



## AI-enabled business analytics and decision support systems: An empirical study in an ERP-based IT organization

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### Abstract

The rapid advancement of Artificial Intelligence (AI) has significantly transformed business analytics, enabling organizations to move from descriptive reporting to predictive and prescriptive decision-making. This study investigates the role of AI-enabled business analytics in enhancing organizational performance within an ERP-based IT organization. A descriptive research design was adopted, and primary data were collected from 100 employees across multiple departments using a structured questionnaire. The findings reveal a high level of awareness and adoption of analytics tools, with ERP-based dashboards, SQL tools, and AI-supported systems being widely used. Business analytics is predominantly applied in ERP operations, project management, and resource planning. The results indicate that analytics significantly improves decision-making, reduces operational inefficiencies, and enhances customer satisfaction. Furthermore, employees strongly support further investment in AI technologies such as predictive analytics and machine learning. The study concludes that AI-enabled business analytics acts as a strategic enabler of organizational effectiveness and competitive advantage. It highlights the importance of integrating advanced analytics tools, improving data literacy, and fostering a data-driven culture. The research contributes to the growing literature on AI-driven analytics and provides practical insights for organizations aiming to leverage intelligent decision support systems.

**Keywords:** Artificial intelligence, business analytics, decision support systems, erp systems, organizational performance

### Introduction

In today's data-driven economy, organizations are increasingly relying on advanced analytical tools to gain insights, enhance operational efficiency, and maintain competitive advantage. The exponential growth of data generated through digital platforms, enterprise systems, and customer interactions has necessitated the adoption of sophisticated analytical frameworks. Business analytics, supported by Artificial Intelligence (AI), has emerged as a powerful tool for transforming raw data into actionable intelligence.

Business analytics involves the use of statistical methods, data mining, and predictive modeling to analyze historical and real-time data (Sharda *et al.*, 2018) [21]. The integration of AI further enhances these capabilities by enabling automation, pattern recognition, and predictive forecasting (Davenport & Harris, 2007) [5]. AI-driven analytics systems are capable of learning from data, identifying complex relationships, and supporting decision-making processes in real time (Provost & Fawcett, 2013) [19].

ERP-based organizations generate large volumes of structured and unstructured data across functions such as finance, operations, human resources, and customer management. The effective use of analytics in such environments enables organizations to optimize processes, improve resource allocation, and enhance customer satisfaction (Chen *et al.*, 2012) [3].

This study focuses on examining the application of AI-enabled business analytics in an ERP-based IT organization and its impact on decision-making and organizational performance. The research aligns with the broader theme of AI-driven research methodologies and functional applications in management.

### Objectives of the Study

1. To examine the application of AI-enabled business analytics in an ERP-based organization
2. To analyze the role of analytics in improving decision-making
3. To evaluate the effectiveness of analytics tools in enhancing organizational performance
4. To assess employee perception towards analytics adoption

### Literature Review

The increasing reliance on data-driven decision-making has positioned business analytics as a critical capability in modern organizations. Over the past two decades, the field has evolved from traditional business intelligence systems to advanced analytics supported by Artificial Intelligence (AI), enabling organizations to generate deeper insights and improve strategic outcomes. Scholars have extensively examined the adoption, application, and impact of business analytics across various organizational contexts. Early research emphasized the role of analytics in enhancing decision-making and organizational performance. Thomas H. Davenport (2013) [4] argued that organizations leveraging analytics outperform competitors by making faster and more informed decisions. Similarly, Erik Brynjolfsson and colleagues highlighted that data-driven firms demonstrate higher productivity and profitability compared to those relying on intuition-based decisions (Brynjolfsson *et al.*, 2011) [2]. These foundational studies established analytics as a strategic resource capable of delivering competitive advantage. The integration of big data technologies further expanded the scope of analytics. Andrew McAfee and Brynjolfsson (2012) [15] described the emergence of the "big data revolution," where organizations utilize large volumes of structured and unstructured data to improve decision-

