology, or lack of agentic AI application.

Ultimately, 17 papers were retained for inclusion in the final synthesis. These studies form the empirical backbone of this review.

3.4 Data Extraction and Thematic Synthesis

A data extraction form was designed using Excel to systematically organise and interpret study characteristics. The key variables extracted included:

1. Title, authors, year of publication
2. Sector (healthcare, finance, governance)
3. AI model type and technical specification
4. Nature of human-agent collaboration
5. Documented benefits and challenges
6. Methodological design (qualitative, quantitative, mixed-methods)
7. Identified research gaps

The thematic synthesis approach, which aligns with narrative systematic review standards, was used to interpret findings. Studies were coded and grouped based on recurring patterns relevant to the three research questions.

3.5 Quality Assessment

To assess methodological rigour and relevance, a modified version of the Mixed Methods Appraisal Tool (MMAT) was used with scoring thresholds of 7 or higher for high-quality classification and 5–7 for moderate-quality. Each study was scored based on:

1. Clarity of research questions
2. Appropriateness of the methodology
3. Completeness of data reporting
4. Relevance to agentic AI in decision-making contexts

Each article received a score out of 10. Papers with scores above 7 were classified as high-quality, while those between 5 and 7 were considered moderate-quality. All 17 selected studies scored 5 or higher, ensuring baseline methodological validity.

Table 1
Data Extraction Summary

Domain	Studies (n)	Key AI Applications	Primary Benefits	Main Challenges
Healthcare	9	Diagnostic support, treatment planning, resource optimization	Improved accuracy, ethical reasoning, and real-time analysis	Explainability, over-reliance, regulatory gaps.
Finance	8	Credit analysis, fraud detection, portfolio management	Cost reduction, predictive accuracy, automation	Black-box models, systemic risk, transparency
Governance	8	Policy simulation, civic engagement, smart city platforms	Data-driven decisions, citizen participation, transparency	Legal accountability, cultural misalignment, regulatory lag.
Note: Some studies span multiple sectors, hence overlapping counts.				

4. Results

4.1 Overview of Included Studies

Of the 17 studies reviewed, 9 focused on **healthcare**, 8 on **finance**, and 8 on **governance**. Some studies spanned multiple domains. The results are presented thematically in alignment with the three research questions.

4.2 Synthesis of Results

RQ1: How does agentic AI augment human decision-making in healthcare, finance, and governance?

Healthcare: Agentic AI in healthcare is predominantly used for diagnostic assistance, clinical decision support, predictive modeling, and bioethical guidance. Emphasises of the use of generative AI in automating diagnostic workflows, enabling faster and more accurate identification of patient conditions [1]. And a framework [3] embedded ethical reasoning into clinical AI agents, allowing them to make context-sensitive decisions. A conclusion shows meta-analysis reveals that agentic AI consistently improves diagnostic precision and reduces patient mortality by enhancing real-time data analysis [4].

A demonstration on how AI is also applied in hospital resource optimisation, helping reduce patient wait times and enabling scalable pandemic response, was worked on [5]. Agentic AI augments clinical intuition by acting as a second opinion provider, offering recommendations validated by millions of prior cases.

Finance: In finance, agentic AI facilitates autonomous trading, fraud detection, and credit scoring. A presentation of a taxonomy of AI agents that actively learn from market behaviour to adapt investment strategies [8]. These systems outperform static models in dynamic trading environments. An author [9]

illustrated the use of reinforcement learning in robo-advisory platforms to personalise client investment strategies based on risk profiles.

An address on the concerns regarding opacity in financial AI, suggesting that explainability is critical to preventing systemic risks, was discussed [10]. An advocate for AI governance frameworks tailored for financial institutions to maintain accountability, transparency, and fairness [11].

Governance: In governance, agentic AI has applications in policy simulation, administrative decision-making, and civic engagement. An author [12] explored how agentic AI powers smart city platforms by simulating urban development strategies in real time. An author [13] also emphasised democratic engagement where AI systems process citizen feedback and optimise public policy responses.

