

## The Role of Data-Driven Decision-Making in Enhancing Management Effectiveness and Organizational Performance

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### ABSTRACT

Digital transformation encourages organizations to utilize data as the basis for decision-making to improve management effectiveness and organizational performance. This research aims to explore the role of data-driven decision-making in supporting managerial processes and achieving organizational performance. The research uses a qualitative approach with a case study design. Data were collected through semi-structured interviews with 15 purposively selected managers and decision-makers, then analyzed using thematic analysis. The results show that the use of data improves decision accuracy, management efficiency, coordination, and performance evaluation, although it is influenced by data quality, analytical competence, and organizational culture. These findings confirm the importance of integrating data in management practices to support organizational effectiveness and performance on an ongoing basis

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## INTRODUCTION

Digital transformation has changed the way organizations manage information and make managerial decisions. The availability of large amounts of data allows managers to reduce reliance on intuition by using empirical evidence as the basis for planning, control, and evaluation. In this context, data-driven decision-making (DDDM) is developing as a strategic approach that integrates data, analytical capabilities, and managerial considerations in the decision-making process. Awan et al. (2021) found that analytics capabilities and data-driven insights are related to improving decision quality, while Li et al. (2022) showed that the use of big data analytics can improve the quality of decision-making through strengthening organizational analytics capabilities. The findings suggest that the use of data is no longer just an information technology function, but has become an important part of modern management practices.

The relevance of DDDM is also increasingly seen in the Indonesian context. Fattah (2024), through a study of 125 experienced managers in Indonesian public service organizations, shows that data governance and data literacy play an important role in the formation of a data-based culture. A more recent study by Fattah et al. (2025) of 330 Indonesian public sector executives and managers found a link between data-driven culture, business analytics capabilities, data literacy, knowledge management, and decision-making performance. Meanwhile, Karina et al. (2025), through 34 in-depth interviews with Indonesian transportation companies, found that the integration of big data in performance management systems can support operational efficiency, control, and decision-making. This evidence shows that data management is becoming an increasingly relevant managerial issue for Indonesian organizations.

Theoretically, the relationship between DDDM and organizational performance can be explained through Resource-Based View and Dynamic Capabilities Theory. A resource-based perspective views data, analytics technology, knowledge, and human competence as strategic resources that can create value when managed effectively. The dynamic capabilities perspective complements this view by describing the organization's ability to identify change, leverage information, and adjust resources based on environmental conditions. Chaudhuri et al. (2024) show that data-driven culture and innovation capabilities help organizations transform the use of technology into performance improvement. Hurbean et al. (2025) also found that data-oriented culture and the use of business intelligence and analytics are related to decision-making effectiveness and managerial performance. Thus, the benefits of data depend not only on technology, but also on the ability of managers and organizations to interpret and use information.

Although the literature shows the benefits of DDDM, there is still a gap in understanding how data is used in managerial practice to produce management effectiveness and organizational performance. Most previous studies have used quantitative design and emphasized the statistical relationship between analytics capabilities, data culture, decision quality, and performance (Li et al., 2022; Fattah, 2024; Hurbean et al., 2025). A qualitative study by Zaitsava et al. (2022) shows that data use remains influenced by cognitive bias and managers' level of

trust in data. Barbala et al. (2024) found that there is cultural tension during the process of forming data-driven organizations, while Karina et al. (2025) focus on the integration of big data in performance management systems in a single transportation context. Thus, qualitative studies that integrate the manager's experience regarding the role of DDDM in management effectiveness and organizational performance achievement are still limited.

Based on these gaps, this study aims to explore the role of data-driven decision-making in improving management effectiveness and supporting organizational performance. In particular, the study seeks to understand how managers use data in the decision-making process, how data use supports decision accuracy, coordination, management efficiency, and performance evaluation, as well as organizational factors that support or hinder its implementation. A qualitative approach through semi-structured interviews is used to gain a deeper understanding of decision-makers' experiences, perceptions, and practices. This focus allows the research to see DDDM as a managerial and social process, not just as the use of technology or data analysis techniques. This approach is in line with evidence that the human, cultural, and organizational dimensions play a critical role in the success of data-driven practices.

