

# Current trends and future prospects in business management analysis integration



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**Abstract** The study examines the importance of implementing modern analytical methods to enhance competitiveness and efficiency in the digital age. The relevance of the research topic is driven by the dynamic development of technologies and the increasing volume of data, which requires organisations to adapt to a rapidly changing information environment. Big data analytics, artificial intelligence, machine learning, and other innovative tools are now essential for data-driven decision-making and creating new strategic advantages. The integration of analytical methods is crucial in improving the effectiveness of managerial processes. Modern approaches, such as big data analytics, artificial intelligence, and machine learning, provide more in-depth insights into market processes. It enables the identification of new opportunities and minimises risks. These approaches facilitate the identification of trends and patterns that may only sometimes be apparent when using traditional methods. In the context of globalisation and rapid changes in the economic environment, the ability to adapt quickly and make informed managerial decisions becomes a competitive advantage. Success in the digital age requires organisations to adopt innovative technologies and develop flexible strategic approaches that enable quick adaptation to changes and the implementation of innovations. The findings of this section suggest that businesses that incorporate analytics into their management processes can achieve substantial benefits, such as enhanced flexibility, operational efficiency, and innovation capabilities.

**Keywords:** big data analytics, artificial intelligence, machine learning, digital transformation, business management, strategic planning

## 1. Introduction

In the modern world, business entities must constantly adapt their strategies and operational processes due to market dynamics and technological progress. The effectiveness of managing these activities largely depends on integrating various analytical methods. These methods allow entities to respond to current challenges and anticipate future trends. This article explores current trends and prospects for integrating analytical methods in managing business activities. It considers both traditional and innovative approaches to analysis and their impact on strategic planning, decision-making, and operational management. It also discusses the potential for further evolution in response to growing market demands and changing technological environments.

In the context of economic globalisation and increased competition, integrating advanced analytical methods enhances competitiveness and is a critical factor in market survival. The use of a comprehensive analytical toolkit enables business entities to effectively adapt to changes in the external environment, optimise internal processes, improve products and services, and ensure sustainable development in the long term. Special attention is given to quantitative and qualitative analysis aspects in this context, including strategic analysis, risk management, financial analysis, performance analysis, and innovation management.

The essence of this article lies in its endeavor to catalog existing analytical techniques, gauge their impact on the managerial practices of business entities, and unearth the pivotal challenges and opportunities that their integration presents. Given the extensive applicability of these methodologies, the study spans a broad spectrum of managerial functions, from strategic formulation and operational oversight to risk mitigation and the fostering of innovation. This holistic approach not only underscores the capacity of integrated analytical tools to elevate managerial efficacy but also formulates strategic recommendations aimed at augmenting management protocols amidst the escalating unpredictability and complexity of the market terrain.



In framing this discussion, we draw upon a multitude of scholarly works that lay the foundation for our assertions and recommendations. Studies by Yalcin et al. (2022) and Rana et al. (2022) provide critical insights into the application of multi-criteria decision-making methods and the integration of artificial intelligence within business analytics, respectively, showcasing the nuanced interplay between advanced analytical techniques and managerial decision-making in an ever-evolving business environment. Similarly, research by Silva et al. (2021) and Kristoffersen et al. (2021) illuminates the transformative potential of innovative analytical tools in the realms of Industry 4.0 and the circular economy, underscoring the strategic importance of analytics in navigating the complexities of modern business landscapes. These references, alongside others cited throughout the article, not only enrich the discourse but also lend empirical weight to our exploration of the dynamic intersection between analytical methodologies and business management practices.

The following analytical literature review focuses on integrating analytical methods in managing business entities. A study by Yalcin et al. (2022) examines the use of multi-criteria decision-making methods in business analytics. The authors present a thorough review of the existing literature, which aids in comprehending how these methods can enhance decision-making processes in the modern business environment despite uncertainty and complexity.

Rana et al. (2022) research further explores this topic by examining the negative aspects of incorporating artificial intelligence into business analytics. The authors investigate the potential for operational inefficiencies and reduced competitiveness resulting from inadequate integration and management of AI technologies. Silva et al. (2021) provide a systematic overview of the application of innovative analytical tools and technologies in the context of Industry 4.0. The article highlights the significance of integrating analytics to improve production processes and achieve digital transformation.