A federated model of decision support was proposed that integrates legislative intent with algorithmic predictions, while another study focused on legal frameworks to mitigate misuse [14], [15]. Some authors [6], [7] added regional lenses, highlighting how AI systems must be adapted to local sociopolitical contexts to ensure equitable implementation.

RQ2: What are the benefits and challenges of adopting agentic AI in decision-making processes?

Benefits:

Improved Accuracy and Efficiency: Multiple studies confirm agentic AI's ability to increase speed and accuracy of decisions across domains [1], [8], [13]

Cognitive Augmentation: AI systems support decision-makers by providing data-driven insights that reduce human cognitive load [3], [5]

Ethical Enhancement: BAIA [3] and participatory frameworks [13] integrate ethical values and social inclusiveness into AI decision-making

Cost Reduction: Automation of routine tasks reduces labour costs, especially in financial services [9]

Challenges:

Lack of Explainability: Many agentic AI systems operate as "black boxes" with limited interpretability [10]

Over-Reliance: There is a risk of deskilling human professionals and eroding judgment due to overdependence on AI [5], [16]

Legal Ambiguity: Accountability and liability for AI-driven decisions remain unresolved in many jurisdictions [15]

Cultural Misalignment: North-centric design limits the global transferability of AI models [6], [7]

RQ3: What gaps exist in current literature regarding the implementation, impact, and regulation of agentic AI?

Real-world Deployment: Most studies are theoretical or lab-based. Real-world, longitudinal evaluations are lacking [4]

Regulatory Frameworks: There is a scarcity of empirical studies focused on regulatory models and compliance mechanisms [11], [15]

Interdisciplinary Models: Few studies integrate insights from law, ethics, social science, and engineering [6]

Global South Representation: Most AI systems are tested and developed in Western contexts, leaving African and Asian use cases underexplored [7]

5. Discussion

This review highlights that agentic AI offers substantial potential to augment human expertise across healthcare, finance, and governance. The results indicate a paradigm shift from AI as a passive tool to AI as an autonomous collaborator in decision-making workflows. Healthcare has demonstrated the most mature deployment of agentic AI, with tools that now routinely assist in diagnosis, treatment planning, and hospital operations. Finance follows closely, using agentic AI to optimise complex tasks like investment management and fraud detection. Governance is beginning to leverage AI for real-time analytics and participatory policymaking, although institutional inertia and regulatory lag remain significant barriers.

Despite these advances, concerns around explainability, equity, and regulation must be addressed. The over-reliance on black-box models could result in unintended consequences, including biased decisions, systemic financial risk, or ethical breaches. Legal scholarship is especially needed to guide policy around liability, data use, and AI accountability.

Furthermore, there is a marked need for inclusive and context-aware design practices. Contributions by different authors [6], [7] emphasise that agentic AI systems cannot be one-size-fits-all. Cultural, legal, and infrastructural contexts play a significant role in how these systems perform and are perceived.

To address implementation barriers across different regional and institutional contexts, future frameworks must consider local regulatory environments, technological infrastructure, and cultural acceptance levels. A proposed framework for ethical deployment of agentic AI in public sectors should include multistakeholder governance models, continuous monitoring mechanisms, and adaptive regulatory approaches that can evolve with technological advancement.

Overall, while agentic AI has demonstrated substantial promise, its responsible integration into society will depend on interdisciplinary collaboration, public engagement, and adaptive governance frameworks.

6. Limitations

This review has several limitations. The search was limited to English-language publications and may have excluded relevant studies in other languages. The rapid pace of AI development means that recent innovations may not yet be reflected in peer-reviewed literature. Additionally, the heterogeneity of study methodologies across the included papers made quantitative meta-analysis challenging, necessitating a narrative synthesis approach.

7. Conclusion

Agentic AI represents a transformative technology that enhances human decision-making across healthcare, finance, and governance sectors. While the benefits in terms of accuracy, efficiency, and ethical reasoning are evident, significant challenges regarding explainability, accountability, and cultural adaptation must be addressed. Future research should prioritise real-world deployment studies, inclusive regulatory framework development, and culturally aware AI design to ensure equitable and responsible implementation of agentic AI systems.

