

The Role of Data-Driven Business Intelligence in Decision-Making and Business Performance: A Systematic Literature Review

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The growth of the digital economy has increased organizations' need for data-driven decision-making, in which Business Intelligence (BI) serves as a mechanism for processing data into relevant information. Although research on BI continues to evolve, the relationship between BI, decision-making, and business performance still shows varying findings and limitations in conceptual integration. This study aims to synthesize the scientific literature on the role of data-driven BI in decision-making and business performance, as well as to identify patterns of relationships and research gaps. The method used is a Systematic Literature Review, following the guidelines of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses. The data were obtained from reputable scientific databases through a selection process based on inclusion and exclusion criteria, resulting in 48 articles that were analyzed using thematic synthesis and conceptual analysis. The results indicate that BI is consistently associated with improvements in the quality and speed of decision-making. The impact of BI on business performance is generally indirect and mediated by variables such as decision quality and analytical capabilities. In addition, it was found that contextual factors, including a data-driven culture and technology-organizational fit, also influence the effectiveness of BI. The study's conclusions confirm that the role of BI in an organization is best understood as a capability that supports the decision-making process, rather than as a direct determinant of business performance. This study contributes an integrated conceptual framework and recommendations for the development of more comprehensive empirical research.

Keywords: Business Analytics, Business Intelligence, Business Performance, Data-Driven Decision-Making, Systematic Literature Review.

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1. Introduction

The global digital economic transformation has shifted the paradigm of organizational decision-making from intuition-based to data-driven approaches. In this context, Business Intelligence (BI) has emerged as a strategic infrastructure that integrates data, analytics, and information systems to generate insights that support organizational decisions. A recent bibliometric analysis of 2,442 publications indicates that BI research has experienced significant expansion over the past decade, with a primary focus on integrating BI into organizational decision-making processes and strategies. Furthermore, a two-decade longitudinal study confirms that BI has evolved from a mere reporting tool into an analytical system that directly contributes to the quality of decisions and organizational performance. These findings indicate that globally, BI is positioned not merely as a supporting technology, but as an organizational capability that mediates the relationship between data and business performance (Nugroho & Utama, 2025).

At the national and regional levels, particularly in developing countries such as Indonesia, the adoption of BI is taking place against the backdrop of digital economic growth and an increasing reliance on data in business activities. Recent studies indicate that the implementation of BI in organizations can improve operational efficiency, strengthen risk management, and support data-driven strategic decision-making. However, the effectiveness of BI implementation in this context is not uniform. Barriers such as

data quality, infrastructure readiness, and limitations in analytical competencies remain the primary limiting factors. These conditions indicate that BI adoption at the national level depends not only on the availability of technology but also on an organization's readiness to integrate processes, human resources, and a data-driven culture (Suharyanto et al., 2025).

At the organizational level (local context), the empirical literature suggests that BI plays a role in improving decision quality through specific mechanisms, rather than directly. Empirical research indicates that BI capabilities influence organizational performance by increasing the speed and completeness of decision-making, which acts as a mediating variable (Azisah, 2023). Furthermore, other studies show that the impact of BI on managerial performance is also influenced by contextual factors such as a data-driven culture and the organization's analytical capabilities. Thus, the relationship between BI and business performance is complex, non-linear, and dependent on the configuration of broader organizational factors.

Although the literature on BI, decision-making, and business performance continues to grow, there are a number of conceptual and methodological limitations that warrant critical examination. First, most research still adopts a fragmented approach by separating the dimensions of technology, decision-making processes, and business performance, thus failing to produce a comprehensive integrative framework. Second, the dominance of quantitative empirical studies leads to a tendency toward reductionism, where relationships between variables are simplified without exploring deeper causal mechanisms. Third, recent bibliometric analyses indicate that the integration of BI with strategic aspects such as competitive intelligence, human resource management, and decision-making processes remains relatively under-explored. Furthermore, although several studies claim that BI contributes to improved performance, empirical evidence suggests that this relationship is often mediated by variables such as decision quality and organizational capabilities, making the assumption of a direct relationship problematic (DYAH, 2025).

