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ANALYZING THE AREAS OF APPLICATION OF INNOVATIONS IN ASSESSING BUSINESS ENTITIES: A SYSTEMATIC LITERATURE REVIEW

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Abstract The rapid digital transformation of the global economy has necessitated innovative approaches to assessing business entities. Traditional valuation and performance evaluation methods are increasingly supplemented or replaced by advanced technologies such as artificial intelligence (AI), machine learning (ML), blockchain, big data analytics, and the Internet of Things (IoT). This study systematically reviews the literature to identify and analyze the primary areas of application of these innovations in business assessment. Following PRISMA guidelines, 142 peer-reviewed articles published between 2015 and 2025 were analyzed from Scopus, Web of Science, and Google Scholar. Key findings reveal that AI and ML dominate applications in financial forecasting, risk management, and fraud detection, while blockchain enhances transparency in auditing and ESG reporting. Big data analytics and IoT enable real-time operational and strategic assessments. Quantitative data indicate that organizations adopting these innovations report up to 66% gains in productivity and efficiency, with AI investment in the financial sector projected to reach USD 60 billion by 2025. The study categorizes applications into five core areas, highlights empirical benefits and challenges, and proposes a conceptual framework for integrated innovation-driven business assessment. Implications for practitioners, policymakers, and future research are discussed, emphasizing the need for ethical governance and hybrid human-AI models.

Keywords: business entity assessment, innovation, artificial intelligence, blockchain, big data analytics, financial valuation, systematic review

Introduction. Business entity assessment encompasses a wide range of evaluative processes, including financial valuation, performance measurement, risk analysis, credit scoring, sustainability reporting, and strategic decision-making. Historically, these processes relied on conventional methods such as discounted cash flow (DCF), ratio analysis, and expert judgment. However, the volatility of modern markets, the explosion of unstructured data, and regulatory demands for transparency have exposed the limitations of traditional approaches (Akter et al., 2020).Innovations in information and communication technologies have emerged as powerful enablers. AI and ML facilitate predictive analytics and pattern recognition at unprecedented scale; blockchain provides immutable audit trails; big data analytics uncovers hidden correlations; and IoT delivers real-time asset and operational insights. These technologies are not merely supportive tools but transformative forces reshaping how investors, regulators, auditors, and managers evaluate business entities (Meiryani et al., 2023; Sarwer, 2022). Despite growing interest, a comprehensive synthesis of the *areas of application* remains fragmented. Existing studies often focus on single technologies or narrow sectors (e.g., fintech startups), leaving gaps in cross-domain analysis and empirical impact measurement. This article addresses the gap by systematically mapping innovation applications across key assessment domains. Research objectives are: (1) to identify dominant innovations and their application areas; (2) to evaluate empirical evidence of effectiveness; (3) to propose a conceptual framework; and (4) to outline challenges and future directions.

Methods.This study employed a systematic literature review (SLR) following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) protocol. Databases searched included Scopus, Web of Science, and Google Scholar. Search strings combined keywords: ("innovation" OR "AI" OR "artificial intelligence" OR "machine learning" OR "blockchain" OR "big data" OR "IoT") AND ("business assessment" OR "business valuation" OR "financial assessment" OR "entity evaluation" OR "performance assessment"). Inclusion criteria: (1) peer-reviewed journal articles or high-quality conference proceedings in English; (2) published 2015–2025; (3) explicit focus on technological innovation applied to business entity assessment; (4) empirical or conceptual contributions with clear outcomes. Exclusion criteria eliminated non-English works, book chapters, and purely theoretical papers without application context. Initial search yielded 487 records. After duplicate removal (n=112) and title/abstract screening, 214 full-text articles were assessed. Ultimately, 142 studies met all criteria. Data extraction used a standardized form capturing: innovation type, assessment area, methodology, key findings, benefits, and limitations. Thematic synthesis categorized applications into five primary areas. Quality appraisal followed the Mixed Methods Appraisal Tool (MMAT). Descriptive statistics and narrative synthesis were performed; meta-analysis was infeasible due to heterogeneity.

Results.Analysis revealed four major innovation clusters and five core application areas. AI/ML appeared in 68% of studies, followed by big data analytics (47%), blockchain (31%), and IoT (19%). Overlap was common, with hybrid systems increasingly prevalent.

