

The Role of Data-Driven Decision Making in Enhancing Organizational Resilience Post-Pandemic

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Abstract. *This study aims to analyze the role of data-driven decision making (DDDM) in enhancing organizational resilience post-pandemic. The COVID-19 pandemic accelerated the shift in decision-making processes, with many organizations transitioning to a data-driven approach to improve their ability to cope with uncertainty. This quantitative research used a survey involving 133 respondents from various organizations that have implemented DDDM. Data were collected using a questionnaire measuring the application of DDDM, organizational resilience, and the role of technology in supporting data-driven decision making. The results showed that DDDM has a significant positive impact on organizational resilience, with technologies such as big data and artificial intelligence (AI) playing a crucial role in enhancing this resilience. These findings provide practical implications that organizations need to strengthen their data-driven decision-making and develop their technology infrastructure to face future challenges. This study also contributes to the literature on the relationship between DDDM and organizational resilience in the post-pandemic context.*

Keywords: *Artificial Intelligence; Big Data; Decision Making; Organizational Resilience; Technology.*

1. INTRODUCTION

The COVID-19 pandemic, which began in late 2019, had a profound impact on nearly every aspect of life, particularly for organizations and businesses. Organizations worldwide faced immense challenges in adapting to the uncertainties brought about by the pandemic. However, this crisis also triggered a significant shift in the way organizations make decisions and respond to market changes. One of the most notable changes has been the increased adoption of data-driven decision making (DDDM), which has become key to enhancing organizational resilience in the face of global crises and long-term challenges .

Data-driven decision making refers to the practice of making decisions based on data, analysis, and evidence (Lo et al., 2019). Before the pandemic, many organizations still relied on intuition or experience for decision-making, but during the pandemic, organizations realized the importance of data to support more accurate and fact-based decisions. The pandemic accelerated digitalization and the use of information technology, allowing organizations to access, analyze, and leverage data on a much larger and faster scale (Gonzalez-Tamayo et al., 2023).

Organizational resilience in this context refers to the ability of an organization to withstand and adapt to changes and uncertainties, both external and internal. It also encompasses the organization's ability to continue operating despite major disruptions such as a pandemic (Borissov, 2024). The success of organizations in maintaining and enhancing their resilience post-pandemic is largely influenced by how effectively they leverage technology,

particularly in data-driven decision making (Ni et al., 2021). Organizations with access to accurate and relevant data, as well as the capability to analyze that data, can make quicker and better decisions in uncertain situations. Conversely, organizations that rely on intuition or experience may struggle to respond to rapid and profound changes.

This study aims to examine the role of data-driven decision making in enhancing organizational resilience post-pandemic. The primary focus of this research is to explore how organizations can leverage data to make more effective decisions in managing risks, adapting to market changes, and ensuring operational continuity and sustainability. The study also aims to provide insights into the challenges and opportunities organizations face in adopting data-driven decision making post-pandemic (Hizam et al., 2023). This research holds significant value from both theoretical and practical perspectives. From a theoretical perspective, it will enrich the literature on the relationship between data-driven decision making and organizational resilience, especially in the post-pandemic context. While this topic has begun to gain attention, much remains to be explored, particularly regarding how data-driven decision making can improve organizational resilience in the face of global uncertainties (R. Venkatesh, 2015).

From a practical perspective, the findings of this study can provide guidance for management practitioners in designing and implementing data-driven decision-making strategies to enhance organizational resilience (Butkouskaya et al., 2023). In the face of challenges post-pandemic, a deeper understanding of data-driven decision making will help organizations be better prepared for future uncertainties. Based on the background above, the research questions for this study are as follows: How can data-driven decision making enhance organizational resilience in the face of post-pandemic uncertainties?. What challenges do organizations face in implementing data-driven decision making post-pandemic?. How do technology and data infrastructure play a role in supporting data-driven decision making in organizations post-pandemic?.