This research is expected to make a theoretical contribution by expanding the understanding of DDDM through the integration of resource perspectives, dynamic capabilities, and managerial processes in explaining management effectiveness and organizational performance. Different from studies that primarily examine the relationships between variables statistically, this study emphasizes the mechanisms, experiences, and conditions that explain how data translates into managerial decisions and actions. Practically, the results of the research can be the basis for organizational leaders in strengthening data governance, analytical literacy, data-based culture, and decision-making competencies. These efforts are important so that investments in technology and analytics do not stop at data provision, but actually support decision quality, management effectiveness, and continuous improvement of organizational performance.

## LITERATURE REVIEW

### **Data-Driven Decision-Making as a Managerial Approach**

Data-driven decision-making (DDDM) refers to the systematic use of data and analysis results as the basis for supporting an organization's decision-making process. From a management perspective, DDDM relies not only on the availability of technology, but also on the organization's ability to integrate data into decision-making routines. Szukits and Móricz (2024) show that analytical culture and the organization of analytical functions play a role in shaping the use of data in the decision-making process. However, the use of data does not completely replace managerial judgment. Berkhout et al. (2024) found that the effectiveness of DDDM depends on decision characteristics, data availability, and organizational conditions, while intuition remains relevant when decisions are ambiguous or require subjective consideration. Thus, DDDM is more

appropriately understood as an integration process between data-driven evidence and managerial assessment.

### **Data-Driven Decision-Making and Management Effectiveness**

Management effectiveness is related to the ability of managers to use resources and information to plan, control, coordinate, and evaluate organizational activities. DDDM can support these functions by providing more systematic information to identify problems, monitor achievements, and determine corrective actions. Orjatsalo et al. (2025), through semi-structured interviews with top-level managers, found that business analytics is widely used to monitor performance against targets and support corrective actions. However, more complex strategic decisions still require managers' experience and interpretation. These findings show that management effectiveness is not only determined by the amount of data available, but by the manager's ability to interpret the data and translate it into relevant actions.

### **Analytics Capabilities, HR Competencies, and Data-Driven Culture**

The success of DDDM requires a combination of technological capabilities and human capabilities. Farivar et al. (2022) show that analytics capabilities alone are not enough to improve organizational performance if they are not supported by employee analytical skills. These competencies allow organizational members to understand, evaluate, and use the results of analysis in operational and managerial activities. In addition to individual competence, data-driven culture also plays an important role. Karaboga et al. (2023) found that data-driven culture strengthens the value creation process of big data analytics capabilities and is associated with improved operational and financial performance. Therefore, the implementation of DDDM needs to be understood as an organizational capability that involves technology, human competence, process integration, and organizational norms that support the use of data.

### **Data-Driven Decision-Making and Organizational Performance**

The literature shows that the benefits of analytics to organizational performance do not arise automatically from technology investments. Oesterreich et al. (2022), through a meta-analysis of 125 enterprise-level studies from 26 countries, found that human resources, management capabilities, and organizational culture are important factors in turning business analytics into business value. This perspective is in line with Gao and Sarwar (2024), who show that big data analytics management capabilities can build dynamic capabilities and improve innovation performance through strategic alignment and social capital. Wong and Ngai (2025) also show that the organization's analytical capabilities and ability to recognize changes support operational performance, especially when the organization has a data-driven culture. The findings indicate that the relationship between DDDM and organizational performance takes place through management processes and the organization's ability to turn information into action.

## **Theoretical Perspectives and Research Positions**

The relationship between DDDM, management effectiveness, and organizational performance can be understood through the perspectives of the Resource-Based View (RBV) and the Dynamic Capabilities View (DCV). From an RBV perspective, data, analytics technology, human competence, and managerial knowledge can be seen as organizational resources that generate value when managed and combined effectively. Meanwhile, the dynamic capabilities perspective describes how organizations use information to recognize changes, respond to environmental conditions, and reconfigure resources to maintain performance. Recent empirical evidence suggests that the value of analytics is determined more by how organizations integrate technical, human, and managerial capabilities than by technology separately (Gao & Sarwar, 2024; Oesterreich et al., 2022; Wong & Ngai, 2025).

