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Emerging Technologies in M&A Due Diligence: How AI and Blockchain Strengthen Risk Detection in the U.S. Market

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ABSTRACT: Although Mergers and acquisitions (M&A) continue to be the major driver for organizational growth in the US, nearly 90 percent of them do not generate synergies because there is ineffective risk identification in their due diligence process. The conventional approaches become less useful when dealing with large and complex amounts of data, which causes information asymmetries, human errors, and risk oversights. The aim of this narrative review is to provide insight into how modern technologies – artificial intelligence and blockchain – can revolutionize due diligence by improving risk detection and decision-making efficiency. The paper draws on literature ranging from 2020 to 2026 and applies the theoretical background related to the Agency Theory, Information Asymmetry Theory, Transaction Cost Economics, and Resource-Based View. The proposed IAB-DDF is a multi-layered framework combining AI-driven predictive analysis, anomaly detection, and NLP with blockchain's inherent capabilities such as immutable ledger, smart contract, and audit trail. Such a combination allows for more accurate data validation, timely risk assessment, and lower transaction costs. The paper also highlights the importance of governance structures through human intervention and explainable AI. This study helps consolidate fragmented literature on the issue at hand and hence contributes to the emergent area of technology-enabled corporate governance. The research finds that integration of AI with blockchain can greatly enhance the trustworthiness of transactions and mitigate risks; however, empirical validation of findings is necessary across industries.

KEYWORDS: Mergers and Acquisitions (M&A), Due Diligence, Risk Detection, Artificial Intelligence (AI), Blockchain Technology

INTRODUCTION

The mergers and acquisitions (M&A) environment has changed dramatically during the last 20 years, which is due to globalization, technological progress, and the growing complexity of organizations. M&A is a very important strategic instrument for growth, diversification, and competitiveness, and the U.S. is estimated to account for approximately 45 percent of global deal value in 2025. However, 90% of these M&A deals fail to achieve the expected synergies. This occurs because, during due diligence, the process gets overwhelmed by information and simple human error (Bedekar et al., 2024). The notorious case of Hewlett-Packard's purchase of Autonomy is an example of how traditional financial review systems might fail to detect anomalies that are difficult to notice, resulting in significant financial and reputational damage. Due diligence, the process of assessing financial, legal, operating, and strategic risks, has been traditionally based on the review of documents by hand, audit, and judgment of the experts. Nevertheless, the current transactions include huge amounts of data in virtual data rooms, which makes these methods even more ineffective, time-consuming, and prone to information gaps (Ugoji et al., 2025; Asamoah & Laryea, 2025).

The new technologies, specifically artificial intelligence (AI) and blockchain, are potentially transformative in overcoming these constraints. For example, AI technology uses predictive analysis and anomaly detection systems in processing large sets of data, whereas blockchain technology provides secure, immutable transactions with audit trails, thereby eliminating any issues related to information asymmetries and reducing the possibility of fraud (Nartey-Kofi et al., 2025; Nartey et al., 2026). Although there is increased interest, the available literature on these technologies is mainly isolated, and there is little empirical research on the combined use of these technologies in M and A due diligence in the United States. This paper fills this gap by proposing an AI-Blockchain Due Diligence Framework (IAB-DDF) integrating predictive analytics with decentralized verification to enhance risk detection. This research contributes to the existing literature related to Mergers and Acquisitions, fintechs, and corporate governance by throwing light on the role of digital integration for improving transparency, monitoring, reducing information asymmetries, and compliance in high-value transactions.

2. LITERATURE REVIEW

2.1 Traditional M&A Due Diligence and Risk Detection in the U.S.

Mergers and acquisitions (M&A) in the United States operate within a regulated environment governed by the Securities and Exchange Commission (SEC), antitrust authorities, and the industry-specific controlling bodies, and typically unfold across three stages: pre-deal (target

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screening, LOI), due diligence (structured risk verification), and post-merger integration (PMI). Due diligence is the process of investigation where different risks, such as financial, legal, operational, and technological risks, have to be considered in a cross-functional manner. But current practices of due diligence continue to be highly manual, time-consuming, and judgment-based, reducing the efficiency of the process, especially in view of the high volume of structured and unstructured data being used by modern M&A operations. This makes it difficult to conduct the necessary analysis for uncovering hidden risks in the process of M&A deal-making (Ugoji et al., 2025; Kumar et al., 2020).

