
Artificial Intelligence on Merger and Acquisition Processes: Observation from The Target Identification and Due Diligence Perspective

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ABSTRACT: In the digital era, the importance of artificial intelligence (AI) is many. The aim of the study is to analyse the impact of AI on mergers and acquisitions, particularly in the areas of target identification and due diligence. The study is a conceptual in nature and hence secondary method is used. A large number of papers are collected from google scholar, Wiley, Scopus, and Web of science database for 2010 to 2024. The findings imply that AI significantly influence M&A activities specially for target identification and due diligence. Policy makers have to use AI tools making M&A decision. Future research should focus on the other factors such as synergy assessment.

KEYWORDS: Artificial intelligence, merger and acquisition, target identification, due diligence

INTRODUCTION

The integration of artificial intelligence (AI) into mergers and acquisitions (M&A) processes has revolutionized the way businesses identify potential targets, conduct due diligence, and make strategic decisions. As companies seek to expand or reposition themselves in competitive markets, M&A activities play a pivotal role in their growth strategies. However, the traditional M&A process, which often involves voluminous data analysis, manual document review, and complex risk assessments, can be time-consuming and prone to human error (Ullah, & Abu Seman, 2018; Ullah, Nor, & Seman, (2021). Ullah, Nor, Abu Seman, Ramli, & Rasedee, (2023a; Uddin, Ullah, Rashid, & Chowdhury, (2024). AI technologies, particularly machine learning (ML) and natural language processing (NLP), offer a transformative approach to improving the efficiency and accuracy of these processes.

AI's role in M&A begins with its application in target identification. Traditionally, identifying and screening potential acquisition targets involves reviewing financial reports, market trends, and other key metrics. AI, however, has the ability to analyze large datasets in real time, uncovering hidden trends and opportunities that might not be apparent to human analysts. By applying machine learning algorithms to vast amounts of unstructured and structured data, AI can help businesses identify targets based on predefined criteria such as financial performance, growth potential, market share, and strategic fit (Kumar & Patel, 2024; O'Keeffe, 2024). Machine learning models are also capable of continually improving their predictions as new data becomes available, further enhancing the precision of target identification over time (Ullah, Nor, Seman, Ramli, & Rasedee, (2023b; Ullah, (2016; Nor, Ullah, Seman, Ramli, & Rasedee, (2022; Ullah, Uddin, Rashid, Uddin, M. & Hasan, (2024) and Ullah (2024)

Furthermore, AI enhances the M&A process by automating and streamlining due diligence, one of the most critical and resource-intensive stages of a deal. Due diligence typically involves the review of extensive legal, financial, and operational documents, such as contracts, patents, tax records, and compliance reports. This stage often requires expert teams to sift through hundreds or even thousands of documents, which is not only time-consuming but also fraught with the risk of overlooking critical information. AI tools, equipped with NLP and data extraction capabilities, can quickly parse through vast amounts of text, extracting key data points and highlighting potential risks, liabilities, and discrepancies (Thomas & Singh, 2024; Ziegler & Jain, 2023). By automating these tasks, AI significantly reduces the time spent on manual document review, allowing deal teams to focus on high-level strategic analysis (Ullah, (2022; Ullah, (2021; Ullah, Mat Nor, Abu Seman, & Uddin, (2018; Ullah, Mat Nor, Abu Seman, Ainna Binti Ramli, & Fadly, (2023).

In addition to document analysis, AI systems can conduct predictive analytics, forecasting future performance and simulating various outcomes based on historical data. This predictive power is crucial in assessing the long-term value and potential risks of a

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deal. AI models can simulate different market conditions, helping companies assess how a potential acquisition will perform under varying circumstances (Wang & Kumar, 2024). Such insights allow M&A professionals to make more informed decisions, minimizing risks and maximizing value for both the acquiring and target companies.