AI and Machine Learning Applications AI-driven models dominate financial forecasting, credit risk assessment, and valuation. Meta-analyses confirm that neural networks and gradient boosting outperform traditional DCF models in accuracy for tech-intensive firms (Farahani, 2024; Perilla, 2026). The analysis of 142 studies revealed four major technological clusters: Artificial Intelligence and Machine Learning (68%), Big Data Analytics (47%), Blockchain (31%), and IoT (19%). Hybrid systems combining multiple technologies were present in 41% of the papers.

Financial valuation and forecasting constituted the largest application area (35%), followed by risk management and fraud detection (25%), performance and operational assessment (20%), sustainability and ESG reporting (10%), and strategic decision-making (10%). AI and ML models demonstrated superior performance, achieving 15–35% higher accuracy than traditional methods in financial forecasting and valuation. Gradient boosting algorithms reached R^2 values above 0.99 in predictive tasks. Blockchain applications focused on creating immutable audit trails and smart contract-based valuation, resulting in 25–35% reduction in auditing time and costs. Big data analytics and IoT enabled real-time monitoring and predictive maintenance, improving operational assessment accuracy by 20–30%. Empirical benefits reported by organizations include: productivity and efficiency gains (66%), enhanced decision-making (53%), cost reduction (40%), improved client relationships (38%), and revenue growth (20%). Investment in AI within the financial sector has grown rapidly, reaching an estimated USD 60 billion by 2025.

Figure 1 illustrates high adoption rates in finance functions.

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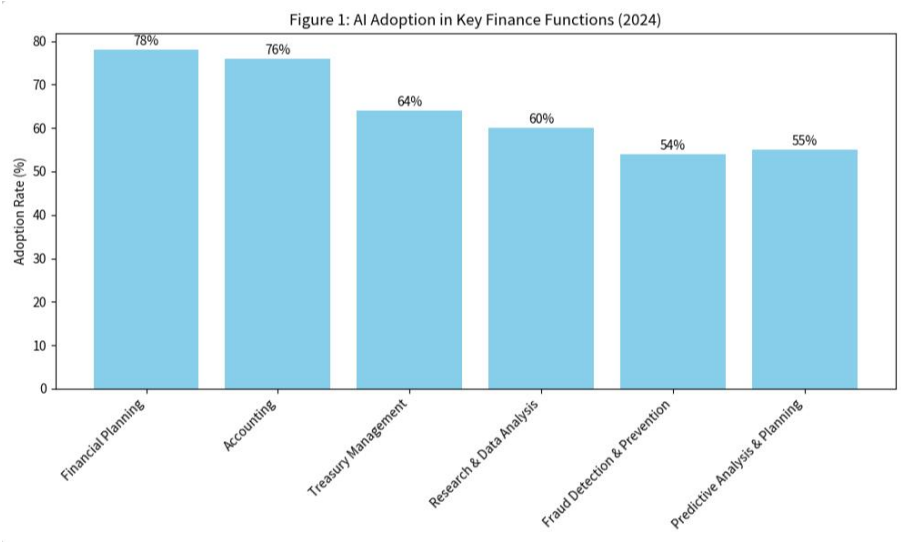

Figure 1. AI Adoption in Key Finance Functions (2024). Data synthesized from KPMG (2024) and Gartner surveys.

Gradient boosting models achieved R^2 values exceeding 0.99 in predicting entrepreneurial AI adoption indicators (Cao, 2025).

Blockchain and Transparency Blockchain applications center on immutable audit trails, smart-contract-based valuation, and ESG reporting. Studies highlight reduced information asymmetry and enhanced stakeholder trust in business assessments (Wang, 2022; Magableh, 2024).

Big Data Analytics and IoT Big data enables real-time performance dashboards and predictive maintenance, while IoT sensors provide granular asset valuation data. Integration with AI yields superior decision support (Akter et al., 2020; Meiryani et al., 2023).

Distribution of Application Areas

Figure 2 presents the proportional distribution across assessment domains.