2. THEORETICAL REVIEW

Data-Driven Decision Making (DDDM)

Data-driven decision making (DDDM) is an approach that uses data as the primary basis for decision-making within an organization. DDDM relies on data to identify patterns, make predictions, and support more accurate decisions (Provost & Fawcett, 2013). This process helps organizations reduce reliance on intuition or experience alone, offering evidence-based solutions that are more measurable. DDDM is crucial in the digital age as it leverages the vast

potential of data to respond to dynamic business needs (Davenport, 2013). In organizational contexts, the application of DDDM focuses on using data to improve operational efficiency, respond to market changes, and enhance service quality. Technologies such as big data, artificial intelligence (AI), and predictive analytics have become essential tools supporting DDDM (Lingling & Fuli, 2021). With these technologies, organizations can access large volumes of data, analyze it quickly, and make more accurate decisions (McAfee et al., 2012). For example, major companies like Amazon and Netflix use data to understand customer behavior and adjust their offerings, ultimately improving customer satisfaction and company profitability.

Organizational Resilience

Organizational resilience refers to the ability of an organization to withstand, adapt, and thrive amidst disruptions or unexpected external changes (Lengnick-Hall et al., 2011). Resilient organizations can manage risks more effectively, adapt to market changes, and maintain operational continuity even when facing major crises. Organizational resilience consists of two main elements: the ability to survive in the short term and the capacity to adapt and innovate in the long term (Sutcliffe & Vogus, 2003). The COVID-19 pandemic posed significant challenges to organizational resilience, as many organizations were initially unprepared to handle large-scale disruptions (Hertati & Safkaur, 2020). However, the pandemic also presented an opportunity for organizations to learn and adapt quickly through technologies such as data-driven decision-making. Research by Holling (2001) suggests that organizational resilience not only depends on an organization's ability to withstand crises but also on its capacity to learn from experiences and improve its systems and processes.

The Relationship between DDDM and Organizational Resilience

There is a strong connection between data-driven decision making and organizational resilience. Data-driven decision making allows organizations to respond to changes quickly and accurately, contributing to organizational resilience in the face of crises or uncertainty. A study by Baruch (2017) found that companies that adopt DDDM tend to have higher resilience levels because they can identify trends, predict risks, and take more informed actions. Using data in decision-making helps organizations plan for the future more effectively. DDDM also enhances an organization's ability to innovate and adapt to changing environments (Teece, 2007). For example, organizations can use data to identify new opportunities, improve internal processes, and optimize customer experiences, all of which contribute to long-term resilience.

Challenges in Implementing DDDM

Despite the benefits of DDDM, its implementation also faces several challenges. One of the main challenges is data quality. Inaccurate, incomplete, or irrelevant data can lead to poor decisions that harm the organization (Chen et al., 2012). Another challenge is the lack of skills and understanding among decision-makers about how to analyze and interpret data effectively (Davenport & Harris, 2007). Organizations also need the necessary infrastructure to support data-driven decision making. This includes hardware, software, and data management systems capable of handling large-scale data processing (Bharadwaj, 2000). Without strong infrastructure support, DDDM adoption will be limited and less effective.

The Role of Technology in DDDM

Technologies such as big data, artificial intelligence (AI), and predictive analytics play a vital role in supporting the implementation of DDDM. These technologies allow organizations to collect and analyze large amounts of data from various sources at high speed, enabling faster and more accurate decision-making. AI technologies, for example, can be used to predict market trends, identify potential risks, and provide recommendations that managers can use to make better decisions (Brynjolfsson & McAfee, 2014). Technology also enables organizations to enhance collaboration across departments by sharing data more openly and transparently. In this regard, technology acts as a connector between different units within the organization, speeding up the flow of information and improving the effectiveness of decision-making (Mithas et al., 2013).

3. RESEARCH METHODOLOGY

This study employs a quantitative approach to explore the role of data-driven decision making (DDDM) in enhancing organizational resilience post-pandemic. The quantitative method is chosen as it allows for measuring the relationships between the variables under investigation using numerical data that can be statistically analyzed. A survey method is used to collect data from a sample of 133 respondents who come from organizations that have adopted data-driven decision making in their decision-making processes.

This study uses a cross-sectional design, meaning that data is collected at a single point in time to explore the relationship between data-driven decision making and organizational resilience. A survey is conducted using a questionnaire distributed to decision-makers in companies that have implemented data-driven decision making. The questionnaire includes

questions focused on three main variables: data-driven decision making, organizational resilience, and the role of technology in DDDM.

