



Adaptive Leadership and Organizational Resilience at Perum LPPNPI: The Role of Mediation Mechanisms

Chintia Dwi Tania* and Indiranty Sudirman

Hasanuddin University, Makassar, Indonesia
*taniacd24a@student.unhas.ac.id

Abstract. This study aims to examine the relationship between adaptive leadership and organizational resilience, emphasizing the mediating roles of organizational learning, crisis preparedness, and digital innovation. The research employed a quantitative approach through a cross-sectional survey conducted at Perum LPPNPI (AirNav Indonesia), the national air navigation service provider. Data were analyzed using Partial Least Squares-Structural Equation Modeling (PLS-SEM). The findings indicate that adaptive leadership does not have a direct effect on organizational resilience. Instead, its influence is fully mediated by internal organizational mechanisms. This highlights that organizational resilience is not solely determined by leadership attributes but is shaped through the synergy between leadership practices and internal organizational systems, such as learning culture, structured crisis preparedness, and the capacity for digital innovation. Theoretically, this study enriches the literature on adaptive leadership by positioning it as an enabling catalyst that fosters resilience rather than a standalone factor directly determining outcomes. Practically, the findings provide strategic guidance for high-risk public organizations to strengthen their internal systems as the primary foundation for building resilience in times of crisis.

Keywords: Adaptive Leadership, Organizational Resilience, Organizational Learning, Crisis Preparedness, Digital Innovation.

1 Introduction

In 2020, the COVID-19 pandemic significantly disrupted the global aviation industry, causing the sharpest decline in passenger demand in history [1]. This situation directly affected the operational and financial stability of air navigation service providers (ANSPs), which had to maintain critical services for flight safety despite limited resources. This included the Indonesian Air Navigation Service Provider (Perum LPPNPI) or AirNav Indonesia, as the sole ANSP in Indonesia, which faced extraordinary challenges in maintaining operational continuity amid unprecedented systemic pressures and uncertainty [2]. This situation requires AirNav not only to survive but also to thrive in an uncertain and complex environment.

In this context, leadership plays a crucial role in maintaining organizational resilience when facing various situations full of uncertainty. Conventional bureaucratic leadership models are considered ineffective in responding to complex, fast-paced, and

uncertain challenges [3]. As an alternative approach, adaptive leadership is considered more appropriate because it focuses on the ability of leaders to keep organizations moving forward when faced with unpredictable changes [3, 4]. Various studies have identified its effectiveness in maintaining stability while driving transformation [5]. [6] research found that adaptive leadership does not always have a direct impact on organizational resilience, unless mediated by crisis mechanisms. This difference in findings indicates that there are still gaps in research, particularly in exploring the role of mediating variables in explaining this relationship more comprehensively.

As an Air Navigation Service Provider (ANSP) classified as a High-Reliability Organization (HRO), this research becomes increasingly important. In daily practice, organizations operating in high-risk environments are required to continuously engage in a process of learning. This process makes organizations better prepared to handle critical situations, improve cross-unit collaboration, and ultimately foster a strong and sustainable culture of innovation [7, 8, 9]. Through the process of reflecting on experiences, learning from mistakes, and internalizing best practices, organizations can develop sustainable adaptive capabilities [10,11, 12].

In addition to organizational learning, crisis preparedness is also a key element in strengthening anticipatory structures through contingency planning, appropriate resource distribution, and cross-functional coordination. This makes adaptability no longer an additional attribute, but rather a core competency embedded in the organization's work culture. Digital innovation emerges as a strategic factor supporting data-driven decision-making and accelerating responses to dynamic changes [13, 14]. Empirically, organizations that integrate digital innovation into their crisis strategies have proven to be more adaptive and possess higher resilience levels [15, 16].

Research linking adaptive leadership, organizational learning, crisis preparedness, and digital innovation simultaneously is still rare, especially in the public sector working in high-risk conditions such as ANSP. However, an approach that integrates these four aspects is important for understanding how adaptive leadership can truly strengthen organizational resilience. To address this gap, this study proposes a more comprehensive conceptual model by positioning adaptive leadership as the primary variable influencing organizational resilience through the mediating variables of organizational learning, digital innovation, and crisis preparedness.