making. This transformation has been supported by advancements in computing power, storage, and data processing technologies, enabling real-time analytics and predictive modeling (Gandomi & Haider, 2015) <sup>[9]</sup>. As a result, analytics has shifted from descriptive reporting toward predictive and prescriptive approaches. The evolution of business analytics has also been influenced by the integration of AI technologies. AI enhances analytics capabilities by enabling automated data processing, pattern recognition, and predictive forecasting. Foster Provost and Tom Fawcett (2013) <sup>[19]</sup> emphasized that data science and machine learning techniques allow organizations to extract meaningful insights from complex datasets. Similarly, Schmitt (2022) <sup>[20]</sup> highlighted the role of automated machine learning (AutoML) in simplifying model development and increasing accessibility to analytics tools. These advancements have significantly reduced the dependency on specialized technical expertise and enabled broader adoption of analytics across organizations. Several studies have examined the factors influencing the adoption of business analytics. Nam *et al.* (2019) <sup>[16]</sup> proposed a framework based on innovation diffusion theory, identifying organizational, technological, and environmental factors as key determinants of analytics adoption. Organizational factors include top management support and data-driven culture, while technological factors involve system compatibility and data quality. Environmental factors such as competitive pressure also influence adoption decisions. This framework highlights that successful implementation of analytics requires alignment between technology and organizational readiness. Similarly, Gharaibeh and Kassim (2024) emphasized the importance of user trust, data security, and system usability in influencing analytics adoption. Their findings suggest that even advanced analytics systems may fail if users perceive them as complex or unreliable. In addition, Kasiri *et al.* (2024) <sup>[12]</sup> identified resource constraints and lack of expertise as major barriers for small and medium enterprises (SMEs), indicating that organizational capabilities play a crucial role in analytics implementation. The application of business analytics spans multiple functional areas within organizations. Yin and Fernandez (2020) <sup>[23]</sup> conducted a comprehensive review and found that analytics is widely used in supply chain management, financial analysis, marketing, and human resource management. In supply chain operations, analytics helps optimize inventory management and demand forecasting (Gunasekaran *et al.*, 2017) <sup>[10]</sup>. In marketing, analytics supports customer segmentation, personalization, and campaign optimization (Winston, 2014). In human resource management, analytics is used for employee performance evaluation and workforce planning (Sharda *et al.*, 2018) <sup>[21]</sup>. The role of analytics in decision-making has been extensively studied in the context of decision support systems (DSS). Power (2016) <sup>[18]</sup> defined DSS as systems that combine data, models, and analytical tools to support managerial decision-making. Analytics enhances DSS by providing real-time insights and predictive capabilities, enabling managers to evaluate alternatives and make informed decisions. Davenport *et al.* (2012) <sup>[6]</sup> further emphasized that organizations integrating analytics into decision processes achieve higher efficiency and better performance outcomes. Recent research has focused on the impact of analytics on organizational performance. Akter and Wamba (2016) <sup>[1]</sup> found that big data analytics capability positively influences firm performance by improving operational efficiency and customer responsiveness. Similarly, Liu *et al.* (2023) <sup>[14]</sup> highlighted that analytics enhances decision-making

accuracy, reduces costs, and improves customer satisfaction. Hussinki (2024) <sup>[11]</sup> argued that analytics contributes to performance when supported by complementary organizational resources such as data culture and managerial expertise. Despite its benefits, the implementation of analytics presents several challenges. Pacis and dela Cruz (2025) <sup>[17]</sup> identified common barriers such as poor data quality, resistance to change, and lack of strategic alignment. These challenges can limit the effectiveness of analytics initiatives and reduce their impact on organizational performance. Additionally, De-Arteaga *et al.* (2022) <sup>[7]</sup> highlighted ethical concerns related to AI-driven analytics, including bias and lack of transparency in algorithmic decision-making. These issues underscore the need for responsible and ethical use of analytics technologies. Another important area of research is the role of data culture in analytics adoption. Kiron *et al.* (2014) <sup>[13]</sup> emphasized that organizations with a strong data-driven culture are more likely to successfully implement analytics initiatives. A data-driven culture encourages employees to rely on evidence-based decision-making and promotes the use of analytics tools across all levels of the organization. This cultural shift is essential for maximizing the value of analytics investments. Furthermore, the future of business analytics is increasingly shaped by AI and machine learning technologies. Predictive analytics enables organizations to forecast future trends and identify potential risks, while prescriptive analytics provides recommendations for optimal decision-making (Evans, 2017) <sup>[8]</sup>. The integration of real-time analytics and cloud-based platforms further enhances the scalability and accessibility of analytics systems. In conclusion, the literature indicates that business analytics, particularly when integrated with AI, plays a critical role in enhancing organizational performance and decision-making. While significant progress has been made in the development and adoption of analytics technologies, challenges related to data quality, organizational readiness, and ethical considerations remain. Future research should focus on addressing these challenges and exploring the potential of emerging technologies such as AI and machine learning in transforming business analytics.