Kristoffersen et al. (2021) explore the role of business analytics in promoting the circular economy. They emphasise the potential of analytics in optimising resource circulation, reducing waste, and encouraging innovative production and consumption methods. Chatterjee et al. (2021) examine the impact of business analytics on organisational efficiency and value creation. They illustrate how using analytical tools enables companies to gain strategic advantages, enhance productivity, and optimise management processes. The study conducted by Popescu et al. (2022) investigates the influence of augmented reality on retail trade and business analytics, particularly in the virtual economy of the metaverse. The authors explore how advanced technologies can revolutionise the consumer experience and generate novel business prospects.

Finally, the study by Fosso Wamba et al. (2024) emphasises the importance of business analytics culture in achieving organisational outcomes. The authors highlight the mediating role of analytics culture between the opportunities provided by big data and business performance improvement, demonstrating how the strategic integration of analytical skills and tools can contribute to sustainable development. Sahoo (2022) conducted a bibliometric analysis of research in big data utilisation in manufacturing. The study underscored the importance of big data analytics in business management, particularly in manufacturing processes. Margherita (2022) proposed a systematic review of research on human resource analytics, identifying key directions and future research. It demonstrates how advanced data analysis can contribute to optimising personnel management and enhancing organisational efficiency. Lee et al. (2022) examine the use of predictive analytics in business decision-making, specifically the role of decision trees. Their analysis offers new insights into applying predictive models in business strategies. The study conducted by Zhang et al. (2021) provides a meta-analytic review that integrates antecedents and consequences of business model innovations. It highlights the significance of innovation for the sustainable development of companies.

Duan and Da Xu (2021) investigate data analytics in the context of Industry 4.0, highlighting the significance of data collection and analysis in enhancing production system efficiency and adapting to technological changes. Hallikas et al. (2021) examine the effect of procurement digitisation and data analytics on supply chain productivity, demonstrating how digital technologies can improve interaction among supply chain participants. Yu et al. (2021) reveal the impact of big data analytics on the development of integrated hospital supply chains and operational flexibility. They emphasise the significance of data processing and analysis in enhancing the efficiency and adaptability of organisational processes. Soeffker et al. (2022) examine the application of stochastic dynamic routing in the context of predictive analytics, emphasising the importance of advanced analytical methods for optimising logistical operations.

Tavera Romero et al. (2021) investigate the role of business intelligence in the evolution of businesses post-Industry 4.0. The authors demonstrate how business analytics technologies can contribute to sustainable development by integrating smart data and innovative technologies. Anh and Tien (2021) use the Goffin matrix for strategic business analysis of the Nguyen Hoang group in Vietnam. This approach shows how traditional analytical tools can be applied to determine strategic directions for company development. In their 2022 study, Manogaran et al. (2022) explore the significance of interfaces and tools in human-computer interaction when dealing with big data analytics. Meanwhile, Yang et al. (2022) investigate the influence of social media on business decision-making. Their research demonstrates how social media analytics can aid competitive analysis and strategic planning.

In their 2021 study, Shet et al. (2021) investigated the factors contributing to the successful implementation of data analytics in human resource management. The study highlights the significance of analytical tools in enhancing personnel management practices. Grant (2021), in his book "Contemporary Strategic Analysis", provides an overview of critical approaches and tools for developing effective business strategies, focusing on the importance of a profound understanding

of the company's external environment and internal resources. Büyüközkan et al. (2021) used SWOT analysis and an integrated fuzzy linguistic approach to determine the development strategy for health and tourism. The study illustrates how comprehensive analysis can contribute to strategy development in complex sectors. Sugiarti et al. (2021) explored how cultural values can be a strategic tool for enhancing employee productivity. The authors emphasised the importance of corporate culture and its impact on work efficiency.