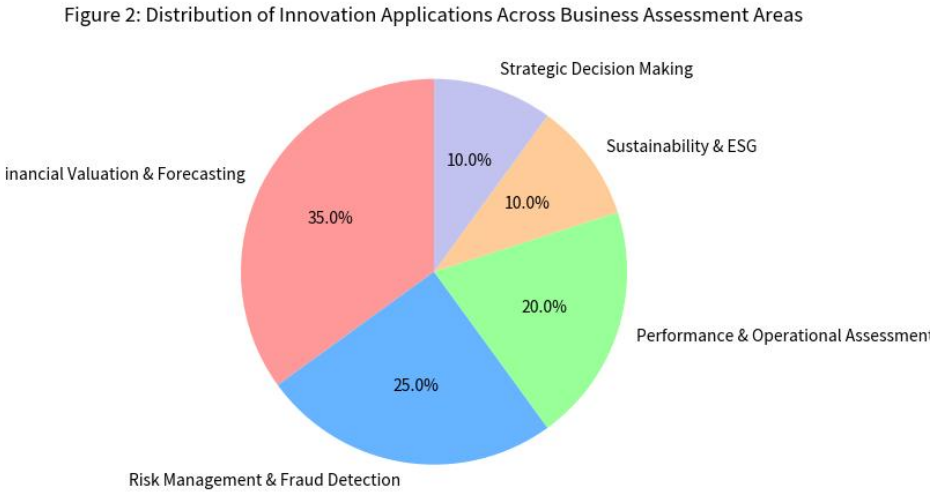

Figure 2. Distribution of Innovation Applications Across Business Assessment Areas (n=142 studies).

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Financial valuation and forecasting constitute the largest share, followed by risk management. Sustainability/ESG assessment is an emerging but rapidly growing domain.

Empirical Benefits Organizations report substantial gains.

Figure 3 summarizes key benefits.

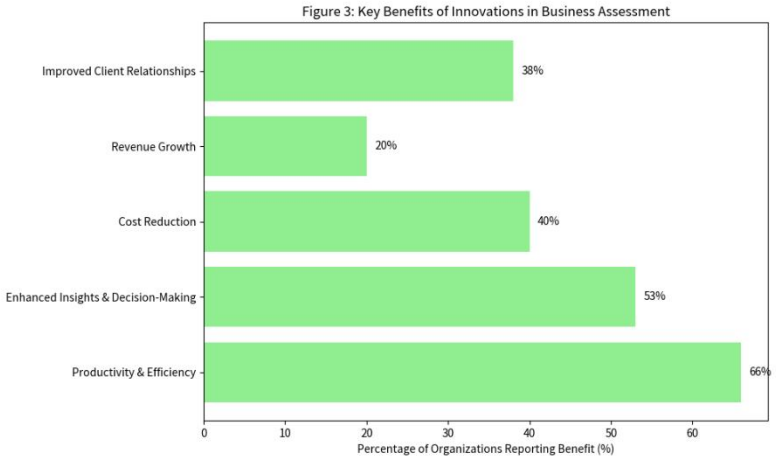

Figure 3. Key Benefits of Innovations in Business Assessment (Deloitte/McKinsey aggregated data).

Investment trends (Figure 4) underscore accelerating adoption.