## Research Methodology

The study adopts a descriptive research design to analyze the application and impact of business analytics.

- **Data Source:** Primary and Secondary
- **Primary Data:** Structured questionnaire
- **Sample Size:** 200 respondents
- **Sampling Technique:** Convenience sampling
- **Area of Study:** ERP-based IT organization
- **Data Analysis:** Percentage analysis and interpretation

The questionnaire included variables such as awareness, usage frequency, effectiveness, and impact of analytics tools.

## Data Analysis and Interpretation

The present study analyzes primary data collected from 200 employees working in an ERP-based IT organization to examine the role of AI-enabled business analytics in decision-making and organizational performance. The analysis is conducted using percentage-based descriptive techniques, supported by theoretical insights from existing literature to enhance interpretive rigor.

### 1. Demographic Profile of Respondents

The demographic composition of the sample indicates that a majority of respondents fall within the 20–30 age group,

reflecting a relatively young workforce. This finding is consistent with prior research suggesting that younger employees exhibit higher adaptability toward digital technologies and analytics systems (Wamba *et al.*, 2015) [22]. The presence of a technologically inclined workforce facilitates the adoption of AI-enabled analytics tools and supports organizational digital transformation initiatives.

The gender distribution in the sample reflects a balanced representation, indicating inclusivity within the organizational structure. Educational qualifications reveal that most respondents possess degrees in management, engineering, or computer science, which aligns with the technical nature of analytics usage. According to Sharda *et al.* (2018) [21], employees with relevant educational backgrounds are more likely to effectively utilize analytics tools and contribute to data-driven decision-making.

Overall, the demographic profile suggests that the organization possesses a strong human capital base capable of supporting analytics adoption and innovation.

## 2. Awareness of Business Analytics

Awareness of business analytics among employees is a critical precursor to its effective implementation. The findings indicate that a substantial proportion of respondents are aware of analytics practices within the organization. This aligns with Kiron *et al.* (2014) [13], who emphasized that organizational awareness and leadership support are key drivers of analytics adoption.

However, a small segment of respondents reported limited awareness, indicating potential gaps in internal communication and training initiatives. This observation is supported by Nam *et al.* (2019) [16], who argued that lack of awareness can hinder the diffusion of analytics innovations within organizations. Therefore, enhancing awareness through structured training programs and organizational communication is essential for maximizing analytics utilization.

## 3. Frequency of Analytics Usage

The analysis of usage patterns reveals that a majority of employees engage with analytics tools on a daily or weekly basis. This indicates that analytics is deeply embedded in routine organizational processes rather than being confined to occasional reporting activities.

Regular usage of analytics tools reflects a transition toward data-driven decision-making practices. According to Davenport *et al.* (2012) [6], organizations that integrate analytics into daily operations achieve higher efficiency and better performance outcomes. The findings also suggest that employees rely on analytics for operational tasks, performance monitoring, and decision support.

A smaller proportion of respondents reported occasional usage, which may be attributed to differences in job roles or departmental functions. This variation highlights the need for broader integration of analytics across all organizational units.

## 4. Types of Analytics Tools Used

The study identifies ERP-based dashboards as the most frequently used analytics tools within the organization. These dashboards provide real-time access to operational data, enabling employees to monitor key performance indicators and make informed decisions.

In addition to ERP dashboards, tools such as SQL databases, Power BI, and programming platforms like Python and R are also utilized. The use of diverse tools indicates the presence of a multi-layered analytics infrastructure. Sharda *et al.* (2018) [21] argue that the integration of multiple analytics tools enhances organizational capability by supporting both descriptive and predictive analytics.

The adoption of advanced tools such as Python and Power BI also reflects the organization's movement toward AI-enabled analytics. According to Provost and Fawcett (2013) [19], the use of machine learning and data science tools significantly enhances the analytical capabilities of organizations.

## 5. Application Areas of Business Analytics

The findings reveal that business analytics is applied across multiple functional areas, with a strong emphasis on ERP operations, project management, and resource planning. In ERP operations, analytics is used to track transactions, monitor system performance, and identify inefficiencies. This is consistent with Chen *et al.* (2012) [3], who highlighted the role of analytics in improving operational efficiency in enterprise systems.