This study focuses on two main questions. First, to what extent can adaptive leadership strengthen organizational resilience at Perum LPPNPI? Second, how do organizational learning, digital innovation, and crisis preparedness serve as bridges in this relationship? By exploring these questions, this study not only enhances theoretical understanding of leadership and crisis management but also provides practical guidance for ANSPs and other public organizations operating in high-risk environments. Ultimately, this research is expected to assist organizations in building adaptive capacity while strengthening resilience in the face of increasingly complex uncertainties.

2 Literature Review

2.1 Adaptive Leadership

Adaptive leadership essentially requires leaders to be able to read challenges, both technical and adaptive, and help organizations learn and transform. According [5], this leadership style helps organizations adapt more quickly, strengthen cross-unit cooperation, and act more quickly when faced with uncertainty.

2.2 Organizational Resilience

In an organizational context, [17] was the first to introduce the concept of resilience. Resilience is considered a crucial element that enables the optimal utilization of resources and capabilities, not only in order to overcome current challenges, but also to explore potential strategic opportunities and lay the foundation for long-term success [18]. In the context of Air Navigation Service Providers (ANSPs), this resilience includes strong safety management systems, adaptive human resource management, and the ability to quickly adapt to technology and operational procedures [19].

This review shows that the term resilience has been used in various fields of science. For example, in psychology, social sciences, and education [20, 21, 22]. All of these fields recognize that resilience is not only found internally within individuals, but also externally in families, communities, and the wider social environment.

2.3 The Role of Mediation: Organizational Learning

Crises and external environmental dynamics are the main triggers for organizational learning [11, 12]. In this context, organizational learning is understood as a strategic process that enables organizations to transform experiences gained from crisis situations into new knowledge that enhances adaptive capabilities and strengthens organizational resilience in the face of complex and uncertain changes [10]. More specifically, in the context of crisis management and organizational resilience, organizational learning plays a key role as a mediating mechanism linking adaptive leadership and organizational preparedness in responding to disruptions.

Adaptive leadership creates an organizational climate conducive to exploration, reflection, and dissemination. Such an environment enables a continuous learning process, which ultimately strengthens the organization's preparedness to face various external pressures [8]. Empirical findings highlight the critical role of organizational learning as a key determinant of competitive advantage in an increasingly dynamic era [23]. Additionally, organizational learning enhances coordination among units and strengthens an organizational culture that supports innovation and preparedness to address crises [9]. Organizations that effectively manage learning demonstrate faster and more adaptive responses to crises, as observed in case studies during the COVID-19 pandemic.

2.4 The Role of Mediation: Crisis Preparedness

Crises and external environmental dynamics are the main triggers for crisis preparedness, which includes strategic and operational preparations prior to the occurrence of a crisis, such as the development of contingency plans and simulation exercises [24, 25]. Empirical findings indicate that high levels of organizational preparedness to deal with crises can minimize the negative impact of crises and accelerate the recovery phase. Cumulatively, this can make a strategic contribution to the overall resilience of the organization [15].

Within the framework of an intermediary variable, crisis preparedness translates the influence of adaptive leadership into concrete steps that strengthen organizational resilience. Adaptive leaders typically facilitate this preparedness through organizational empowerment, crisis simulation or scenario exercises, and the creation of a collective culture of high vigilance. These practices directly strengthen an organization's capabilities to navigate conditions of uncertainty and disruption. This is particularly significant in the context of the COVID-19 pandemic, where organizations are faced with the need to respond quickly and adaptively to a constantly changing environment [15].

2.5 The Role of Mediation: Digital Innovation

Digital innovation is defined as an integrated approach that utilizes technology and digital devices to support the achievement of organizational goals, optimize operational processes, and create added value for customers. This innovation reflects a paradigm shift in modern organizational management, where technology is no longer positioned as a technical tool but as a strategic catalyst in organizational transformation.

In line with this definition, at the organizational level, a number of experts argue that companies need to formulate innovative approaches to utilizing digital technology by developing strategies that integrate the implications of digital transformation comprehensively, in order to drive continuous improvement in operational performance [26].