Based on the synthesis of the literature, this study views DDDM as a managerial process that links the use of data with the effectiveness of decision-making and the achievement of organizational performance. The quantitative literature has provided evidence on the relationship between analytics capabilities, data-driven culture, and performance, but it has not fully explained how managers experience, interpret, and use data in their daily practices. The findings of Berkhout et al. (2024) and Orjatsalo et al. (2025) further demonstrate the need to understand contextual aspects and human considerations in DDDM. Therefore, this study uses a qualitative approach through semi-structured interviews to explore how the use of data supports decision accuracy, coordination, management efficiency, performance evaluation, as well as factors that support or inhibit the effectiveness of DDDM in organizations.

## **METHODOLOGY**

### **Types of Research**

This study uses a qualitative approach with a case study design to explore the role of data-driven decision-making (DDDM) in improving management effectiveness and organizational performance. This approach was chosen because the research focuses on managers' experiences, perceptions, and practices in using data to support managerial decisions (Alam, 2021; Lim, 2025).

### **Population and Sample**

The study participants consisted of 15 managers and decision-makers who were selected using purposive sampling. Selection is based on the direct involvement of participants in planning, decision-making, coordination, control, or data-driven performance evaluation. This amount is appropriate for qualitative research with a specific focus and need to achieve information saturation (Hennink & Kaiser, 2022).

### **Research Instruments**

The research instrument is in the form of semi-structured interview guidelines that contain questions regarding data use, decision accuracy, management efficiency, coordination, performance evaluation, data quality,

analytical competence, and organizational culture. Semi-structured interviews allow researchers to obtain in-depth information while maintaining the focus of the research (Adeoye-Olatunde & Olenik, 2021). The validity of data is maintained through credibility, dependability, confirmability, and transferability (Ahmed, 2024).

### Data Collection Procedure

The research began with the preparation of interview guidelines and the selection of participants in a purposive manner. The interview is conducted after the participants give their consent. With the participant's permission, the interview is recorded and transcribed verbatim. The identity of the participant is anonymized to maintain the confidentiality of the data.

### Data Analysis Techniques

The data was analyzed using thematic analysis through the stages of data reading, coding, code grouping, theme development, theme review, and interpretation of results (Braun & Clarke, 2021; Byrne, 2022). The analysis focused on the role of DDDM in decision accuracy, efficiency, coordination, performance evaluation, as well as its supporting and inhibiting factors. Data management and encoding processes are supported using NVivo.

## RESULTS AND DISCUSSION

### Characteristics of Informants and Interview Conduct

The study involved 15 managers and decision-makers who had direct involvement in planning, controlling, coordinating, evaluating, and using data to support organizational decisions. A variety of managerial functions is maintained to obtain a more comprehensive perspective on the application of *data-driven decision-making* (DDDM). The interview was conducted in a semi-structured manner with a duration of about 40–65 minutes.

Table 1. Respondent Characteristics

| Code | Function/Position              | Managerial Experience | Duration   | Interview Date |
|------|--------------------------------|-----------------------|------------|----------------|
| M01  | Operations Manager             | 8 years               | 54 minutes | June 4, 2026   |
| M02  | Head of Operational Unit       | 6 years               | 47 minutes | June 5, 2026   |
| M03  | Administration Manager         | 9 years               | 58 minutes | June 6, 2026   |
| M04  | Financial Manager              | 11 years old          | 62 minutes | June 7, 2026   |
| M05  | Planning Manager               | 7 years               | 51 minutes | June 9, 2026   |
| M06  | Information Technology Manager | 10 years              | 65 minutes | June 10, 2026  |
| M07  | Head of Internal Control       | 8 years               | 55 minutes | 11 June 2026   |
| M08  | Performance Manager            | 6 years               | 49 minutes | June 13, 2026  |
| M09  | Business Development Manager   | 9 years               | 57 minutes | 14 June 2026   |
| M10  | Head of Planning Unit          | 7 years               | 46 minutes | June 16, 2026  |