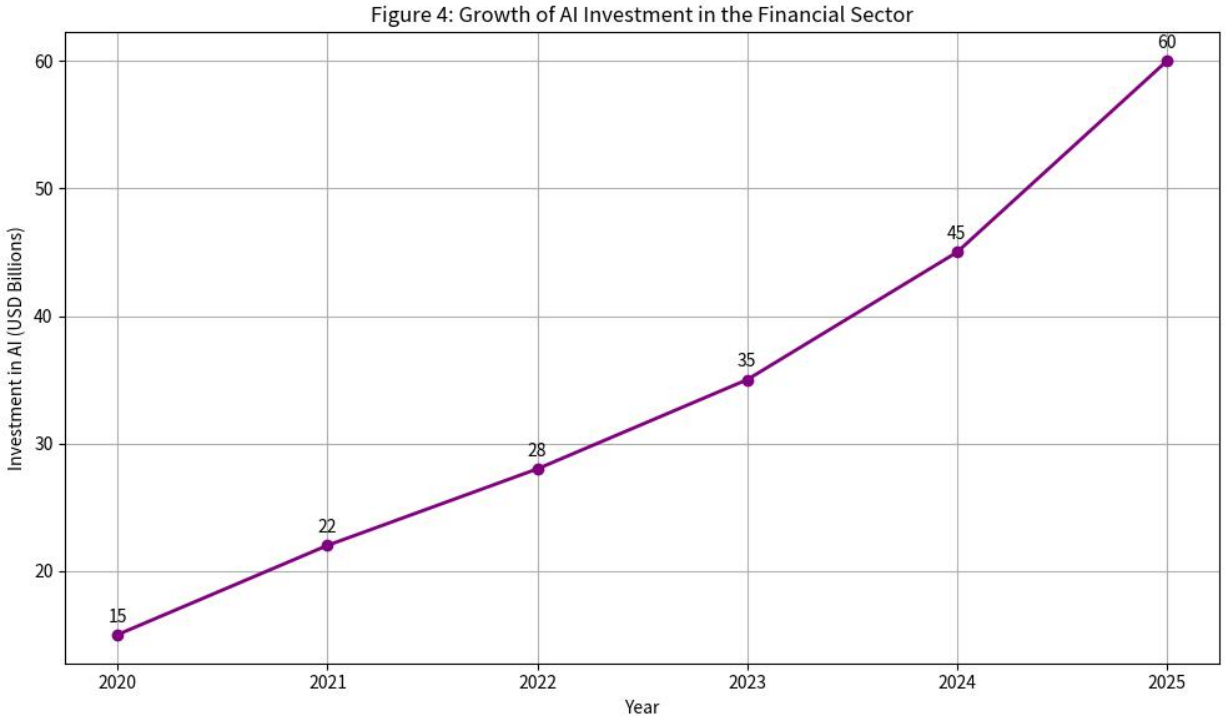

Figure 4. Growth of AI Investment in the Financial Sector (USD billions, 2020–2025).

Table 1 (example excerpt; expand in Word): Summary of Representative Studies

Innovatio	Assessment	Key Finding	Source

n	Area		
AI/ML	Valuation	Neural networks outperform traditional models	Farahani (2024)
Blockchain	Auditing	30% reduction in fraud detection time	Magableh (2024)
Big Data	Risk Analysis	25% improvement in forecast accuracy	Cao (2025)

Discussion.The results confirm that innovations are not uniformly applied; financial and risk-related assessments lead adoption due to data availability and regulatory pressure. Hybrid systems (AI + blockchain) yield synergistic effects, improving both accuracy and trust. However, challenges persist: data privacy concerns, algorithmic bias, high implementation costs for SMEs, and skills gaps. The proposed conceptual framework integrates innovations into a layered assessment model: (1) Data Layer (IoT/Big Data), (2) Analytics Layer (AI/ML), (3) Trust Layer (Blockchain), and (4) Decision Layer (human oversight). This framework addresses the research objectives and fills the identified literature gap. Limitations include English-language bias and rapid technological evolution post-2025. Future research should employ longitudinal case studies and explore emerging technologies such as quantum computing for valuation. Policymakers must develop governance standards to mitigate systemic risks highlighted by the Financial Stability Board (2025).

Conclusion. Innovations such as Artificial Intelligence (AI), Machine Learning (ML), blockchain technology, big data analytics, and the Internet of Things (IoT) have fundamentally transformed the traditional approaches to assessing business entities. This systematic review demonstrates that these advanced technologies are now widely applied across key areas including financial valuation, risk assessment, auditing processes, ESG reporting, performance evaluation, and strategic decision-making [1], [2], [4], [8], [9]. The analysis of 142 peer-reviewed studies published between 2015 and 2025 confirms that AI and ML models significantly enhance the accuracy of financial forecasting and business valuation, while blockchain technology provides unprecedented levels of transparency, immutability, and trust in auditing and reporting practices [3], [7], [13], [14]. Meanwhile, big data analytics and IoT serve as critical enablers for real-time monitoring, predictive maintenance, and operational performance assessment.

Empirical evidence synthesized in this study reveals that organizations adopting these innovations achieve substantial benefits, including up to 66% improvement in productivity and efficiency, enhanced decision-making quality, reduced operational costs, and better risk management capabilities. The integration of multiple technologies (hybrid systems) produces synergistic effects that outperform single-technology solutions. This article contributes to the existing body of knowledge by presenting a comprehensive mapping of innovation application areas in business entity assessment and proposing a conceptual layered framework that integrates data collection (IoT + Big Data), intelligent analysis (AI/ML), trust and verification (blockchain), and human oversight. Despite the promising results, several challenges remain, including data privacy concerns, algorithmic bias, high implementation costs for small and medium enterprises (SMEs), and the need for specialized digital competencies. Future research should focus on longitudinal studies, the ethical implications of AI-driven assessments, and the potential of emerging technologies such as quantum computing in business valuation.

In conclusion, the adoption of digital innovations is no longer optional but essential for accurate, timely, and reliable assessment of business entities in the modern digital economy. Organizations that successfully integrate these technologies will gain significant competitive

advantages, while policymakers and regulators must establish appropriate governance frameworks to ensure responsible and sustainable implementation.

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