In the context of the COVID-19 pandemic, AirNav Indonesia has initiated the development of a number of digital applications as part of its strategy to improve operational efficiency in flight navigation services, including "Inavcard," which is designed to address the issue of duplicate name points on flight routes, as well as "AirNav Release," which functions as a support system for planning and managing operational schedules in a more structured and integrated manner [2].

Empirical studies indicate that organizations that successfully integrate digital innovation into their crisis management strategies demonstrate adaptive and innovative capabilities that support resilience [14, 16]. Thus, digital innovation serves not only as a technological tool but also as a strategic mediator linking adaptive leadership with organizational preparedness and resilience in facing various complex disruptions and crises.

2.6 Conceptual Model and Research Hypotheses

Ronald A. Heifetz, as one of the leading figures in change theory, emphasizes that adaptive leadership requires leaders to be flexible and innovative in facing various challenges. This is important because leaders today are faced with complex challenges in a dynamic and ever-evolving business environment [3].

The literature shows that adaptive leadership contributes positively to organizational resilience at various levels, with the greatest influence identified at the team level, followed by the organizational level, and the lowest at the individual level. These findings provide important insights into the need to reconstruct managerial mechanisms in response to disruptive dynamics and strengthen adaptive leadership capabilities [27].

However, findings from other literature show more complex results [6], finding that there is no significant direct relationship between adaptive leadership and organizational resilience, except when leadership is directed directly through crisis management [6]. The following Figure 1 presents a conceptual model of the relationship between research constructs, which illustrates the influence of adaptive leadership (KAD) on organizational resilience (KET) with the mediating roles of organizational learning (PO), digital innovation (ID), and crisis preparedness (KE).

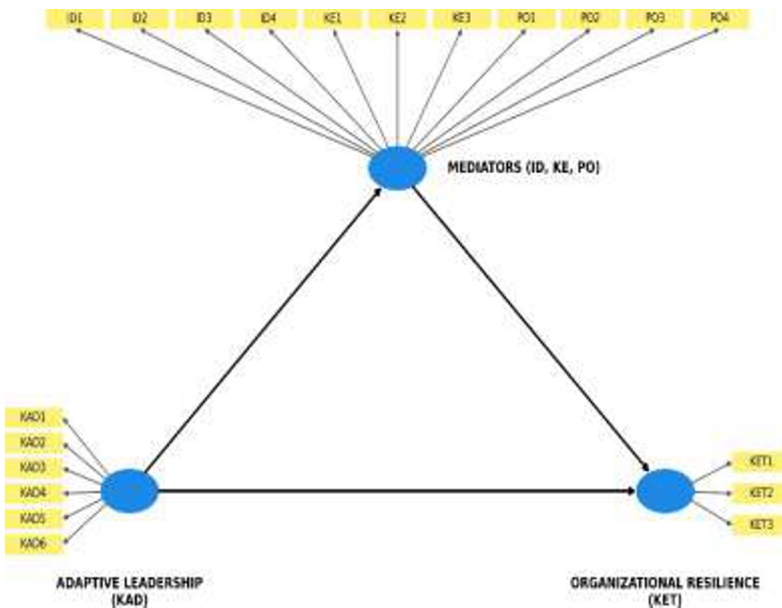


Fig. 1. Conceptual framework of construct relationships

Source: Author’s analysis using SmartPLS 4 (2025)

According to the conceptual model, the first hypothesis proposed is that adaptive leadership in strengthening organizational resilience is greatly influenced by the presence of mediating variables that play a role in bridging causal relationships in a systematic and contextual manner.

- **H1:** The Direct Effect of Adaptive Leadership on Organizational Resilience

Crises and external environmental dynamics are the main triggers for organizational learning [11, 12]. In this context, organizational learning is understood as a strategic process that enables organizations to transform experiences gained from crisis situations into new knowledge that can enhance adaptive capabilities and strengthen organizational resilience in the face of complex and uncertain changes [10]. Adaptive leadership creates an organizational climate conducive to exploration, reflection, and dissemination. Such an environment enables the learning process to occur continuously, ultimately strengthening the organization's preparedness to face various external pressures [8].

At the organizational level, experts argue that companies need to formulate innovative approaches to leveraging digital technologies. This includes developing strategies that comprehensively integrate the implications of digital transformation into all aspects of the organization. The main objective of this approach is to drive continuous improvement in operational performance [26].