|     |                             |          |            |               |
|-----|-----------------------------|----------|------------|---------------|
| M11 | Human Resource Manager      | 12 years | 59 minutes | June 17, 2026 |
| M12 | Strategy Manager            | 10 years | 61 minutes | 18 June 2026  |
| M13 | Head of Administrative Unit | 5 years  | 44 minutes | June 19, 2026 |
| M14 | Supervisory Manager         | 13 years | 63 minutes | June 21, 2026 |
| M15 | Senior Decision Maker       | 15 years | 64 minutes | June 23, 2026 |

The thematic analysis yielded six main themes: (1) improving decision accuracy, (2) improving management efficiency, (3) strengthening coordination, (4) strengthening performance evaluation, (5) data quality as a basis for trust, and (6) analytical competence and organizational culture as determining factors for the success of DDDM.

Table 2. Theme Findings

| Theme                  | Key Findings                                        | Impact on Management                            |
|------------------------|-----------------------------------------------------|-------------------------------------------------|
| Decision accuracy      | Data reduces reliance on assumptions                | More measurable results                         |
| Efficiency             | Problems and priorities are more quickly recognized | More targeted resources                         |
| Coordination           | Data becomes a shared reference                     | Perceived differences are reduced               |
| Evaluation             | Deviations can be detected earlier                  | Faster corrective action                        |
| Data quality           | Trust depends on accuracy and consistency           | Data governance is important                    |
| Competence and culture | Data requires human interpretation                  | Data literacy and leadership support are needed |

### DDDM Increases Accuracy and Confidence in Decision Making

The findings show that data has changed the way managers shape the basis of decisions. Before the use of data became more systematic, personal experience, intuition, and verbal reports were still the main sources in determining actions. Once the data is more integrated in the management process, intuition is not eliminated, but is used alongside empirical evidence to check the correctness of the initial assumptions.

*"In the past, if there was a decline, we usually immediately guessed the cause from experience. Now the first suspicion remains, but we check the data first. Several times it turned out that the real cause was different."* (M01, June 4, 2026)

*"Data makes me more confident when I have to explain decisions. I don't just say 'I think', but I can show the reason why the choice was taken."* (M04, June 7, 2026)

*"Now if there is a new proposal, what is asked is not who proposed it, but what is the basis of the data. It just changed the way we discussed."* (M09, June 14, 2026)

Data also helps managers sort priorities. In an organizational environment that faces multiple problems simultaneously, data allows managers to distinguish between high-impact issues and issues that can be delayed. Thus, the value of DDDM is not only about generating more information, but also about improving the manager's ability to problem *framing* and set priorities.

These findings support Awan et al. (2021) who show that data-driven insights improve the quality of decision-making. Li et al. (2022) also found that

the use of *big data analytics* strengthens the quality of organizational decisions. However, the results of this study deepen the findings. The relationship between data and decisions doesn't happen automatically. Managers first interpret, compare data with experience, and consider the operational context.

This also reinforces the view of Zaitsava et al. (2022) that data-driven decisions still contain a cognitive dimension. The findings of this study show that DDDM is not the replacement of intuition by data, but the process of calibrating intuition through data. This difference is important because some previous studies have tended to measure DDDM based on the intensity of analytical use, while this study shows how data actually enters into managers' thinking processes.

### **DDDM Improves Management Efficiency and Response Speed**

The second theme shows that DDDM contributes to management effectiveness through process efficiency. Information available more quickly helps managers reduce the time it takes to identify problems, prioritize them, and choose actions.

*"The most noticeable thing is the time. We used to look for information in several parts first. Now even before the meeting, the picture of the problem is visible."* (M02, June 5, 2026)

*"If the indicators start to change, we can check immediately. There is no need to wait for the monthly report to be completed before realizing that there is a problem."* (M06, June 10, 2026)

*"The data makes us know which parts need attention. So the team's energy is not exhausted to pursue everything at once."* (M11, June 17, 2026)

These findings show two forms of efficiency. First, information efficiency, which is reduced time to search and verify information. Second, efficiency of action, which is the ability to direct resources to the problems that need the most response.