In project management, analytics supports planning, scheduling, and performance evaluation. Gunasekaran *et al.* (2017) [10] emphasized that analytics enhances project outcomes by enabling better forecasting and resource allocation. Similarly, in resource planning, analytics helps optimize the utilization of organizational resources, reducing waste and improving productivity.

The widespread application of analytics across functions indicates that it has become an integral component of organizational processes, supporting both operational and strategic activities.

## 6. Perceived Effectiveness of Analytics Tools

The effectiveness of analytics tools is evaluated based on employee perceptions. The results indicate that a majority of respondents consider analytics tools to be effective or highly effective in generating actionable insights.

Employees reported that analytics tools facilitate trend analysis, performance evaluation, and decision-making. This finding is supported by Evans (2017) [8], who argued that analytics improves decision quality by providing accurate and timely information. Similarly, Akter and Wamba (2016) [1] found that analytics capability positively influences organizational performance by enhancing efficiency and responsiveness.

However, a small proportion of respondents expressed neutral or negative perceptions, which may be due to lack of familiarity or insufficient training. This highlights the importance of continuous skill development and user support in ensuring effective utilization of analytics tools.

## 7. Impact on Decision-Making

One of the key objectives of the study is to assess the impact of analytics on decision-making. The findings indicate that a significant majority of respondents believe that business analytics improves decision-making quality.

Analytics enables managers to make evidence-based decisions by providing real-time insights and predictive forecasts. Power (2016) [18] emphasized that decision support systems enhance managerial effectiveness by integrating data and analytical models. Similarly, Davenport and Harris (2007) [5] argued that organizations competing on analytics achieve superior decision-making capabilities.

The findings also suggest that analytics supports both operational and strategic decisions, thereby enhancing overall organizational effectiveness.

## 8. Impact on Organizational Performance

The analysis further reveals that business analytics has a positive impact on organizational performance. Respondents reported improvements in cost efficiency, operational effectiveness, and customer satisfaction.

Analytics helps identify inefficiencies and optimize processes, leading to cost reduction. Liu *et al.* (2023) <sup>[14]</sup> highlighted that analytics improves operational performance by enabling data-driven process improvements. Additionally, analytics enhances customer satisfaction by providing insights into customer behavior and preferences (McAfee & Brynjolfsson, 2012) <sup>[15]</sup>.

These findings confirm that analytics capability is a key determinant of organizational success in the digital economy.

## 9. Future Potential of AI-Driven Analytics

The study highlights that employees recognize the growing importance of AI-driven analytics. A majority of respondents identified machine learning, predictive analytics, and real-time dashboards as critical areas for future development. This aligns with Schmitt (2022) <sup>[20]</sup>, who emphasized the role of automated machine learning in enhancing analytics efficiency and accessibility. The increasing focus on AI technologies reflects the evolution of analytics from descriptive to predictive and prescriptive systems. The findings suggest that organizations must invest in advanced analytics capabilities to remain competitive in a rapidly changing business environment.

## 10. Summary of Analysis

In summary, the data analysis indicates that the organization has successfully integrated AI-enabled business analytics into its operations. High levels of awareness, regular usage, and positive perceptions demonstrate a strong analytics culture. The findings confirm that analytics enhances decision-making, improves efficiency, and contributes to organizational performance. However, challenges related to training and skill development must be addressed to fully leverage the potential of AI-driven analytics.

## Findings

The analysis of primary data collected from employees in an ERP-based IT organization reveals several important insights regarding the adoption and impact of AI-enabled business analytics. These findings are closely aligned with the objectives of the study and supported by existing literature.

First, the study finds that the organization possesses a relatively young and technologically adept workforce, which facilitates the adoption of advanced analytics tools. This observation is consistent with prior research indicating that younger employees are more adaptable to digital innovations and analytics systems (Wamba *et al.*, 2015) <sup>[22]</sup>. The presence of a skilled and educated workforce further strengthens the organization's ability to implement data-driven practices effectively (Sharda *et al.*, 2018) <sup>[21]</sup>.

Second, a high level of awareness of business analytics is observed among employees, indicating that the organization has successfully established a foundation for analytics

adoption. This aligns with Kiron *et al.* (2014) <sup>[13]</sup>, who emphasized that awareness and leadership support are critical drivers of analytics implementation. However, a small proportion of employees still lack awareness, suggesting the need for continuous training and communication.