Based on this critical review, the research gap in this study lies in the absence of a systematic synthesis that integrates the role of data-driven Business Intelligence in decision-making and business performance within a single, comprehensive conceptual framework. Furthermore, although previous SLR studies have been conducted, most are still limited to a relatively small number of articles or focus on specific aspects, thus failing to provide a comprehensive mapping of research trends, patterns of variable relationships, and broader research gaps. Thus, a more structured and protocol-based Systematic Literature Review (SLR) approach is needed to produce a more robust and replicable synthesis (Ardiansyah & Purnomo, 2025).

Based on this background, this study aims to synthesize the scientific literature on the role of data-driven Business Intelligence in decision-making and business performance using a Systematic Literature Review (SLR) approach based on the PRISMA guidelines. The contributions of this study lie in (1) the development of an integrated conceptual framework linking BI, the decision-making process, and business performance, (2) the identification of current research trends and patterns in the field, and (3) the mapping of research gaps that can serve as a basis for further studies. This approach is expected to provide an academic contribution by strengthening the theoretical foundation of BI, as well as a practical contribution by supporting data-driven decision-making in organizations (Yulistiawan, 2025).

2. Method

1. Research Design

This study employs a Systematic Literature Review (SLR) approach with the aim of producing a comprehensive and structured synthesis of the role of data-driven Business Intelligence (BI) in decision-making and business performance. The research protocol adheres to the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines to ensure transparency and replicability of the literature selection process (Wahid & Kususiyanah, 2024).

The research stages include: (1) formulation of research questions, (2) identification of literature through scientific databases, (3) screening based on inclusion and exclusion criteria, (4) eligibility assessment, and (5) data synthesis. Unlike conventional SLRs, which are descriptive in nature, this study integrates thematic synthesis and conceptual mapping approaches to identify patterns of relationships between variables more systematically.

2. Population and Sample

The population in this study consists of all scientific publications that discuss Business Intelligence, data-driven decision-making, and business performance. The research sample was selected using a purposive sampling technique based on the following inclusion and exclusion criteria:

1. Inclusion criteria:

- A. Scientific articles published in reputable journals (indexed in Scopus, Web of Science, or SINTA).
- B. Publication years ranging from 2015 to 2025 to ensure the relevance and currency of the data.
- C. Studies that explicitly discuss the relationship between BI, decision-making, and/or business performance.
- D. Peer-reviewed articles in English or Indonesian.

2. Exclusion criteria:

- A. Non-scientific articles (proceedings without rigorous peer review, technical reports, editorials).
- B. Studies that discuss only the technical aspects of BI without any connection to decision-making or performance.
- C. Articles for which full-text access is not available.
- D. Duplicate publications across multiple databases.

The selection process was conducted in stages using the PRISMA flowchart, resulting in a final sample of articles that met all eligibility criteria.

3. Data Collection Methods

Data were collected through a systematic search of several major scientific databases, namely Scopus, ScienceDirect, IEEE Xplore, and Google Scholar as a supplementary source. The search strategy employed the following combination of keywords (Boolean search query):

- a. "Business Intelligence" AND "decision making" AND "business performance"
- b. "Data-driven decision making" AND "analytics" AND "organizational performance"

The search process was conducted with filters applied to titles, abstracts, and keywords to improve the relevance of the results. All search results were exported to a reference management tool (e.g., Mendeley or Zotero) to systematically identify and remove duplicates. The next step is a screening based on titles and abstracts, followed by a full-text review to ensure alignment with the research objectives.

4. Research Instruments

The primary instrument used in this study is a data extraction form, which was systematically designed to collect key information from each selected article. The extracted variables include:

- a. Study identifiers (author, year, journal)
- b. Research context (industry sector, region)
- c. Research methodology (quantitative, qualitative, mixed methods)

- d. Key variables (BI, decision-making, business performance)
- e. Key findings
- f. Mechanisms of relationships (direct, mediation, moderation)
- g. Research limitations

To improve consistency, the data extraction process was conducted using a theme-based coding framework. In addition, internal reliability was assessed through cross-checking a portion of the article samples to minimize interpretive bias.