In their 2021 study, Benzaghta et al. (2021) conducted an integrative review of the literature on SWOT analysis applications, emphasising its importance in shaping the strategic vision of organisations. The study highlights the universal applicability of SWOT analysis to assess internal and external factors that influence company operations. Khraisat and Alazab (2021) present a critical review of intrusion detection systems on the Internet of Things. They identify techniques, deployment strategies, validation, attack types, public datasets, and challenges. This review is vital for understanding security aspects in the digital transformation era. Kitsios and Kamariotou (2021) examine artificial intelligence's role in digital transformation business strategy. They propose a research agenda that emphasises the strategic significance of AI for innovative business development. Donthu et al. (2021) provide an overview of bibliometric analysis methodology. Bibliometric analysis is a valuable tool for identifying trends and relationships in scientific research, contributing to a more complete understanding of specific knowledge areas.

Henry (2021) explores the basics of strategic management in his book "Understanding Strategic Management", offering valuable insights into developing and implementing effective management strategies in organisations. In a related study, Kumar et al. (2021) examine the connection between business strategy and environmental studies, highlighting the significance of integrating environmental responsibility into strategic planning. Tseng et al. (2021) investigate the trends and challenges in industrial and operational engineering towards Industry 4.0, emphasising the necessity of adapting to new technological and environmental requirements.

Lim et al. (2021) conducted a comprehensive literature review on the applications of blockchain technology in supply chains. The authors' analysis identifies the key themes, methodologies, and industries in which blockchain enhances transparency, security, and operational efficiency. Kraus et al. (2021) study the digital transformation in healthcare and define the current state of research in this field. They emphasise the significant potential of digital technologies to improve the quality of medical services and optimise clinical processes. Pamucar et al. (2021) propose a new logarithmic methodology for adding weights (LMAW) for multi-criteria decision-making. Their approach has been applied in logistics and has demonstrated efficiency in solving complex optimisation tasks. In their 2021 analysis, Feng et al. (2021) focus on on-demand ordering systems, specifically in the taxi industry. They explore the challenges and opportunities for improving efficiency and meeting consumer demand in this rapidly growing sector.

Meanwhile, Shair et al. (2021) evaluate the banking industry's effectiveness and overall productivity growth, examining the impact of environmental issues on their operations. The authors emphasise the significance of considering environmental factors for achieving sustainable development in the financial sector.

Drawing on an analytical literature review that covers a broad range of topics, from blockchain technologies in supply chains to digital transformation in healthcare and from advanced methodologies in multi-criteria decision-making to evaluating efficiency in the banking industry regarding environmental aspects, several key conclusions can be made.

Contemporary research underlines the importance and necessity of integrating innovative technologies and advanced analysis methods into business management. Implementing blockchain, artificial intelligence, and big data analytics is critical for increasing transparency, security, efficiency, and sustainable development of operational processes.

Research in the field of digital transformation in healthcare and other sectors has shown how technological innovations can significantly alter traditional management approaches, making them more adaptable to modern challenges. Furthermore, the development of methodologies for multi-criteria decision-making highlights the significance of a qualified analytical approach in management strategies.

Therefore, based on the literature review, more profound exploration and implementation of integrated analytical methods and technologies are relevant and necessary in the chosen topic. In the context of rapid technological development and increasing competition, innovation in analytics and management is critical to achieving strategic advantages, optimising processes, enhancing productivity, and ensuring sustainable business development. Studying and applying advanced analysis methods, such as artificial intelligence, blockchain, and big data, has become necessary in the modern business environment. It opens new horizons for innovative development and competitiveness in the global market.

The aim of this research is to analyse current trends and identify prospects for integrating analysis methods in business management to enhance competitiveness, efficiency, and adaptability to changing market conditions. The study focuses on examining the impact of innovative technologies, such as artificial intelligence, blockchain, and big data analytics, on decision-making processes and strategic planning in organisations. Special attention is given to developing methodological approaches and recommendations for integrating these analysis methods to optimise internal processes, improve supply chain management, develop new products and services, and ensure sustainable business development in the face of globalisation and technological changes.

## 2. Methodology

The research methodology employs systems analysis, comparative analysis, and analysis and synthesis. This approach enables a thorough evaluation and efficient integration of analysis methods into the management processes of economic entities, with a focus on current trends and development prospects.