2.2 Limitations of Traditional Due Diligence

Current literature clearly identifies structural problems in the process of traditional due diligence, and these limitations are mainly due to time constraints, manual processes, information asymmetry, and data overload, which limit accurate valuation and risk assessment. Moreover, as a result of risk exposures related to M&A transactions, these structural shortcomings may be accompanied by the following risks: misstatement risk, liability risk, compliance risk, cybersecurity risk, and ESG risk (Campbell et al., 2024; Apaflo et al., 2026). The structural limitations mentioned above may be explained by means of theories like:

Agency Theory: Jabbar et al. (2021) define agency relationship as a contractual agreement where one or more principals hire an agent to undertake some task. This relationship has the potential to create a conflict due to the separation of ownership and control in modern firms. Agency costs are incurred when the agents make decisions contrary to shareholders' interests, including self-benefiting behavior, inefficient investments, and short-term value prioritization. Due diligence serves a monitoring purpose to mitigate agency costs by verifying the accuracy of all disclosures made, reducing uncertainty associated with the transaction. Therefore, agency Theory highlights conflicts of interest and the monitoring role of due diligence

Information Asymmetry Theory**:** explains valuation distortions arising from unequal information access. The level of information asymmetry, which may occur during mergers and acquisitions, may generate a valuation that could differ by up to 30% from the real one (Krukowski & DeTienne, 2022; Chen et al., 2025).

According to the Resource-Based View (RBV), competitive advantage can be sustainable only if it is grounded on valuable, rare, difficult to copy, and irreplaceable resources. Therefore, advanced analytics and artificial intelligence should be considered strategic assets for efficient and predictive decision-making in the M&A context (Chen et al., 2022).

Transaction Cost Economics (TCE) aims at reducing costs associated with economic transactions, including search, monitoring, and enforcement expenses. Conventional due diligence procedures are expensive, since they involve an extensive examination of contracts and other documents, including the lengthy legal assessment stage (Ahmed, 2025; Andrade et al., 2022)

As shown, current M&A due diligence practices are not satisfactory, thus requiring a shift toward new methods based on technological advancements to address issues of cost reduction and risk identification in modern transaction contexts (Chen et al., 2022; Ahmed, 2025).

3. METHODOLOGY

In this study, a robust method for conducting the narrative review is used to evaluate how artificial intelligence and blockchain can contribute to improving risk detection processes during M&As due diligence processes in the United States. For this purpose, the systematic search for information resources is conducted using databases such as Scopus, Web of Science, and Google Scholar to identify peer-reviewed journal papers, industry reports, and conference proceedings published in 2020-2026. The search uses relevant keywords, which include "AI in M&A," "blockchain due diligence," "risk detection," and "financial anomaly detection."

All information resources are evaluated based on their relevance, scientific rigor, and the extent of coverage of the topic under discussion. The focus of the literature review is on applications of machine learning, natural language processing, and blockchain technologies in M&A due diligence practices. The thematic analysis approach has been applied to distinguish the main categories of risks and analyze the roles of AI and blockchain technologies. Moreover, the review employs various theories such as agency theory, transaction cost economics, resource-based view, and information asymmetry theory to provide a theoretical background for the Integrated AI-Blockchain Due Diligence Framework (IAB-DDF). Using this approach, the research can be conducted holistically by addressing literature that is currently fragmented while pointing out gaps within it to develop a relevant framework.