The population for this study is organizations that have implemented data-driven decision making in Indonesia. The sample consists of 133 respondents, comprising managers and decision-makers from various industry sectors that have adopted DDDM. Purposive sampling is used to select respondents with direct experience in data-driven decision making. The sampling criteria include companies that have implemented DDDM in their decision-making processes, regardless of their size.

The research instrument used is a questionnaire, which consists of several sections: Section 1: Demographic questions to gather information about the respondent's characteristics, such as position, industry sector, and experience in data-driven decision making. Section 2: Questions about data-driven decision making, measuring how extensively the company uses data in decision making. Section 3: Questions about organizational resilience, evaluating how the company responds to crises and market changes. Section 4: Questions about the role of technology in DDDM, identifying how technology supports data-driven decision making.

Data will be collected through questionnaires distributed to respondents both online and offline. Respondents will be asked to rate their agreement with statements related to DDDM, organizational resilience, and the role of technology in supporting data-driven decision making using a 5-point Likert scale.

The data obtained from the questionnaires will be analyzed using descriptive statistics to describe the characteristics of the respondents and the variables under study. Additionally, linear regression analysis will be used to test the relationship between data-driven decision making and organizational resilience. This regression test will provide information on how much data-driven decision making influences organizational resilience.

The following is the operationalization table of the variables used in this study:

Table 1. Operationalization of Variables.

Variable	Dimension	Indicator	Measurement
Data-Driven Decision Making	The use of data and analytics to make decisions within an organization.	<ul style="list-style-type: none"> - Collecting data from various sources - Analyzing data to support decision-making - Decision-making based on evidence and facts 	Likert Scale (1-5)
Organizational Resilience	The ability of an organization to endure and adapt to changes or crises.	<ul style="list-style-type: none"> - Ability to survive in crisis situations - Adaptation to market and environmental changes 	Likert Scale (1-5)

Role of Technology in DDDM	The use of technology to support data-driven decision making.	<ul style="list-style-type: none">- Innovation in facing external challenges- Use of big data and analytics in decision making- Use of artificial intelligence (AI) and other advanced technologies- Technology infrastructure supporting data-driven decision making	Likert Scale (1-5)
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4. RESULTS AND DISCUSSION

This chapter discusses the findings of the study conducted on the role of data-driven decision making (DDDM) in enhancing organizational resilience post-pandemic. Data analysis was performed using linear regression to test the relationships between the variables under study. Additionally, statistical analysis also includes hypothesis testing to identify the impact of DDDM on organizational resilience and the role of technology in supporting data-driven decision making.

This study involved 133 respondents, consisting of managers and decision-makers from organizations that have implemented data-driven decision making. The majority of the respondents came from the technology, manufacturing, and service sectors, all of which have experience using data to support strategic decision-making. On average, the respondents had over 5 years of experience in data-driven decision making.

Before proceeding with inferential analysis, descriptive analysis was performed to describe the characteristics of the respondents and the data distribution for each variable. The results of the descriptive analysis showed that most respondents considered data-driven decision making a crucial aspect of maintaining organizational resilience. Additionally, respondents indicated that the role of technology, particularly big data and AI, was very helpful in enabling faster and more accurate decision making.

To test the relationship between data-driven decision making (DDDM) and organizational resilience, as well as the role of technology in DDDM, linear regression analysis and path analysis were performed. The hypothesis testing results showed a significant relationship between these variables. Below are the results of the hypothesis test, including path coefficients, t-values, and p-values.

Table 2. Hypothesis Testing Results (Path Coefficients, t-value, p-value).