Empirical studies indicate that organizations that successfully integrate digital innovation into their crisis management strategies demonstrate higher adaptive and innovative capabilities. These capabilities form a crucial foundation for organizational resilience in addressing various forms of challenges and uncertainties [14, 16]. Thus, digital innovation does not merely function as a technological tool; rather, it plays a strategic role as a mediating variable that strengthens the relationship between adaptive leadership and organizational resilience.

- **H2:** The Influence of Adaptive Leadership on Mediator Variables

The three mediating variables examined in this study, namely organizational learning, crisis preparedness, and digital innovation, are considered strategic elements that play an important role in strengthening organizational resilience in the face of external challenges and internal dynamics. First, organizational learning is believed to contribute positively to organizational resilience. Through a continuous learning mechanism, organizations are able to improve their adaptive capacity in responding to uncertainty, reduce the potential adverse impact of unexpected events, and maintain and strengthen their competitive advantage in a sustainable manner [7]. Second, preparedness can be defined as the level of an organization's ability to design anticipatory procedures and systematic responses when faced with crisis conditions, including through contingency planning and regular training to proactively manage risks [15, 24]. Third, digital innovation plays a strategic role in strengthening organizational resilience by leveraging digital technology not only to improve operational efficiency but also to build capabilities.

- **H3:** The Influence of Mediating Variables on Organizational Resilience

This hypothesis proposes that adaptive leadership is not considered to have a direct influence on organizational resilience. The impact will be seen when adaptive leadership works through a number of mediating mechanisms. Three of these are continuous organizational learning, systematic crisis preparedness, and digital innovation integrated into managerial processes. Through learning, organizations gain the ability to transform experiences into new sources of knowledge. Crisis preparedness indicates the presence of planned anticipatory measures, while digital innovation provides strategic opportunities to enhance efficiency and flexibility. These three aspects serve as bridges connecting adaptive leadership with the strengthening of organizational capacity to respond to disruptions, maintain operational continuity, and build long-term resilience.

- **H4:** The influence of adaptive leadership on organizational resilience is mediated by organizational learning, crisis preparedness, and digital innovation

3 Methodology

This study was conducted using a quantitative approach through the Partial Least Squares-Structural Equation Modeling (PLS-SEM) method. The objective was to empirically test how adaptive leadership influences organizational resilience by considering the mediating roles of organizational learning, digital innovation, and crisis preparedness. The research design focuses on testing hypotheses and exploring in depth the causal relationships between variables and the proposed conceptual model.

Data collection was conducted through a cross-sectional questionnaire survey. Respondents included structural officials, supervisors, and professional staff within Perum LPPNPI. Selection was conducted using purposive sampling, with criteria that participants had worked for at least two years and had an understanding of organizational dynamics, crises, and innovation. Referring to the PLS-SEM guidelines, the required sample size was ten times the number of indicators in the variable with the most pathways, resulting in a target of 132 respondents.

The questionnaire instruments in this study were developed based on indicators of variables that have been tested in previous literature. Adaptive leadership was measured by referring to the concept [6]. Meanwhile, organizational learning was adapted from the framework developed by [7]. Crisis preparedness is measured based on the framework by [15], while the digital innovation variable refers to the conceptual framework by [26]. All items are measured using a five-point Likert scale, ranging from 1 = strongly disagree to 5 = strongly agree.

The data analysis was conducted in two primary stages using the Partial Least Squares-Structural Equation Modeling (PLS-SEM) approach. The first stage involved the assessment of the outer model, which examined the measurement quality through tests of convergent validity (outer loadings ≥ 0.70), discriminant validity (cross-loadings highest on their respective constructs), and construct reliability (Composite Reliability ≥ 0.70). The second stage focused on the evaluation of the inner model, aimed at assessing the strength and significance of the structural relationships among latent variables. This included the examination of the coefficient of determination (R^2), effect

size (f^2), model fit indices, and path significance through bootstrapping to determine the direction and magnitude of the hypothesized effects.

4 Results

This study aims to examine the influence of adaptive leadership on organizational resilience, both directly and indirectly through mediating variables, namely organizational learning, digital innovation, and crisis preparedness. The data were analyzed using the Partial Least Squares–Structural Equation Modeling (PLS-SEM) approach.