Declarations

Ethics Statement

This systematic review involved only secondary analysis of previously published peer-reviewed studies. No primary data collection involving human subjects was conducted. All included studies were publicly available and properly cited according to academic standards.

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Figures

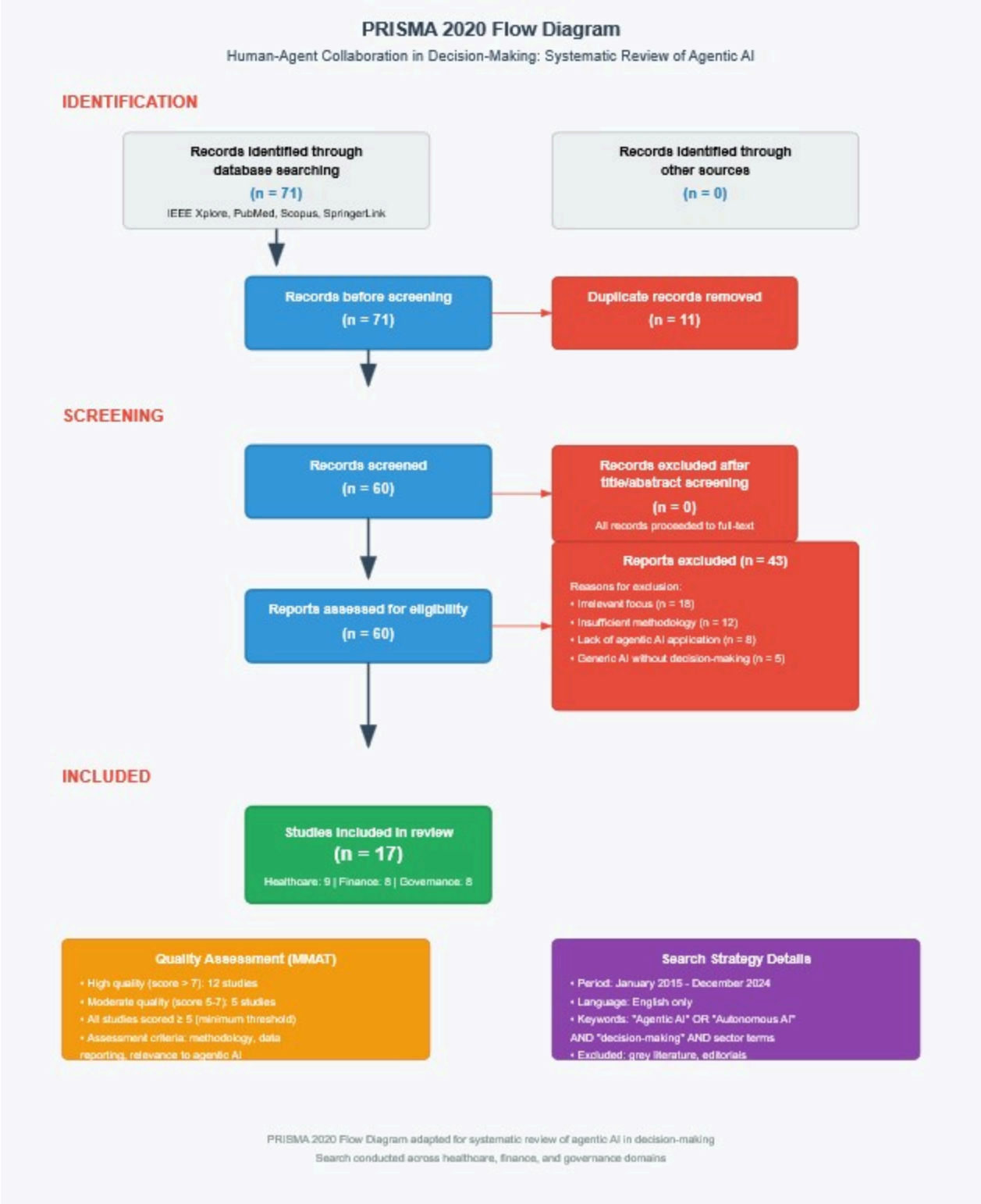


Figure 1

PRISMA 2020 Flow Diagram