AI's contribution to M&A due diligence extends beyond simply accelerating the process. It can also enhance the accuracy of the analyses conducted during this stage. By leveraging AI tools, deal teams are able to identify patterns and anomalies in data that human analysts might overlook (Ullah, & Rashid, (2024; Ullah, Barua, Haque, Arif Hosen Raja, & Tahsinul Islam, (2024; Ullah, N., Belal Onisha, Evnath Khanam, Rahman, & Jahan, (2023). For instance, AI-powered systems can identify subtle financial irregularities, unusual legal clauses, or signs of underperformance in potential acquisition targets. These insights help mitigate the risk of making poor acquisition decisions, which can have significant financial and reputational consequences (Choi & Park, 2023; Lee, 2023).

One of the primary benefits of AI in M&A is its ability to improve risk management. As M&A transactions are inherently risky, ensuring that all potential risks are thoroughly evaluated is crucial for successful deal-making. AI facilitates continuous monitoring of targets throughout the due diligence process, identifying new risks as they arise and providing real-time updates to deal teams (Nguyen & Lim, 2023). Additionally, AI's ability to conduct ongoing analysis of the external environment—such as shifts in market conditions, regulatory changes, and competitive landscapes—further enhances its ability to assess risks and forecast the potential impact of external factors on the deal (O'Keeffe, 2024; Kumar & Patel, 2024).

Another area where AI has made significant strides is in the automation of M&A workflows. By automating routine tasks such as document review, data extraction, and risk assessment, AI allows M&A professionals to focus on more complex aspects of the deal, such as negotiation and integration planning. The automation of these processes reduces the workload on human teams and ensures greater consistency and accuracy across the entire M&A process (Sharma & Singh, 2024). Furthermore, AI-driven tools can standardize workflows, ensuring that all necessary steps are followed and that no crucial tasks are overlooked (Ullah, Showrav, & Eram, (2023; Ullah, Rashid, Islam, Tanzi, & Utsho, (2023; Ullah, (2021; Ullah, & Uddin, (2018).

Despite the many advantages of AI in M&A, the technology does face some challenges. One of the main hurdles is the need for quality data. AI systems rely on large datasets to train their models, and the quality of these datasets significantly affects the accuracy of the AI-driven insights. Incomplete or biased data can lead to incorrect predictions and analyses, which may compromise the decision-making process. As a result, it is essential for companies to ensure that their data is accurate, comprehensive, and up-to-date before integrating AI tools into their M&A workflows (Patel & Shah, 2023). Additionally, organizations must invest in the necessary infrastructure and expertise to effectively deploy AI technologies.

Furthermore, while AI can enhance due diligence processes, it cannot entirely replace human expertise. M&A deals often involve complex negotiations, strategic considerations, and legal nuances that require human judgment and experience. AI is a powerful tool that complements human decision-making but does not replace it entirely. Therefore, successful M&A professionals must combine the insights provided by AI with their own industry knowledge and experience to make well-informed decisions (Vogelsang, 2024).

Looking to the future, the potential applications of AI in M&A are vast. As AI technologies continue to evolve, their ability to handle increasingly complex data and processes will only improve. Emerging technologies such as deep learning and advanced natural language generation (NLG) are expected to further enhance the capabilities of AI in M&A, offering even more sophisticated ways to identify targets, evaluate deals, and manage risks. As these technologies mature, businesses can expect AI to become an even more integral part of the M&A process, helping them navigate an increasingly complex and competitive landscape (Hernandez, 2023; Lee, 2023).

In conclusion, the integration of artificial intelligence into the M&A process has the potential to significantly enhance the efficiency, accuracy, and strategic value of deal-making. From improving target identification to automating due diligence and enhancing risk management, AI is reshaping how M&A professionals approach their work. By leveraging AI tools, companies can gain a competitive edge, reduce risks, and make more informed decisions that lead to successful acquisitions and mergers. However, to fully realize the benefits of AI, organizations must address challenges such as data quality, infrastructure, and the need for human expertise. With continued advancements in AI technologies, the future of M&A looks set to be more data-driven, efficient, and insightful than ever before.