Systems analysis is employed to identify relationships and interdependencies between management components and the impact of the external environment. It enables the identification of critical elements and the determination of opportunities and threats. Comparative analysis is used to evaluate the effectiveness of different analysis methods by comparing practices and results in different contexts. It facilitates the identification of successful strategies and approaches. The aim of the analysis is to examine in detail the individual aspects of using analysis methods, including their advantages, disadvantages, limitations, and potential. Synthesis enables the combination of the obtained data and findings to form a comprehensive picture of the issue and develop complex recommendations for optimising management processes.

The use of these methods facilitates a comprehensive analysis, which is essential for comprehending contemporary challenges and opportunities for integrating analysis methods into the strategic management of economic entities.

## 3. Results

In the rapidly evolving landscape of technology and increasing competition in global markets, the importance of applying comprehensive analysis methods in business management is significantly growing. The integration of analytical tools allows economic entities to more effectively respond to changes in the environment, optimise internal processes, enhance decision-making quality, and discover new development opportunities.

Analysis methods in management can be classified according to various criteria: by the object of application (financial analysis, marketing analysis, human resources analysis), by data type (quantitative analysis, qualitative analysis), by toolkit (statistical methods, machine learning, blockchain analysis), and so on. Each of these methods has its own advantages and areas of application depending on the specifics of the tasks that need to be addressed (Alekseieva et al., 2023).

Theoretical approaches to integrating analysis methods into management include the systems approach, which involves studying the organisation as a single system where analytical methods are used to address complex tasks, and the data-driven approach, which focuses on using big data and analytical tools for making informed decisions.

The integration of analysis methods in management provides organisations with a range of benefits, including increased flexibility and adaptability to changes, the ability to forecast and anticipate market trends, and resource and process optimisation. At the same time, there are specific challenges associated with the need for personnel training, integrating tools into existing business processes, ensuring data security, and analysis (Kachula et al., 2022).

Theoretical aspects of integrating analysis methods into management underscore the significance of this process for modern businesses. They provide a foundation for understanding how to select, adapt, and use various analytical tools to optimise management decisions and achieve the organisation's strategic goals. Successful integration of these methods requires a strong understanding of their theoretical foundations as well as careful consideration of the challenges that arise during their application.

The practical application of analysis methods in the management activities of economic entities plays a crucial role in enhancing efficiency and competitiveness. The adoption of modern analytical tools such as artificial intelligence, big data analytics, and blockchain opens up new opportunities for process optimisation, improving decision-making quality, and fostering innovative approaches in business (Sumets et al., 2022).

Artificial intelligence (AI) is a computer program that is based on advanced machine learning technologies, including neural networks, from a technical standpoint. Various aspects of business management have now embraced artificial intelligence, from automating internal procedures to analyzing consumer habits and enhancing supply chains. The ethical dilemmas pertaining to AI encompass a diverse range of concerns, ranging from privacy breaches and data security to the reliability of AI-generated outcomes and the delineation of AI rights and responsibilities. Additionally, there's a pressing need to establish boundaries for AI applications, ensure fairness and equity in their deployment, and address issues of intellectual property rights. And if the technical side of AI is clear—it is based on the depth and technology of machine learning as well as neural networks—then ethical issues cause many discussions. Despite the strides in policy discussions, both the legislative framework and practical mechanisms for AI implementation remain in nascent stages. However, AI has already begun to permeate educational practices, which indicates the urgency of addressing these ethical considerations amidst ongoing developmental and deliberative processes (Halushko & Batmanhlich, 2023).

Examples of successful AI implementation include the development of personalized marketing strategies, demand forecasting for products and services, and improving customer service quality. For example, ChatGPT and its analogs, VASA-1 or Gemini from Microsoft and Google, are widely used for recruiting personnel. Currently, recruiters can use ChatGPT to perform routine operations, namely:

- 1) automatically generate texts for job descriptions and create templates for feedback letters based on the results of interviews;

- 2) simplify the first stage of candidate selection by analyzing their answers to basic questions about the desired position;
- 3) help improve the employer's brand using modern technologies and accelerate the provision of feedback (Kravchuk, et al. 2023).