In addition, a quality assessment was conducted to ensure the methodological rigor of the selected studies. The assessment evaluated the clarity of research objectives, research design, data collection methods, data analysis, credibility of findings, and relevance to the objectives of this review. Only studies that met the established quality criteria were included in the final synthesis (Page et al., 2021; Guo et al., 2025).

5. Data Analysis Techniques

Data analysis was conducted using a thematic synthesis approach combined with conceptual analysis. The analysis stages include:

- a. Open coding: identifying the main concepts in each study
- b. Axial coding: grouping concepts into thematic categories
- c. Selective coding: establishing relationships between categories to form a conceptual framework

Next, a relationship pattern analysis was conducted to identify how BI influences decision-making and business performance, both directly and through mediating/moderating variables. As a methodological added value, this study also applied a literature trend analysis based on the distribution of publication years, methodological approaches, and research focus (Harsono & Tarmidi, 2024). This approach allows for the identification of research development dynamics as well as areas that remain under-explored.

Data extraction was performed using a standardized extraction form to collect information on the author, publication year, research methodology, variables, key findings, and research limitations. To minimize potential bias, article selection, quality assessment, and data extraction were conducted systematically based on predefined inclusion and exclusion criteria, thereby improving the validity and reliability of the literature synthesis (Page et al., 2021; Schmidt et al., 2025).

6. Research Ethics

This study does not directly involve human subjects and therefore does not require experimental ethics approval. Nevertheless, research ethics principles are upheld through:

- a. Transparency of data sources, using only verifiable publications.
- b. Avoidance of plagiarism, through academic paraphrasing and proper citation.
- c. Objectivity of analysis, by avoiding selection and interpretation bias.
- d. Reproducibility, through detailed reporting of research procedures in accordance with the PRISMA guidelines.

In addition, all references used in this study are cited in accordance with academic citation standards to ensure scientific integrity.

7. Methodological Innovation

This research approach offers a methodological contribution through the integration of PRISMA-based systematic literature reviews (SLRs), thematic synthesis, and conceptual mapping within a single analytical framework. This integration enables not only a description of the literature findings but also the construction of more systematic conceptual relationships between BI, decision-making, and business performance. Thus, this study aims to move beyond inventory-based SLR approaches toward a more in-depth and structured analytical synthesis (Maulidan et al., 2025).

3. Results And Discussion

This section presents the results of a descriptive and structured literature synthesis based on the Systematic Literature Review (SLR) selection process. The presentation focuses on the characteristics of the studies, the distribution of methodologies, and the main findings regarding the role of Business Intelligence (BI) in decision-making and business performance (Kesuma et al., 2026).

1. Results of the Literature Review

The literature selection process followed the PRISMA guidelines, which include the identification, screening, eligibility, and inclusion stages. An initial search of several scientific databases yielded a number of articles, which were then progressively screened to produce a final relevant sample (Mahyuni, 2021).

Table 1. Summary of the Literature Selection Process

Selection Stage	Number of Articles
Initial identification	512
After removal of duplicates	438
Title and abstract screening	176
Full-text eligibility	92
Final sample (included)	48

2. Study Characteristics

The selected articles were analyzed based on year of publication, methodological approach, and research context.

Table 2. Distribution of Studies by Year of Publication

Year	Number of Studies
2015–2017	6
2018–2020	14
2021–2023	18
2024–2025	10
Total	48

Table 3. Distribution by Methodology

Methodology	Total	Percentage
Quantitative	27	56.3%
Qualitative	9	18.7%
Mixed methods	6	12.5%
Conceptual/Review	6	12.5%
Total	48	100%

Table 4. Research Context

Sector/Industry	Number of Studies
Manufacturing	11
Finance	9
Retail & E-commerce	10
Health	6
Others	12
Total	48

3. Key Findings Regarding the Role of BI

The synthesis results indicate that the role of BI within an organization can be classified into several main categories based on its relationship to decision-making and business performance.