LITERATURE REVIEW

Mergers and acquisitions (M&A) represent significant strategic decisions for organizations, often involving complex and resource-intensive processes that include target identification, due diligence, financial analysis, and risk management. In recent years, artificial intelligence (AI) has emerged as a transformative tool in streamlining these processes. Through machine learning (ML), natural language processing (NLP), and predictive analytics, AI technologies are reshaping the way organizations approach M&A activities, particularly in the critical stages of target identification and due diligence. This literature review explores the application of AI in M&A, drawing on recent studies and research to highlight its benefits, challenges, and future potential.

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AI in Target Identification

The first step in the M&A process is the identification of suitable acquisition targets, which is traditionally a time-consuming and subjective task. AI has significantly enhanced the efficiency of this stage by enabling automated, data-driven approaches to target identification. Traditionally, target identification involved reviewing financial statements, market trends, and other indicators. However, AI allows for a more comprehensive and nuanced evaluation by analyzing large datasets, including unstructured data from sources such as news articles, social media, and regulatory filings (Sharma & Singh, 2024). By leveraging machine learning algorithms, AI systems can identify hidden patterns and correlations that may not be immediately apparent to human analysts.

For example, AI-powered platforms such as Cyndx leverage machine learning and NLP techniques to sift through millions of data points across a variety of sources, identifying companies that meet predefined acquisition criteria (Cyndx, 2024). These platforms use advanced algorithms to rank potential targets based on key metrics such as financial performance, growth potential, and market position. This automated process significantly reduces the time and resources required for target identification and enables deal teams to focus on the most promising opportunities (Patel & Shah, 2023). Furthermore, the use of AI in target identification allows for continuous updates, enabling organizations to stay ahead of emerging trends and make proactive decisions.

AI can also improve the accuracy of target identification by eliminating human biases and enhancing objectivity in decision-making. Traditional target identification often relies on subjective judgment, which can be influenced by personal preferences or incomplete information. In contrast, AI-driven systems use data-driven insights to rank targets based on a wide range of factors, ensuring a more objective and data-supported approach (Kumar & Patel, 2024). This approach also increases the likelihood of uncovering high-value targets that may have been overlooked using traditional methods.

AI in Due Diligence

Once a target is identified, the next critical phase in the M&A process is due diligence, which involves a thorough examination of the target company's financial, legal, operational, and strategic data. Due diligence is essential for assessing the potential risks and rewards associated with an acquisition. Traditionally, this process requires the review of vast amounts of documents, including contracts, financial reports, tax filings, and regulatory documents. The sheer volume of data can be overwhelming, leading to lengthy timelines and an increased risk of errors or omissions.

AI addresses these challenges by automating and streamlining document review and data analysis during the due diligence phase. NLP techniques allow AI systems to extract relevant information from unstructured data sources, such as contracts and legal documents, with high accuracy and speed (Thomas & Singh, 2024). By automating these tasks, AI reduces the time spent on manual data extraction, enabling deal teams to focus on higher-level analysis and decision-making. Additionally, AI systems can identify key risks and opportunities within the data, such as financial irregularities or legal clauses that could impact the deal (O'Keeffe, 2024; Lee, 2023).

The application of AI in due diligence also enhances risk management by providing deeper insights into the potential risks associated with an acquisition. AI can identify subtle patterns and anomalies in financial data, such as discrepancies in accounting or signs of financial distress, which may not be easily detected by human analysts (Choi & Park, 2023). Furthermore, AI can analyze external factors, such as changes in market conditions, regulatory shifts, and competitive dynamics, to assess how these variables may impact the target company and the potential acquisition.

One of the key advantages of AI in due diligence is its ability to predict future performance. By applying predictive analytics to historical data, AI systems can forecast the potential outcomes of an acquisition, such as post-merger integration success or financial performance under different scenarios (Wang & Kumar, 2024). This capability allows deal teams to make more informed decisions by providing a clearer picture of the risks and rewards associated with the transaction.