The introduction of such tools will simplify routine processes, such as recruitment and labor market analysis, and free up time for qualified staff to focus on strategic tasks. This is especially important for small and medium-sized businesses (SMEs), which usually have limited resources and cannot afford many employees to perform analytical tasks. The use of these tools will also help SMEs to be more competitive, predict and adapt to changes in the market, and find new opportunities for business development. Given the rapid changes in the economy and technology, the use of digital tools for data analysis is becoming a key success factor for SMEs (Bapat, et al. 2024).

Big data analytics enables companies to extract valuable insights from large volumes of structured and unstructured data, facilitating informed decision-making. The application of big data analytics can significantly enhance decision-making processes in areas such as financial planning, risk management, new product development, and identifying new market opportunities (Figure 1).



**Figure 1** The diagram below represents the Big Data Market from 2018 to 2030, measured in billions of US dollars.   
 Source: Kerr-McCutcheon (2023)

The graph illustrates the growth of the big data market over time, with each year's value represented by columns. A compound annual growth rate (CAGR) of 12.7% is projected from 2022 to 2030. In 2022, the market is valued at approximately \$163.5 billion, with an expected increase to around \$473.6 billion by 2030. The compound annual growth rate (CAGR) suggests a significant increase in interest and investment in big data processing technologies, highlighting the importance of this sector in the contemporary digital world.

It is important to note that these figures are projections and may vary depending on various factors, such as new technological developments, regulatory changes, market conditions, and other global economic trends.

Blockchain technology provides opportunities for transparency, security, and data immutability in management processes. It is used in supply chain management, digital identification, intellectual property protection, and financial transactions, promoting trust among business process participants.

The analysis of real-life case studies on integrating analytical methods into business processes highlights the significance of these tools in achieving strategic goals. Successful implementations include deploying data-driven customer relationship management (CRM) systems, optimising production lines using AI to forecast equipment failures, and applying blockchain to ensure transparency and security in supply chains (Kotsur et al., 2021).

The application of analysis methods in management has the potential to enhance the efficiency, innovation, and competitiveness of economic entities. To integrate modern analytical tools into business processes, a systematic approach is required, along with an understanding of application specifics and readiness to adapt to changing market conditions. Successful integration cases offer valuable experience and insights for further developing and implementing analytical solutions in various business sectors (Kalina et al., 2022; Lopatynskiy et al., 2023).

The modern business world is characterised by the rapid adoption of innovations and technological solutions, which require economic entities to adapt to new conditions and challenges. One of the significant trends is the increasing



importance of data analytics, artificial intelligence, and other modern analysis methods. These methods provide new opportunities for enhancing management processes.

Innovations in analytics, such as the development of machine learning and artificial intelligence, are transforming the way large volumes of data are analysed. It enables efficient data processing and the identification of complex relationships and patterns that were previously inaccessible using traditional analysis methods. This approach not only allows organisations to forecast market behaviour but also to adapt to changes with maximum speed.

Technological changes, particularly in digital transformation, are transforming traditional business management models. The digitisation of processes, implementation of the Internet of Things (IoT), and blockchain technologies offer new opportunities for automating, enhancing security, and improving the efficiency of management processes (Podolchak et al., 2023; Bayev et al., 2022).

In the context of globalisation and rapidly changing market conditions, organisations need to adapt to new realities. This requires implementing cutting-edge technologies and developing flexible management strategies that can react quickly to changes. It also involves rethinking data work, enhancing employees' competencies in analytics and artificial intelligence, and fostering an innovation culture across all aspects of the company's activities.

Digital transformation presents both opportunities and challenges for businesses. Challenges include cybersecurity, integrating new technologies into existing IT systems, and the need for skilled professionals. However, with the right approach and strategic planning, these challenges can be turned into opportunities for growth and development.

The potential for integrating analysis methods into business management appears promising, given the continuous advancement of technology and the growing availability of data. Prospects include refining analytical tools, expanding the application of artificial intelligence to automate complex management processes, and creating integrated management systems capable of real-time analysis of large data volumes.