Table 5. Classification of Business Intelligence Roles

Categories of the Central Bank's Roles	Number of Studies	Percentage
Supporting decision-making	19	39.6%
Improving decision-making speed	11	22.9%
Supporting operational efficiency	8	16.7%
Improve business performance immediately	5	10.4%
Others (strategic alignment, etc.)	5	10.4%
Total	48	100%

4. Patterns of Relationships Between BI, Decision-Making, and Business Performance

An analysis of the relationships between variables reveals variations in the patterns used in empirical studies.

Table 6. Patterns of Variable Relationships

Relationship Patterns	Number of Studies
BI → Decision Making	15
BI → Business Performance	7
BI → Decision-Making → Performance	20
BI → (Mediation/Moderation by Other Variables) → Performance	6
Total	48

5. Mediating and Moderating Variables

A number of studies have identified mediating variables that influence the relationship between BI and business performance.

Table 7. Identified Mediating/Moderating Variables

Variable	Frequency
Quality of decision-making	14
Speed of decision-making	9
Analytical capabilities	8
Data-driven culture	7
Technology-Organization Fit	5

6. Summary of Key Findings

Based on the results of data extraction and classification:

- a. The majority of studies identify BI as a factor associated with improved decision-making quality.
- b. The most frequently observed relationship pattern is an indirect relationship via mediating variables.
- c. Quantitative approaches dominate the analyzed studies.
- d. Research tends to focus on specific sectors such as manufacturing and retail.

7. Novelty of the Results

The results of this study present a structured mapping of:

- a. The empirical distribution of BI's role across various industrial contexts
- b. Patterns of variable relationships that are not limited to direct relationships
- c. Identification of mediating variables that consistently appear in the literature

This approach yields a more systematic representation than previous studies, which tended to report their findings separately.

4. DISCUSSION

1. Comparison with Previous Research

A synthesis of the results indicates that Business Intelligence (BI) is most consistently associated with improvements in the quality and speed of decision-making, and is linked to business performance through indirect mechanisms. This pattern aligns with the empirical literature, which positions BI as a decision support capability that enhances the accuracy, completeness, and timeliness of information, which in turn influences organizational performance. Several previous studies have also reported that BI's contribution to performance is stronger when mediated by decision quality rather than through direct effects (Nugroho & Utama, 2025).

However, there is a key difference compared to some previous studies that assumed a direct relationship between BI and business performance. In this synthesis, the proportion of studies showing a direct relationship is relatively small, while the majority identify mediating pathways (e.g., decision quality, decision speed, analytical capabilities). These findings reinforce the argument that BI functions as an enabler whose effectiveness depends on organizational processes that convert insights into action. Furthermore, the results indicate variation across industry contexts, with sectors characterized by high data intensity (e.g., retail and finance) more frequently reporting the integration of BI with operational decision-making processes compared to other sectors (Sulistyawati, 2024).

Compared to descriptive literature reviews, this study consolidates the evidence into a more explicit pattern of relationships—particularly the dominance of the chain model (BI → decision-making → performance). Thus, the comparative contribution of this study lies in clarifying the role of decision-making as a mediating mechanism that consistently emerges across various contexts (Amanda et al., 2025).

The differences in findings across previous studies can largely be attributed to variations in industrial characteristics, organizational maturity, and Business Intelligence implementation strategies. Organizations operating in data-intensive industries, such as finance and retail, generally report stronger positive impacts of BI because they rely heavily on real-time analytics to support operational and strategic decision-making. In contrast, manufacturing and public sector organizations often experience indirect effects due to organizational complexity, data integration challenges, and varying levels of analytical capability (Abu Salim et al., 2023; Rahman et al., 2024).

2. Similarities and Differences in Findings

Compatibility.

- a. The consistency in the role of BI in improving decision quality confirms cross-study findings that emphasize the importance of integrating data and analytics into managerial processes.
- b. The emergence of mediating variables—specifically decision quality and speed—aligns with dynamic capability models that position information processing as a prerequisite for effective organizational responses.
- c. The dominance of quantitative methods in the empirical studies analyzed is consistent with the literature's tendency to test relationships between variables using statistical models.

Differences.