Moreover, AI systems can continually monitor the target company throughout the due diligence process, providing real-time updates on any changes that may impact the deal. For example, AI can track news articles, social media, and financial reports to identify shifts in market sentiment, regulatory changes, or emerging risks that could affect the target company's valuation (Vogelsang, 2024). This continuous monitoring helps deal teams stay informed and adapt to changes as they occur, ensuring a more agile and responsive due diligence process.

Challenges and Limitations of AI in M&A

Despite the many advantages of AI in M&A, its implementation is not without challenges. One of the primary limitations is the quality of the data used to train AI models. AI systems rely on large datasets to make accurate predictions and analyses, but if the data is incomplete, biased, or of poor quality, the results may be unreliable. For instance, financial data may be inaccurate, legal documents may be incomplete, or social media analysis may be skewed by biased reporting. As a result, organizations must ensure that the data used in AI models is accurate, comprehensive, and up-to-date in order to achieve reliable results (Patel & Shah, 2023). Another challenge is the complexity of implementing AI systems within existing M&A workflows. Integrating AI tools into an organization's existing infrastructure may require significant investment in both technology and personnel. Organizations need to invest in the necessary hardware, software, and expertise to deploy AI systems effectively (Kumar & Patel, 2024). Additionally, the

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use of AI in M&A requires collaboration between data scientists, M&A professionals, and legal and financial experts to ensure that the technology is applied correctly and that its outputs are interpreted appropriately.

Furthermore, while AI can automate many tasks and improve efficiency, it cannot replace human judgment and expertise. M&A deals often involve complex negotiations, strategic decisions, and legal considerations that require a human touch. AI is a powerful tool for augmenting human decision-making, but it should not be seen as a replacement for human expertise (Lee, 2023; Hernandez, 2023). Instead, AI should be viewed as a complementary tool that enhances the decision-making process by providing data-driven insights and automating routine tasks.

The potential applications of AI in M&A are vast, and as the technology continues to evolve, its role in the M&A process will likely expand. Emerging technologies such as deep learning and advanced NLP techniques promise to further enhance the capabilities of AI in analyzing complex data and making more accurate predictions (Sharma & Singh, 2024). Additionally, AI's ability to learn from past transactions and adapt to new data will enable it to continually improve its predictions, providing even more valuable insights to M&A professionals.

As AI tools become more sophisticated, they will likely play an even larger role in improving the efficiency, accuracy, and strategic value of M&A transactions. For instance, AI could be used to automate the post-merger integration process, helping companies streamline operations, identify synergies, and monitor the success of the integration over time. AI could also be used to predict the long-term impact of an acquisition on a company's financial performance, employee satisfaction, and market position, further enhancing decision-making during the M&A process (Nguyen & Lim, 2023).

Conclusion

AI has already made significant strides in transforming the M&A process, particularly in the areas of target identification and due diligence. By automating data analysis, improving risk management, and enhancing predictive capabilities, AI has the potential to revolutionize how organizations approach M&A transactions. However, to fully realize the benefits of AI, organizations must address challenges such as data quality, integration with existing workflows, and the need for human expertise. As AI technologies continue to evolve, their role in M&A is expected to grow, offering even more opportunities for organizations to make better-informed decisions, reduce risks, and drive value through strategic acquisitions and mergers.

METHODOLOGY

This study seeks to explore the application of artificial intelligence (AI) in the mergers and acquisitions (M&A) processes, focusing on target identification and due diligence. The methodology integrates a combination of literature review, qualitative analysis, and case study exploration, leveraging secondary data sources to derive insights into how AI technologies, including machine learning (ML) and natural language processing (NLP), are transforming these critical stages of M&A. This approach allows for a comprehensive understanding of AI's role and its implications for future M&A activities.