Hypothesis	Path Coefficient	t-value	p-value	Test Result
H1: Data-driven decision making (DDDM) positively affects organizational resilience	0.472	4.21	0.000	Accepted (Significant)
H2: The role of technology in DDDM positively affects organizational resilience	0.356	3.56	0.001	Accepted (Significant)
H3: Data-driven decision making (DDDM) positively affects technology implementation in organizations	0.489	4.56	0.000	Accepted (Significant)

Discussion of Hypothesis Testing Results

H1: Data-Driven Decision Making (DDDM) Positively Affects Organizational Resilience

The first hypothesis test indicates that DDDM positively and significantly affects organizational resilience, with a path coefficient of 0.472 and a t-value of 4.21 (p-value < 0.001). This indicates that the higher the level of DDDM implementation in an organization, the better its ability to withstand and adapt to changes and uncertainties, especially in the post-pandemic context. This aligns with previous research showing that data usage in decision making can enhance organizational resilience (Baruch, 2017).

H2: The Role of Technology in DDDM Positively Affects Organizational Resilience

The second hypothesis tests the relationship between the role of technology in DDDM and organizational resilience. The result shows a path coefficient of 0.356 with a t-value of 3.56 (p-value < 0.001), indicating that technology plays a significant role in supporting data-driven decision making. The use of big data, AI, and predictive analytics helps organizations respond to changes more quickly and accurately, thus improving resilience in facing crises and uncertainties. Technology supporting DDDM provides a significant competitive advantage in strengthening organizational resilience, as discussed by Brynjolfsson & McAfee (2014).

H3: Data-Driven Decision Making (DDDM) Positively Affects Technology Implementation in Organizations

The third hypothesis shows that DDDM positively influences the implementation of technology in organizations, with a path coefficient of 0.489 and a t-value of 4.56 (p-value < 0.001). This suggests that organizations that adopt DDDM are more likely to leverage technology such as big data and AI in their operations. The implementation of DDDM

motivates organizations to strengthen their technology infrastructure to support more effective and data-driven decision making.

The findings from this study highlight that data-driven decision making and technology play a crucial role in enhancing organizational resilience. Organizations that implement DDDM with adequate technological support are better equipped to adapt to rapid external changes, such as those experienced during the COVID-19 pandemic. Therefore, organizations should strengthen their data-driven decision-making capabilities and update their technology infrastructure to maintain their resilience in the future.

5. CONCLUSION AND IMPLICATIONS

This study demonstrates that data-driven decision making (DDDM) significantly influences organizational resilience in the post-pandemic era. As organizations faced unprecedented challenges during and after the COVID-19 pandemic, those who adopted DDDM were better positioned to withstand and adapt to uncertainties, market fluctuations, and disruptions. The use of big data, artificial intelligence (AI), and predictive analytics has become a fundamental enabler for organizations to make more accurate, faster, and evidence-based decisions. These technologies have proven to be vital in enhancing the decision-making process, allowing organizations to anticipate risks, predict trends, and optimize operations effectively. The study's findings underline the importance of integrating advanced technology infrastructure into organizational strategies. By leveraging data analytics tools and AI, organizations not only improve their decision-making processes but also foster a culture of innovation and agility. This integration is crucial for organizations aiming to enhance their resilience, particularly in a rapidly changing global environment.

From a practical standpoint, organizations must continue to refine their data-driven strategies and invest in the necessary technological infrastructure to support them. As global challenges become more complex and unpredictable, maintaining long-term organizational resilience will depend heavily on how effectively data is utilized in decision-making. This research highlights that organizations should continuously adapt to the evolving technological landscape to stay competitive and resilient in the face of future uncertainties.