Karina et al. (2025) found that the integration of *big data* can support operational efficiency and organizational control. The results of this study support these findings, but add an explanation of the mechanism. Efficiency arises when data reduces uncertainty and shortens the distance between problem identification and managerial action.

These findings are also in line with *the Dynamic Capabilities View*. Data helps organizations sensing changes, determining responses, and reallocating resources. Thus, DDDM contributes to performance not because the organization has more information, but because the organization is able to respond to information more quickly and precisely.

### **Data Becomes the Basis for Coordination and Alignment Between Units**

The third finding suggests that data has a broader function than just an analysis tool. Data is also a common language in coordination between units. Differences in perception between sections tend to be reduced when discussions use the same data source.

*"What helps is that we see the same number. So no longer does one part feel that the condition is good, the other part says there is a problem, but each one uses a different basis." (M03, June 6, 2026)*

*"If there is a difference of opinion, now we usually go back to the data first. After the basic facts are clear, then talk about solutions." (M07, June 11, 2026)*

*"Differences of opinion still exist, but now it is more productive. We didn't debate for too long whether the problem existed or not." (M13, 19 June 2026)*

The findings show that the data has a coordinating and legitimative function. A coordinating function arises because the data provides the same reference. The legitimative function arises because decisions can be explained and accountable to other units based on verifiable evidence.

These results are relevant to Barbala et al. (2024), who show that the formation of a data-driven culture can face tensions when parts of the organization have different practices and understandings of data. This study found that these problems can be reduced if organizations have an agreement on the source, definition, and interpretation of indicators.

Thus, this study adds a dimension that has not been emphasized much in the DDDM literature, namely data as a mechanism of social integration in organizations. Data not only affects the quality of individual decisions, but also the quality of interactions between units. Management effectiveness therefore arises through the ability of data to align collective actions.

### **DDDM Strengthens Organizational Evaluation, Control, and Learning**

The use of data also changes the evaluation function from an administrative process to a more active control process. Managers not only use data to know the final outcome, but also to recognize irregularities during the process.

*"Now we don't just look at whether it is achieved or not. We can see from the process, when it starts to go down and which parts start to have problems." (M05, June 9, 2026)*

*"If the target is not achieved, the data helps us trace the problem. So the evaluation doesn't stop at who's at fault." (M08, June 13, 2026)*

*"The dashboard is good, but for me the question remains the same: what do we want to do with this number? If there is no follow-up, it will only be a display." (M14, June 21, 2026)*

*"We are now faster to make corrections. You don't have to wait for the problem to be big first." (M10, June 16, 2026)*

The findings show a shift from reactive evaluation to adaptive evaluation. Reactive evaluation is performed after the problem has occurred. Adaptive evaluation uses indicator changes to make corrections before deviations become larger.

Orjatsalo et al. (2025) found that *business analytics* is used by managers to monitor targets and support corrective actions. The results of this study reinforce these findings while showing that data-based evaluation also results in organizational learning processes. When data about outcomes and processes is

discussed on a regular basis, organizations gain an opportunity to understand why a decision is successful or failing.

### **Data Quality Determines Managers' Trust in the System**

While the benefits of DDDM are obvious, interviews show that data quality is a major bottleneck. Managers don't always trust the information available, especially when there are discrepancies in numbers, delays in updates, or mismatches between systems and field conditions.

*"Sometimes the problem is not a lack of data. The data is a lot, but the two reports can show different numbers. Finally, we checked again from the beginning."* (M15, June 23, 2026)

*"Fast but wrong data is dangerous. The correct data but arriving late also doesn't help much."* (M02, June 5, 2026)

*"If several times the numbers in the system are different from the real conditions, people start to doubt. Once they don't believe it, they go back to using feelings."* (M12, 18 June 2026)

These findings show that there is a difference between data availability and data readiness. Organizations can have large amounts of data, but they don't necessarily have data ready to be used for decisions.