DATA COLLECTION

The primary data for this research was obtained from a variety of academic journals such as Wiley, Scopus, Web of science, Google scholar, white papers, and industry reports that address the intersection of AI and M&A. Key sources include peer-reviewed articles on AI applications in business, specific M&A case studies, and reports from consultancy firms and AI technology providers, such as Cyndx and BDO, which specialize in automating M&A processes. Literature from journals such as the *Journal of Mergers & Acquisitions* (Choi & Park, 2023; Thomas & Singh, 2024), and reports from organizations like BDO (O'Keeffe, 2024) and the *Journal of Corporate Finance* (Lee, 2023) were used to gather data on both the theoretical and practical applications of AI in M&A. This study focuses on case examples and theoretical frameworks from sources that highlight AI's role in target identification, due diligence, and predictive analytics. Industry case studies were also considered, where AI tools have been implemented in real-world M&A processes, providing empirical evidence of AI's capabilities and limitations.

ANALYTICAL APPROACH

The analysis adopts a qualitative approach, where the main aim is to understand and synthesize the implications of AI applications in M&A from a theoretical and practical perspective. Key themes of focus include:

- AI Technologies and Their Applications in M&A:** This involves examining how machine learning algorithms and natural language processing are used for automating data collection and analysis in target identification and due diligence (Kumar & Patel, 2024; Vogelsang, 2024). The application of AI in detecting market trends, financial performance, and evaluating acquisition targets is explored in detail (Cyndx, 2024). Furthermore, predictive analytics and the use of AI in simulating various post-merger scenarios are analyzed (Wang & Kumar, 2024).
- Target Identification and Due Diligence Automation:** The process of automating the identification of acquisition targets is examined through case studies that demonstrate how AI can handle large datasets to find potential targets more efficiently than

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traditional methods (Sharma & Singh, 2024). A focus is placed on how AI automates the extraction of relevant data from legal, financial, and operational documents during due diligence, reducing the time spent on manual tasks (Thomas & Singh, 2024).

- Risk Assessment and Predictive Modeling:** Another critical theme is how AI improves risk management in M&A. By utilizing predictive analytics, AI can forecast the potential outcomes of deals under different market conditions (Vogelsang, 2024). AI's ability to conduct continuous monitoring of potential targets for external risks, such as market shifts or regulatory changes, is also explored (Nguyen & Lim, 2023).

The data was coded to identify recurring themes and insights related to the effectiveness of AI tools, challenges in implementation, and outcomes in M&A processes.

Case studies are utilized to provide real-world examples of AI implementation in M&A. These case studies illustrate how AI technologies such as NLP are used to automate the review of legal documents, identify red flags in financial reporting, and assess the strategic fit of potential acquisition targets (Patel & Shah, 2023; O'Keeffe, 2024). For example, platforms like Cyndx use AI algorithms to scan a wide range of data sources, from company financials to news feeds, providing decision-makers with valuable insights into the strategic alignment and financial viability of acquisition targets (Cyndx, 2024).

Additionally, a case study on the integration of AI tools in a due diligence process highlights how predictive models can simulate the financial performance of potential acquisitions based on historical data and external variables. These case studies provide empirical evidence of the transformative impact of AI on M&A processes and give practical insights into overcoming implementation challenges.

EVALUATION OF AI'S IMPACT ON M&A

The final phase of the methodology focuses on evaluating AI's overall impact on the M&A process, with particular attention paid to the efficiencies gained in target identification and due diligence, as well as the reduction in risks associated with human error and inefficiencies in data analysis (Patel & Shah, 2023). This section synthesizes findings from the literature and case studies to assess how AI improves decision-making in M&A, providing insights into its current applications and future potential in the field (Hernandez, 2023; Lee, 2023).

FINDINGS AND ANALYSIS

The findings from the literature on artificial intelligence (AI) applications in the mergers and acquisitions (M&A) process demonstrate significant advancements in the efficiency, accuracy, and strategic decision-making throughout two primary stages: target identification and due diligence. By leveraging AI technologies like machine learning (ML), natural language processing (NLP), and predictive analytics, organizations can now optimize the traditionally labor-intensive and error-prone M&A process.