- a. The small proportion of direct relationships between BI and performance differs from some early publications that claimed a strong direct effect; the results of this synthesis indicate that such claims are not supported by the most recent evidence.
- b. The role of contextual factors—such as a data-driven culture and organizational-technology fit—is more prominent as a moderator in these findings compared to some earlier studies that did not adequately examine variable interactions.
- c. Sectoral variations reveal heterogeneity in BI effects, which is not always elaborated upon in studies focused on a single industry.

These variations suggest that the effectiveness of Business Intelligence cannot be generalized across all organizational contexts. Instead, the value generated by BI depends on the interaction between technological capabilities, organizational readiness, data governance, and managerial competencies. Therefore, future empirical studies should consider contextual variables when examining the relationship between BI implementation and business performance (Sharma et al., 2022; Gupta & George, 2023).

3. Theoretical and Practical Implications

Theoretical Implications.

First, the research findings reinforce the framework that positions BI as an organizational capability operating through mediating mechanisms, rather than as a direct determinant of performance. This supports the refinement of the conceptual model by positioning decision-making as the core mediating variable (Yulfianti et al., 2025). Second, findings regarding the role of contextual variables indicate the need to integrate information systems perspectives with organizational theory (e.g., dynamic capabilities and socio-technical systems), so that the BI–performance relationship is understood as the result of interactions between technology, processes, and people. Third, mapping relationship patterns and mediating variables provides a basis for developing more targeted hypotheses in subsequent empirical studies, particularly regarding causal mechanisms.

Practical Implications.

First, organizations need to focus their BI investments not only on technology infrastructure but also on designing decision-making processes capable of systematically leveraging analytical outputs. Second, strengthening analytical capabilities and a data-driven culture are key factors in ensuring that the information generated by BI can be translated into high-quality decisions. Third, cross-sector differences indicate that BI implementation strategies need to be tailored to industry characteristics, including data complexity, the pace of market change, and operational needs.

The synthesized findings also provide a foundation for developing more comprehensive conceptual models that integrate Business Intelligence capability, decision-making quality, organizational capability, and business performance within a single analytical framework. Such models may contribute to explaining the indirect mechanisms through which BI creates organizational value and provide a stronger theoretical basis for future empirical validation across different industrial sectors (Page et al., 2021; Abu Salim et al., 2023).

4. Limitations of the Study

Several limitations should be noted to ensure a balanced interpretation.

- a. Database coverage and time period. Although several reputable databases and a recent time frame were used, there may be relevant studies that were not indexed or fell outside the inclusion criteria.
- b. Methodological heterogeneity. Variations in research designs (quantitative, qualitative, and conceptual) limit direct comparability across studies, so the synthesis is conducted at the thematic level rather than on quantitative effect sizes.
- c. Publication bias. Studies with significant results tend to be published more frequently, which may influence the distribution of findings within the sample.
- d. Limitations in variable reporting. Not all articles report mediating and moderating variables in detail; thus, the frequencies presented reflect the available data, not the entire actual population.

Given these limitations, the findings of this study should be understood as a mapping of patterns and conceptual relationships supported by empirical evidence, rather than as quantitative causal estimates (Haro et al., 2026).

5. Conclusion

This study aims to synthesize the role of data-driven Business Intelligence (BI) in decision-making and business performance through a Systematic Literature Review (SLR) approach. The results of the analysis indicate that BI is consistently associated with improvements in the quality and speed of decision-making, and influences business performance primarily through indirect mechanisms involving mediating variables such as decision quality and analytical capabilities. From a scientific perspective, this study contributes to strengthening the conceptual framework that positions decision-making as a key mechanism in the relationship between BI and business performance, while also providing a structured mapping of the patterns of variable relationships and emerging research trends. This contribution clarifies that the effectiveness of BI is not deterministic but rather depends on the integration of technology, processes, and organizational factors. For future research, it is recommended to conduct empirical tests based on an integrative model that simultaneously incorporates mediating and moderating variables, to use a longitudinal approach to examine causal relationships, and to explore a wider range of sectoral and regional contexts in order to enhance the generalizability of the findings.

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