Third, the findings indicate that analytics tools are widely used on a regular basis, particularly for operational and managerial decision-making. This supports the argument that organizations integrating analytics into routine processes achieve higher efficiency and improved outcomes (Davenport *et al.*, 2012) <sup>[6]</sup>. The frequent use of analytics tools demonstrates their importance in daily organizational activities.

Fourth, ERP-based dashboards emerge as the most commonly used analytics tools, followed by SQL databases and visualization platforms. The use of multiple tools reflects a well-developed analytics infrastructure, enabling both descriptive and predictive analysis (Provost & Fawcett, 2013) <sup>[19]</sup>. This suggests that the organization is progressing toward advanced analytics capabilities.

Fifth, the study finds that business analytics is applied across various functional areas, including ERP operations, project management, and resource planning. This confirms that analytics has become an integral part of organizational processes, supporting both operational efficiency and strategic planning (Chen *et al.*, 2012; Gunasekaran *et al.*, 2017) <sup>[3, 10]</sup>.

Sixth, the perceived effectiveness of analytics tools is high, with most employees acknowledging their role in generating accurate and actionable insights. This supports the findings of Evans (2017) <sup>[8]</sup>, who argued that analytics enhances decision quality and reduces uncertainty. Positive perceptions of analytics tools indicate their reliability and usability within the organization.

Seventh, the impact of analytics on decision-making is significant, as a majority of respondents agree that analytics improves the quality, speed, and accuracy of decisions. This aligns with Power (2016) <sup>[18]</sup>, who highlighted the role of decision support systems in enhancing managerial effectiveness. The findings also confirm that analytics supports both operational and strategic decision-making processes.

Eighth, the study finds that analytics contributes positively to organizational performance by reducing costs, improving efficiency, and enhancing customer satisfaction. These findings are consistent with Akter and Wamba (2016) <sup>[1]</sup>, who demonstrated that analytics capability is a key driver of firm performance.

Finally, the study identifies AI and machine learning as key areas for future development. Employees recognize the potential of predictive analytics and real-time data systems in enhancing organizational competitiveness. This reflects the growing importance of AI-driven analytics in modern organizations (Schmitt, 2022) <sup>[20]</sup>.

## Conclusion

The present study examined the role of AI-enabled business analytics in enhancing decision-making and organizational performance within an ERP-based IT organization. The findings provide strong evidence that business analytics has become a critical component of modern organizational strategy, enabling data-driven decision-making and improved operational efficiency. One of the key conclusions of the study is that the successful adoption of analytics is

closely linked to organizational readiness, including employee awareness, technological infrastructure, and management support. The presence of a young and technologically skilled workforce has facilitated the integration of analytics tools into daily operations. This supports the argument that human capital plays a crucial role in leveraging analytics capabilities effectively (Sharda *et al.*, 2018) <sup>[21]</sup>. The study also concludes that analytics tools are widely used across multiple functional areas, indicating their strategic importance. The integration of analytics into ERP systems enables organizations to utilize real-time data for monitoring performance and optimizing processes. This finding is consistent with Chen *et al.* (2012) <sup>[3]</sup>, who highlighted the role of analytics in improving enterprise system efficiency. Furthermore, the study demonstrates that analytics significantly enhances decision-making by providing accurate, timely, and relevant information. The use of analytics reduces reliance on intuition and enables evidence-based decision-making, thereby improving organizational outcomes (Davenport & Harris, 2007) <sup>[5]</sup>. The findings also confirm that analytics contributes to cost reduction, efficiency improvement, and customer satisfaction, reinforcing its role as a driver of organizational performance (Aker & Wamba, 2016) <sup>[1]</sup>. Another important conclusion is that the organization is gradually transitioning toward AI-driven analytics, with increasing emphasis on predictive modeling and machine learning. This reflects the evolving nature of analytics, where organizations are moving beyond descriptive analysis to more advanced and intelligent systems (Provost & Fawcett, 2013) <sup>[19]</sup>. However, the study also identifies the need for continuous training and skill development to ensure that employees can effectively utilize these advanced technologies. Despite the positive findings, the study acknowledges certain limitations. The use of a relatively small sample size and a single organizational context may limit the generalizability of the results. Future research can explore the application of AI-driven analytics across different industries and organizational settings to provide broader insights. In conclusion, AI-enabled business analytics represents a strategic capability that enables organizations to transform data into actionable insights and achieve sustainable competitive advantage. Organizations that invest in advanced analytics technologies, foster a data-driven culture, and develop employee competencies are better positioned to succeed in an increasingly data-centric business environment.

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