4. M&A DUE DILIGENCE ARTIFICIAL INTELLIGENCE.

Artificial intelligence (AI) is transforming M&A due diligence by making it faster, more accurate, and scalable in identifying, assessing and analyzing risk in the target. The traditional processes are resource-intensive and need human review, whereas AI allows recognizing large-scale patterns across financial, legal, and operational data and reducing human error and improving the quality of the decision (Bedekar et al. 2024; Narteh-Kofi et al. 2025). Core technologies such as machine learning algorithms have the ability to develop model representations of complex relationship between financial, legal, and market data that are assimilations of more than one dimension and non-linear relationships. They yielded more accurate representations of the dynamics of case than traditional statistical approaches to matters when it comes to predicting the potential acquisition targets, the performance of newly acquired entities, and the success of the integration process. Robotic Process Automation (RPA) process entails automation of repetitive rules-based tasks, like indexing documents, document reconciliation, compliance checks and data extraction. RPA does not rely on adaptive learning, but it will become more efficient, and it lowers the chance of a human error in the initial review stages (Maan & Nagwekar, 2022; Campbell et al., 2024).

4.1 AI in Risk Detection and Auditing.

The role of artificial intelligence is very vital in risk detection owing to its superior analytical capability. In anomaly detection, supervised machine learning methods such as XGBoost and Random Forest algorithms performed better than the traditional logistic regression model in the detection of earnings manipulation, revenue recognition fraud, and hidden liabilities in SEC EDGAR filings (Maan and Nagwekar, 2022; Anuradha, 2024; Amoakoh et al., 2026). Unsupervised algorithms in clustering analysis (Isolation Forest, autoencoder) analyzes the transaction logs of a virtual

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data room, containing millions of transactions, within minutes and detect anomalies in journals which are difficult to sample using manual means (Hernandez Aros et al., 2024). Predictive analysis improves due diligence through use of historical and present information for the prediction of the outcome of a merger in terms of financial performance, synergy realization, and costs involved during integration (Tokachichu et al., 2024; Lee & Choi, 2020). The Natural Language Processing (NLP) technology uses automated contract analysis for the extraction of qualitative information from data available in firm disclosures, legal contracts, news reports, social media etc. (Johnson, 2022. Nwinyi & Oman-Amoako, 2026). The NLP agents Kira Systems and Luminance were used to extract change-of-control clauses, indemnities, and termination penalties from the 5 million and other similar instruments. Explainable XAI agents (SHAP and LIME) is capable of tracing output enhancing regulatory compliance (Nartey et al., 2026; Oyeyemi et al., 2021).

4.2 Limitations and Challenges

The above stated benefits and advantages are great, however AI has its significant shortcomings as well. These include algorithm bias, data privacy concerns and regulatory uncertainty. AI algorithms may have biases in terms of how they interpret the data used during training, sensitive transactional data could increase cybersecurity risks, and uncertainties regarding regulatory policies, such as those developed by SEC and PCAOB regarding AI. Transactions relating to mergers and acquisitions carry high cybersecurity risks since they involve sharing sensitive financial reports and other company-related documents. (Nartey et al.,2026). Use of M&A transactions is highly prone to cyber-attacks as M&A transactions contain sensitive, highly confidential data like financial statements, agreements, and secret information of the company, and use of AI in conducting the due diligence is highly susceptible to cyber threats as due diligence uses confidential information of transactions, which is altered, stored, and shared. It is further problematic that AI solutions are combined with other digital technologies, making them prone to any form of cyber threat (Bedekar et al., 2024). There are standardized rules governing the use of AI in auditing, and difficult for organizations to adopt AI (Nartey et al.,2026).

5. BLOCKCHAIN IN DUE DILIGENCE AND COMPLIANCE

Blockchain is a decentralized cryptographically secured system of transactional data to produce immutable and verifiable audit trails spread over nodes of a decentralized ledger (Nartey et al., 2026). Through the utilization of the blockchain in M&A due diligence and acquisition contexts, it improves financial assurance with a secure, transparent, and traceable ledger.

Immutable ledgers for verification: Blockchain distributed ledger has a tamper-evident audit trail that stores financial transactions to determine ownership and maintain transaction history, and poses low risk for manipulation. Hyperledger Fabric also provides forensic requirements for auditors to validate revenue recognition, perform accounts receivable aging analysis, and perform goods provenance checks, relying on potentially manipulated supplier data. Hyperledger Fabric's features align with Sarbanes-Oxley Section 404 (Benedikt, 2021).