Fattah (2024) shows the importance of data governance and literacy in building a data-based culture. Fattah et al. (2025) also emphasized the relationship between analytics capabilities, data culture, and decision-making performance. The results of this study deepen the findings by showing the psychological and managerial mechanisms behind them.

### **Analytical Competencies and Organizational Culture Determine the Success of DDDM**

The last theme shows that data has no managerial value without the ability of humans to understand and interpret it. Some informants consider that the ability to read patterns and understand the implications of data is more important than mastering highly complex analytical techniques.

*"I don't have to be able to model the analysis, but I have to understand what the numbers are talking about and what decisions might need to be made."* (M04, June 7, 2026)

*"If the information is too complicated, people end up being lazy to open. For managers, the data must be clear enough to be used to take action."* (M06, June 10, 2026)

*"Experience is still important. But if the data shows something different, we have to be willing to ask whether our assumptions are still correct."* (M09, June 14, 2026)

*"If the leaders of each meeting always ask which data they have, over time the team will also get used to it. In my opinion, data culture does start from the behavior of leaders."* (M13, 19 June 2026)

These findings are consistent with Farivar et al. (2022), who show that analytical capabilities need to be supported by employees' analytical skills. Karaboga et al. (2023) also show the importance of data-driven culture in transforming analytics capabilities into organizational performance.

However, this study provides additional details about the process of forming the culture. Data-driven culture doesn't just emerge through formal

policies or technology investments. Culture is formed through managerial routines, such as asking for evidence in meetings, questioning assumptions, comparing targets with realization, and using information as a basis for evaluation.

Szukits and Móricz (2024) show the importance of analytical culture to data-driven decision-making. The results of this study strengthen this argument by showing that leadership has a role in shaping data use norms. Senior managers serve as *role models* that determine whether data is treated as part of the decision-making process or simply as a complement to the report.

Overall, the findings suggest that *data-driven decision-making* does not automatically improve organizational performance simply through the availability of data or analytics technologies. The benefits of DDDM arise when quality data can be trusted, understood, and translated by managers into decisions, coordination, corrective actions, and performance evaluations. These findings extend previous research that has placed a lot of emphasis on the statistical relationship between analytical capabilities, decision quality, and performance by providing a qualitative explanation of the managerial mechanisms that link these three aspects. Thus, management effectiveness becomes an important process that bridges the use of data and the improvement of organizational performance, while data quality, analytical competence, and organizational culture determine the success of the process.

## CONCLUSIONS AND RECOMMENDATIONS

This study concludes that data-driven decision-making (DDDM) plays an important role in improving management effectiveness and supporting organizational performance through strengthening decision-making accuracy, management efficiency, interunit coordination, and performance evaluation and control. Data does not replace managerial experience and considerations, but serves as an objective basis for validating assumptions, determining priorities, recognizing deviations, and accelerating corrective actions. The findings also show that DDDM's contribution to performance is not automatic. Data quality determines a manager's level of trust, while analytical competence determines the ability to interpret information and turn it into action. Organizational culture also shapes the consistency of data use in managerial activities. Thus, DDDM is more accurately understood as a managerial-organizational capability that integrates data, technology, human competencies, experience, and organizational processes.

Based on these findings, organizations are advised not only to increase investment in information systems and analytics technology, but also to strengthen data governance, standardization of indicators, integration of information between units, and timeliness of data provision. Organizations also need to improve managers' literacy and analytical competence through training oriented to the interpretation and use of data in decision-making. Leaders need to build a data-driven culture through consistent practices, such as the use of evidence in meetings, indicator-based evaluations, assumption testing, and accountable decision-making. This approach is important so that DDDM does not stop at providing dashboards or reports, but develops into part of a management routine

that is able to strengthen the organization's ability to respond to changes and maintain performance in a sustainable manner.

## ADVANCED RESEARCH

Further research can use multiple-case studies, mixed methods, or longitudinal studies to test the application of DDDM in various organizations and assess the influence of analytics and artificial intelligence technologies on management effectiveness and organizational performance.

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