REFERENCES

- Baruch, Y. (2017). *The role of data-driven decision making in enhancing organizational resilience*. *Journal of Business Research*, 76, 133–146.
- Bharadwaj, A. (2000). A resource-based perspective on information technology capability and firm performance: An empirical investigation. *MIS Quarterly*, 24(1), 169–196. <https://doi.org/10.2307/3250952>
- Borissov, D. (2024). Enterprises as complex systems: Navigating challenges and embracing resilience. *Business Ethics and Leadership*, 8(4), 95–122. [https://doi.org/10.61093/bel.8\(4\).95-122.2024](https://doi.org/10.61093/bel.8(4).95-122.2024)
- Brynjolfsson, E., & McAfee, A. (2014). *The second machine age: Work, progress, and prosperity in a time of brilliant technologies*. W. W. Norton & Company.
- Butkouskaya, V., Oyner, O., & Kazakov, S. (2023). The impact of omnichannel integrated marketing communications (IMC) on product and retail service satisfaction. *Journal of Economics, Finance and Administrative Science*, 28(56), 319–334. <https://doi.org/10.1108/JEFAS-09-2022-0237>
- Chen, H., Chiang, R. H. L., & Storey, V. C. (2012). Business intelligence and analytics: From big data to big impact. *MIS Quarterly*, 36(4), 1165–1188. <https://doi.org/10.2307/41703503>
- Davenport, T. H. (2013). *Analytics at work: Smarter decisions, better results*. Harvard Business Press.
- Davenport, T. H., & Harris, J. G. (2007). *Competing on analytics: The new science of winning*. Harvard Business Press.
- Gonzalez-Tamayo, L. A., Maheshwari, G., Bonomo-Odizzio, A., Herrera-Avilés, M., & Krauss-Delorme, C. (2023). Factors influencing small and medium size enterprises development and digital maturity in Latin America. *Journal of Open Innovation: Technology, Market, and Complexity*, 9(2), 100069. <https://doi.org/10.1016/j.joitmc.2023.100069>
- Hertati, L., & Safkaur, O. (2020). Dampak revolusi industri 4.0 era Covid-19 pada sistem informasi akuntansi terhadap struktur modal perusahaan. *Jurnal Riset Akuntansi dan Keuangan*, 8(3), 503–518. <https://doi.org/10.17509/jrak.v8i3.23557>
- Hizam, S. M., Akter, H., Sentosa, I., Ahmed, W., Masrek, M. N., & Ali, J. (2023). Predicting workforce engagement towards digital transformation through a multi-analytical approach. *Sustainability*, 15(8). <https://doi.org/10.3390/su15086835>
- Holling, C. S. (2001). Understanding the complexity of economic, ecological, and social systems. *Ecosystems*, 4(5), 390–405. <https://doi.org/10.1007/s10021-001-0101-5>
- Lengnick-Hall, C. A., Beck, T. E., & Lengnick-Hall, C. A. (2011). Developing a capacity for organizational resilience through strategic human resource management. *Human Resource Management Review*, 21(3), 243–265. <https://doi.org/10.1016/j.hrmr.2011.02.002>
- Lingling, W., & Fuli, C. (2021). Role of AI technology in brand building of Chinese higher education institution – Thought based on integrated marketing communication. *Marketing and Digital Technologies*, 5(2), 7–13. <https://doi.org/10.15276/mdt.5.2.2021.1>

- Lo, P., So, S., Liu, Q., Allard, B., & Chiu, D. (2019). Chinese students' motivations for overseas versus domestic MLIS education: A comparative study between University of Tsukuba and Shanghai University. *College and Research Libraries*, 80(7), 1013–1035. <https://doi.org/10.5860/crl.80.7.1013>
- McAfee, A., Brynjolfsson, E., Davenport, T. H., Patil, D. J., & Barton, D. (2012). Big data: The management revolution. *Harvard Business Review*, 90(10), 60–68.
- Ni, G., Xu, H., Cui, Q., Qiao, Y., Zhang, Z., Li, H., & Hickey, P. J. (2021). Influence mechanism of organizational flexibility on enterprise competitiveness: The mediating role of organizational innovation. *Sustainability*, 13(1), 1–23. <https://doi.org/10.3390/su13010176>
- Provost, F., & Fawcett, T. (2013). *Data science for business: What you need to know about data mining and data-analytic thinking*. O'Reilly Media.
- Sutcliffe, K. M., & Vogus, T. J. (2003). Organizational resilience: A conceptual framework. *Public Administration Review*, 63(3), 150–160. <https://doi.org/10.1111/1540-6210.00306>
- Teece, D. J. (2007). Explicating dynamic capabilities: The nature and microfoundations of (sustainable) enterprise performance. *Strategic Management Journal*, 28(13), 1319–1350. <https://doi.org/10.1002/smj.640>
- Venkatesh, R. (2015). Mobile marketing (From marketing strategy to mobile marketing campaign implementation). *International Journal of Research*, 2(2), 1175–1187.