Smart contracts in compliance: The use of smart contracts in M&A allows automatically executable terms of transaction conditions (i.e. Closing, earn-outs, and covenants), thus reducing dependence on intermediaries and diminishing transaction enforcement costs. AML and FCPA standard enhance compliance in cross-border M&A transactions by supporting real-time monitoring and risk detection (Guo et al., 2025; Nartey et al., 2026).

Forensic integration tools provided by blockchain analytics can identify illicit transactions and ascertain the origin of assets. This can enhance transparency regarding financial affairs in M&A due diligence. Using this functionality with an ERP allows for an entire audit trail of money transactions starting from purchase order, moving through revenue recognition to payment, with reduced risk of uncovering circular revenue schemes and other financial wrongdoings that led to failures of U.S. mergers and acquisitions (Irresberger et al., 2023; Hernandez Aros et al., 2024).

5.1 Enhancing Data Integrity and Audit Trail

The use of blockchain makes the authenticity of the data more accurate, as the real-time authentication of the ownership of the asset can be done using timestamps that are cryptographically secured. The manual process of verifying titles will not be required anymore, and any disputes can be sorted out efficiently (Kaisto et al., 2024). Moreover, the transparency of the supply chain will increase owing to the immutability of the provenance of the data, which will further help in increasing the valuation accuracy of the asset (Kumar et al., 2020; Herbe et al., 2024).

5.2 Challenges and Legal Considerations

Regulatory uncertainty: The nascent regulatory regimes in the US are beginning to acknowledge distributed ledger technology as legitimate means of gathering audit evidence but there are yet to be set any specific rules that would guide the conduct of due diligence using technological means (Guo et al., 2025).

Interoperability challenges: The non-standardized API and blockchain fragmentation makes it difficult for technology to work seamlessly with legacy enterprise systems such as SAP and Oracle, and the utilization of oracle makes it vulnerable to governance challenges (Kumar et al., 2020; Liu et al., 2024).

High implementation cost: The initial high cost of implementation and subsequent costs including the cost of compliance and infrastructure can prevent adoption of blockchain, but companies must do the cost-benefit analysis before undertaking this step especially where the transaction value is high (Ahmed, 2025).

In summary, blockchain technology has an essential role to play when it comes to improving transparency, audit ability, and fraud detection in mergers and acquisition due diligence process. However, full adoption of the technology is hindered by the lack of clarity on regulation and costs of implementation.

6. AI AND BLOCKCHAIN RISK DETECTION APPLICATIONS

From established M&A literature, the following three main risks are usually evaluated at the initial stages of M&As: operational risks associated with the acquirer's capabilities to properly run the target company; financial risks related to sustainability of leverage, ratings, and willingness to

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sustain earnings per share dilutions; and overpayment risks reflect value destruction due to acquisition price being higher than the target firm's economic value (Ayodeji et al., 2025; Campbell et al., 2024).

Financial Risk: AI-based detection leverage machine learning approaches to detect financial risks via detecting abnormalities, manipulations, suspicious accounting, unusual accruals, and possible future underperformance after the merger. Supervised models (logistic regression, random forests, support vector machine and neural networks) and Unsupervised models (clustering, isolation forest and autoencoders) are utilized in order to detect fraud and forecast risks, including cybersecurity anomalies in transaction systems (Al Marri & AlAli, 2020; Ugoji et al., 2025; Gu et al., 2020). Blockchain-based detection reduces financial misstatement through immutable, time stamped financial transaction records. It provides a transparent verification for all payment flows, revenue recognition and collateral movements. Smart contracts use liquidity or coverage ratios to automatically flag or detect an occurrence when the metrics within the smart contract exceed predetermined thresholds (Nethravathi et al., 2022).

Operational Risk: AI detect operational risks using process mining, ERP, MES, logistics, HR systems and historical data to flag inefficiencies occurred as a result of bad execution, poor infrastructure, bottlenecks and bad/drainage networks and integration challenges (Kajewole et al., 2023). Blockchain-based detection provides transparency and immutability to allow all parties to see shared documents and data associated with a supply chain, some examples include inventory and event data. This bridge gaps in documentation (i.e. missing scanned items, misguided supply deliverables, late entries, etc.) for compliance and inefficiencies (Kajewole et al., 2023).