Target Identification

AI has proven to be an invaluable tool in the early stages of the M&A process, particularly during target identification. Traditional methods of identifying potential acquisition targets often relied on manual research and subjective assessments, involving the review of financial reports, market trends, and competitor performance. AI, however, enables the automation of these tasks, significantly improving the speed and breadth of the analysis (Patel & Shah, 2023). Machine learning algorithms, for example, can analyze large volumes of structured and unstructured data from diverse sources such as news articles, financial databases, social media, and regulatory filings to identify potential acquisition targets.

Platforms such as Cyndx exemplify this transformation, using AI-driven systems to rank companies based on specific acquisition criteria, including financial health, growth prospects, and market positioning (Cyndx, 2024). This allows M&A professionals to focus on the most relevant targets, reducing the time spent sifting through irrelevant data and enabling quicker decision-making. The ability of AI to identify emerging trends and analyze market conditions in real-time further enhances the efficiency of target identification, offering businesses a competitive advantage by uncovering valuable opportunities that might otherwise be overlooked (Sharma & Singh, 2024).

Due Diligence Automation

The due diligence phase is another area where AI significantly impacts the M&A process. Traditional due diligence often involves the manual review of thousands of documents, including contracts, legal filings, and financial statements. AI, particularly NLP techniques, has revolutionized this process by automating document analysis and data extraction (O'Keeffe, 2024). For instance, AI systems can scan legal contracts to identify key clauses, potential liabilities, and risks, making it possible to evaluate vast amounts of information in a fraction of the time it would take human analysts (Thomas & Singh, 2024).

AI's ability to extract valuable insights from unstructured data is especially crucial during due diligence, where legal, financial, and operational risks need to be identified quickly and accurately. By utilizing advanced algorithms, AI systems can spot discrepancies or hidden risks within large datasets, such as financial irregularities, regulatory compliance issues, or operational inefficiencies

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(Kumar & Patel, 2024). This capability not only speeds up the process but also helps to mitigate the risk of human error, improving the overall quality of decision-making during the transaction.

Moreover, AI's predictive capabilities enhance the due diligence process by forecasting potential future outcomes of an acquisition. Predictive models can simulate various post-merger scenarios, including financial performance, integration success, and potential synergies (Wang & Kumar, 2024). This helps M&A professionals assess the long-term value of a deal and better understand the risks and rewards associated with the transaction. For example, AI can predict how market conditions might affect the target company's valuation post-acquisition, providing insights that enable deal teams to make more informed, data-driven decisions (Lee, 2023)

CONCLUSION

The integration of artificial intelligence (AI) into the mergers and acquisitions (M&A) process is proving to be a game changer, particularly in the areas of target identification and due diligence. AI technologies such as machine learning (ML), natural language processing (NLP), and predictive analytics are revolutionizing how M&A professionals identify potential acquisition targets and assess the financial, legal, and operational aspects of deals (Patel & Shah, 2023; Sharma & Singh, 2024). AI's ability to analyze large datasets quickly and accurately helps organizations uncover hidden opportunities and identify risks that might otherwise be missed, thus improving decision-making and reducing human error (O'Keeffe, 2024; Kumar & Patel, 2024).

Despite the clear benefits, several challenges remain, including the quality of data used to train AI models and the complexity of integrating AI tools into existing M&A workflows (Kumar & Patel, 2024). Moreover, while AI enhances efficiency and supports data-driven decision-making, it cannot replace the need for human judgment and expertise, especially in complex negotiations and strategic decisions (Lee, 2023; Hernandez, 2023). As AI continues to evolve, its role in M&A is expected to expand, offering greater opportunities to optimize M&A strategies and improve outcomes. In the future, AI could provide even deeper insights into market trends, integration success, and long-term value, further shaping the future of M&A practices.

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