Considering the discussed trends and prospects, integrating modern analysis methods into business management is not only essential but also necessary for the successful development of economic entities in modern conditions. It requires companies to be flexible, open to innovation, and ready for continuous learning and adaptation. However, it also presents boundless opportunities for growth and development.

#### 4. Discussion

The debate on the integration of innovative techniques, such as artificial intelligence and big data analytics, versus traditional management methods underscores a pivotal dilemma in contemporary business strategy. Innovations promise enhanced efficiency and competitiveness through process automation, improved forecasting, and decision optimization. This perspective is supported by Silva et al. (2021), who highlight the transformative potential of innovative analytical tools in Industry 4.0. However, the counterargument stresses the potential for innovations to introduce complexity without guaranteed returns on investment, echoing concerns about the risks of adopting untested technologies. This cautionary stance finds resonance in the work of Rana et al. (2022), who examine the pitfalls of integrating artificial intelligence without adequate strategic oversight.

The synthesis of our research with these discussions underscores the necessity of a balanced approach, amalgamating the strengths of both innovative and traditional methodologies tailored to the specific needs and conditions of each company. This balanced perspective is further elaborated by Dzhyhora et al. (2022), who advocate for an integrated model of data management that combines the control and risk mitigation of centralization with the flexibility and rapid innovation adoption of decentralization.

Moreover, our exploration into the realm of automation and its role in future management practices reveals a consensus on the significant efficiency gains it can offer. Automated systems' capacity to process vast datasets and unearth subtle connections presents a compelling case for their adoption. Nevertheless, the indispensable value of human intervention, especially in tasks requiring creative, moral, and ethical judgments, cannot be overstated. This viewpoint aligns with findings by Yalcin et al. (2022), who emphasize the critical role of human expertise in complementing automated systems, particularly in complex decision-making processes.

By weaving our research outcomes with the fabric of existing studies, we illuminate the nuanced interplay between innovation and tradition in business management. Our findings not only corroborate the insights of Silva et al. (2021) and Rana et al. (2022) but also contribute to the ongoing discourse by underscoring the importance of a strategic, integrated approach to the adoption of new technologies. This approach ensures that innovations like AI and big data analytics serve to augment, rather than supplant, the foundational strengths of traditional management practices.

#### 5. Conclusion

In the rapidly changing dynamics of the modern economy, integrating analytical methods into business management processes is particularly relevant. Innovative technologies have a significant impact on enhancing the competitiveness of companies. Artificial intelligence, big data analytics, and other modern tools not only automate and optimise internal

processes but also provide companies with the ability to respond to market changes flexibly. Real cases from reputable companies support these claims, demonstrating the benefits of combining advanced technologies with proven management methods.

However, it is still necessary to preserve the human factor in management. While full automation undoubtedly provides advantages in speed and data processing accuracy, it can only partially replace human judgment and creative approaches, especially in addressing complex tasks involving moral and ethical aspects. Therefore, developing integrated systems that combine the benefits of automation with in-depth analysis and strategic thinking by experts is a priority direction for developing business analytics.

Research also indicates limitations associated with rapid technological changes, which require businesses to update their knowledge and skills in analytics continually. The research emphasises the significance of developing solutions that maintain a high level of data security while also prioritising user experience.

The proposed directions for further research are based on analysing the obtained data and considering the identified trends. These directions aim to deepen understanding of the interaction between cutting-edge technologies and management strategies. This fragment discusses the development of competencies in ethical and socially responsible management and the technical aspects of integration solutions.

The article's conclusions highlight the practical significance of the results obtained and emphasise the novelty of approaches to integrating analytical methods into business processes. Companies should develop strategies to adapt to changing technological and market conditions while protecting personal data and privacy.

Future research should focus on creating tools for accurately measuring the impact of analytical methods on business productivity and studying their integration while considering ethical norms and standards. It is important to balance innovation with user needs, which requires a responsible and balanced approach to the use of technology.

### Ethical considerations

Not applicable.

### Conflict of Interest

The authors declare no conflicts of interest.

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