Legal and Compliance Risk: AI-based detection uses Natural Language Processing (NLP) based system to extract meaningful terms in a contract in relation to legal and compliance risk such as indemnity, termination rights and non-compete terms. NLP models detect misrepresentation, regulatory exposure, and compliance risks by comparing portfolios of contracts while reducing human oversight errors and improving consistency in large-scale due diligence (Ugoji et al., 2025**).** Blockchain-based detection assists in ensuring that legal and compliance activities such as licenses, certifications, audit results, actions that were undertaken to correct situation, significant contract milestones and KYC/AML checks are recorded and can be verified by a third party with full reliability and integrity.

6.1 Comparative Performance Analysis

Artificial intelligence (AI) and blockchain technologies is their functional orientations, which form complementary, instead of competitive, risk detection abilities during mergers and acquisitions (M&A). AI is an analytical predictive system while blockchain is a structural and verification-focused registry. In combination, they tackle information asymmetry through reduction of uncertainties associated with future results (AI) and increasing the integrity of reports (blockchain) (Kajewole et al., 2023).

6.2 Advantages of AI in Risk Identification

One of the most significant advantages of using AI is leveraging multiple dimensional datasets on a large scale, which makes it possible to detect various risks, invisible to the human eye. When using AI for financial anomalies detection, one should apply supervised (Random Forest, Neural Network) and unsupervised (Isolation Forest, Autoencoder) methods of machine learning to determine instances of earnings manipulation, off-balance sheet liabilities, and stress precedents with AUC scores ranging from 0.89 to 0.95 on benchmark datasets (Hernandez Aros et al., 2024, Nartey et al., 2026). AI assists in forecasting operations by detecting inefficiencies in workflows, supply chains and functional integration through predictive analytics (Ugoji et al., 2025). Finally, AI in the legal or compliance domain can help with NLP of contractual documents for the identification of nonstandard clauses potentially related to lawsuits, compliance automation for the purpose of ensuring regulatory conformity, as well as decreasing time spent on manual analysis by up to 95% (Kajewole et al., 2023).

6.3 Blockchain Strengths in Risk Detection

The strengths of blockchain technology lie in its ability to improve risk identification with the help of immutable and verifiable transaction records. Blockchain technology offers financial integrity through tamper-resistant transaction records that can be used to validate the correctness of the financial figures. Smart contracts on blockchain enable automatic monitoring of compliance as they can be programmed to execute only when certain predetermined criteria are met, and violations are recorded (Helou, 2024, Nartey et al., 2026). Furthermore, blockchain technology can ensure operational traceability by tracking the movements of assets and supply chains between different parties involved in a process, thus preventing any form of fraud or information gap (Herbe et al., 2024).These two technologies are especially urgent in the U.S. M&A, in which Sarbanes-Oxley, Dodd-Frank, and litigation risks increase the necessity of predictive analytics (AI) and verifiable disclosures (blockchain).

6.4 Table 1: Technology Performance Matrix

Dimension	Artificial Intelligence	Blockchain
Risk Prediction	High (AUC 0.89–0.95 on fraud datasets)	Low (structural only; no native prediction)
Data Integrity	Moderate (hash-based; vulnerable to input poisoning)	High (cryptographic immutability via consensus) [Polas et al., 2022]
Automation	High (95% manual review reduction)	Moderate (smart contracts; requires oracle feeds)
Transparency	Moderate (model interpretability challenges)	High (publicly auditable ledgers)
Scalability	High (cloud/distributed compute)	Variable (throughput limits; Layer-2 solutions emerging)
Regulatory Clarity (U.S.)	Moderate (SEC AI guidance evolving)	Evolving (CFTC/SEC crypto rules)

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Explainability Challenges	High (black-box models)	Low (deterministic execution)
Integration Complexity	Moderate (API ecosystems mature)	High (requires node infrastructure)

This matrix demonstrates that AI excels in dynamic analysis, whereas blockchain excels in structural trust.

6.5 The Integration of AI and Blockchain: Synergistic Approaches to Risk Detection

Integrating artificial intelligence with blockchain technology forms a synergistic risk-detection method that will utilise the unique benefits of both technologies and balance out their respective shortcomings. Risks are identified by AI through methods such as pattern recognition, anomaly detection and predictive modeling. Blockchain technology also contributes through providing features such as transparency, immutability, and decentralization, which, in combination, lead to the creation of what can be called a "verifiable AI," in which any analytical results can be verified and trusted based on blockchain immutability. The combination works through several main channels. Firstly, blockchain provides reliable tamper-proof data for the input into the AI model, thus ensuring more accurate analysis. Secondly, the data is processed by AI in real-time, allowing for the detection of anomalies and fraudulent activities, while smart contracts allow for automation of the process in case the risk threshold is met. Thirdly, all decisions made through AI analysis can be recorded in blockchain for complete auditability.

Theoretically, the combination helps deal with principal-agent problems, since it ensures transparency and equal access to information and reduces transaction costs by reducing search costs for AI and monitoring and enforcement costs for blockchain. In practice, firms may use both technologies to perform pre-deal screening through AI and post-deal monitoring through blockchain.

7. PROPOSED INTEGRATED AI-BLOCKCHAIN DUE DILIGENCE FRAMEWORK FOR THE U.S. M&A MARKET

The IAB-DDF aims at tackling information asymmetry and risk detection issues in mergers and acquisitions deals within the United States through a well-structured and technology-supported architecture based on sound theories of finance and organization (Ayodeji et al., 2025; Ugoji et al., 2025). The architecture is founded on three main pillars. First, the use of blockchain allows for collecting all the data associated with due diligence procedures from reliable sources, in compliance with internal control standards such as those outlined by SOX Section 404. This way, the data collected will be authentic. Second, the use of AI will ensure that all pattern recognition processes and data analysis are done with a high degree of intelligence using continuous streams of data. Third, human governance will ensure that all the findings made by AI are properly analyzed and in compliance with regulations and fiduciary requirements.

7.1 IAB-DDF Five-Layer Architecture

The AI-Blockchain Due Diligence Framework (IAB-DDF) consists of a five-layer integrated approach to improve risk identification, data integrity and regulatory adherence in due diligence reviews for M&A deals.

The Data Integrity Layer relies on blockchain technology, which makes use of distributed ledger technology for provision of immutable and verified data on financial information, contracts, and ownerships. Permissioned network blockchain systems such as Hyperledger Fabric ensure safe data storage, cryptography verification, and real-time verification of data without any intermediaries (Jabbar et al., 2021; Singh, 2021).

The Data Aggregation and Validation Layer involves automated pre-processing of data, including classification of documents, cleansing, normalization and integration of public sources of regulation data, including SEC filing. This layer ensures the minimization of inconsistencies in datasets, making sure that there is data completeness and hence reducing errors in inputs used for risk evaluation.

The AI Risk Identification and Predictive Analytics Layer is composed of machine learning and natural language processing. The layer enables automated analysis of structured and unstructured data. Financial fraud, prediction of performance risks, identification of legal risks through contract analysis, and operational, cyber security, and ESG risks can be predicted through this layer. Machine learning models such as the XGBoost model have greatly improved AI capabilities, such as merging compatibility and litigation risks (Gu et al., 2020). Importantly, the results of such an AI application are recorded in a blockchain-based system.

The Governance and Human Oversight Layer contextualises AI predictions from regulatory and business perspectives. This includes human-in-the-loop verification, explainable AI reporting and audit reviews, which minimise algorithmic bias and enable expert decision-making, such as by auditors, lawyers, and investment managers.

Finally, the Regulatory and Audit Compliance Layer incorporates regulatory compliance into the design, such as SEC disclosure, antitrust, cybersecurity, and privacy protection. Blockchain audit trails improve traceability and regulatory defensibility pre- and post-transaction. They operate synergistically to ensure that a technology-driven due diligence process is secure, transparent, and meets governance and regulation requirements (Yeboah et al., 2026, Apaflo et al., 2026).

7.2 Operational Workflow and Theoretical Alignment of the Proposed Framework

In the context of U.S. mergers and acquisitions, the due diligence process is typically carried out in a linear manner by collecting documents and performing risk analysis and negotiations. The new framework transforms this approach through the incorporation of advanced technologies at every step of the process. Here, documents from the target firm are uploaded into the blockchain-based data room. Following this step, the data aggregation layer checks the structural and completeness aspect of data, followed by multiple risk analysis using AI-powered modules. The results from the analysis are timestamped and recorded on the blockchain for security purposes. Afterward, the results are validated by human experts, and the compliance layer creates audit-ready reports.

IAB-DDF conforms with existing economic and organizational frameworks. First, from the standpoint of agency theory, blockchain technology provides efficient surveillance, and the application of artificial intelligence technology facilitates the identification of adverse selection to eliminate the information gap between buyers and sellers (Andrade et al., 2022). Second, from the perspective of transaction cost economics, the use of automation and blockchain technology significantly cuts down coordination, supervision, and enforcement costs. Third, in terms of RBV, AI-

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blockchain integration can be considered a strategic capability that is challenging to imitate by other firms. The proposed framework offers several strategic advantages for U.S. firms which includes improved anomaly and fraud detection, less exposure to litigation, greater accuracy of valuation, enhanced regulating defensibility and more multidisciplinary team coordination (Chen et al., 2025). When applied effectively, technology-enabled due diligence improves transaction quality and supports greater post-merger stability.

7.3 Implementation Considerations and Limitations

There are several enablers that would make this approach successful, including ensuring investment in secure and stable digital technology infrastructure, the presence of qualified experts with experience and knowledge in AI and blockchain, as well as perfect integration into existing business operations. Collaboration of compliance and legal teams among others would also prove beneficial for ensuring alignment with regulatory frameworks. As part of the complexity involved in adoption, a phased implementation approach is suggested.

Despite the benefits that can be gained from adopting the framework, there are various weaknesses associated with its use. These include the high cost of implementation at the onset, challenges in achieving compatibility across diverse technology systems, and uncertainty with regards to emerging regulations. The performance and validity of the framework, in particular, depends heavily on the quality of input data used. Therefore, empirical testing of the framework should be carried out in the U.S. M&A environment.

8. RECOMMENDATIONS AND CONCLUSION

There are several theoretical and practical implications of this research that add value to the current literature on M&A due diligence. In terms of theoretical contribution, this paper uses a combination of agency theory, information asymmetry theory, transaction cost economics, and the resource-based view to explain the limitations of conventional M&A due diligence. Specifically, it elaborates on a new Integrated AI-Blockchain Due Diligence Framework that explains the potential benefits of applying the technologies in combination to overcome the challenges in due diligence. Thus, the paper highlights one of the major gaps in existing research by showing how technologies based on prediction and structures can be used simultaneously.

The practical implications include the introduction of an actionable framework for implementing technology-enabled due diligence process among US companies. This framework is presented in the paper through the description of the IAB-DDF that shows how AI technologies can be combined with blockchain-based data environments to assess financial, legal, operational, and ESG risks. Moreover, the paper highlights the issues related to governance and regulation in this case including human involvement, explainable AI solutions, and auditability.

Considering these findings, companies are advised to use IAB, reinforce governance using human-in-the-loop verification, ethical audits, and quality data, while investment in training and incremental adoption are essential to overcome the challenges of complexity and cost. From the standpoint of regulation, guidelines concerning AI explainability and accountability, blockchain adoption in due diligence documentation and creation of secure and interoperable technological ecosystems aligned with privacy requirements are needed.

There are limitations to this study. First, it is mainly targeted at the U.S. market and offers only a conceptual framework which needs validation in practice. Furthermore, the fast pace of development of technologies may affect the applicability of particular techniques in the long run. The future direction of research should involve testing of IAB-DDF in real transactions, international comparative analysis, and examination of other emerging technologies including quantum computing for predictive analytics.

In conclusion, M&A due diligence in the USA faces drastic changes in its approach to risk management. The synergistic use of technologies such as AI and blockchain can be quite promising in reducing the risks in question and achieving better outcomes. The proposed IAB-DDF framework is a useful tool for conducting complicated M&A deals in the current environment.

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