4.1 Evaluation of the Outer Model

At this stage, the outer model evaluation was conducted to ensure that each indicator in the research instrument meets the required criteria for validity and reliability.

Convergent validity. Convergent validity was assessed by examining the outer loading values, which represent the correlations between each indicator and its corresponding construct. An indicator is considered valid if its factor loading exceeds 0.70. The outer loading results used to assess convergent validity are presented in Table 1. As shown in Table 1, all indicators exhibit loading values greater than 0.70, thereby satisfying the convergent validity criteria. These results indicate that the indicators consistently and accurately represent the constructs being measured.

Table 1. Outer loading results for convergent validity

	Adaptive Leadership	Organizational Resilience	Mediation (Organizational Learning, Digital Innovation, Crisis Preparedness)	Description
D1	0.883			Valid
KAD2	0.926			Valid
KAD3	0.908			Valid
KAD4	0.885			Valid
KAD5	0.915			Valid
KAD6	0.893			Valid
KET1		0.937		Valid
KET2		0.933		Valid
KET3		0.940		Valid
PO1			0.833	Valid
PO2			0.816	Valid
PO3			0.854	Valid
PO4			0.870	Valid
ID1			0.816	Valid
ID2			0.874	Valid
ID3			0.855	Valid
ID4			0.861	Valid
KE1			0.837	Valid

KE2	0.894	Valid
KE3	0.882	Valid

Discriminant Validity. Discriminant validity was assessed to ensure that each construct in the model measured a distinct concept and did not overlap with others. An indicator was deemed valid when its cross-loading on the associated construct exceeded its correlations with other constructs. As presented in Table 2, the results indicate that all indicators exhibit the highest loading values on their respective constructs compared to cross-loadings with other constructs, thereby confirming the absence of multicollinearity and supporting the discriminant validity of the measurement model.

Table 2. Cross-loading results for discriminant validity

	Adaptive Leadership	Organizational Resilience	Mediation (Organizational Learning, Digital Innovation, Crisis Preparedness)	Description
KAD1	0.883	0.760	0.760	Valid
KAD2	0.926	0.731	0.799	Valid
KAD3	0.908	0.606	0.739	Valid
KAD4	0.885	0.633	0.733	Valid
KAD5	0.915	0.667	0.752	Valid
KAD6	0.893	0.654	0.729	Valid
KET1	0.719	0.937	0.836	Valid
KET2	0.682	0.933	0.810	Valid
KET3	0.711	0.940	0.858	Valid
PO1	0.689	0.791	0.833	Valid
PO2	0.742	0.797	0.816	Valid
PO3	0.734	0.773	0.854	Valid
PO4	0.743	0.732	0.870	Valid
ID1	0.621	0.715	0.816	Valid
ID2	0.678	0.761	0.874	Valid
ID3	0.670	0.721	0.855	Valid
ID4	0.705	0.730	0.861	Valid
KE1	0.721	0.722	0.837	Valid
KE2	0.786	0.799	0.894	Valid
KE3	0.740	0.825	0.882	Valid

Construct reliability. Construct reliability was assessed using Composite Reliability (CR) values to evaluate the degree of internal consistency among the indicators within each construct. In the SmartPLS analysis, CR values equal to or greater than 0.70 indicate acceptable reliability. As presented in Table 3, the CR value for adaptive leadership is 0.955, for organizational resilience is 0.930, and for the mediating constructs organizational learning, digital innovation, and crisis preparedness is 0.964. These results confirm that all constructs demonstrate excellent reliability, thereby supporting the stability and consistency of the measurement model.

Table 3. Composite Reliability of the measurement constructs

Construct	Composite Reliability	Description
Adaptive Leadership	0.955	Reliable
Organizational Resilience	0.930	Reliable
Mediation (Organizational Learning, Digital Innovation, Crisis Preparedness)	0.964	Reliable

4.2 Evaluation of the Inner Model

The evaluation of the inner model aims to assess the strength of the relationships among latent variables and the model's ability to explain the studied phenomenon. This assessment is conducted through the analysis of R^2 values, effect sizes, model fit, and significance testing using the bootstrapping method.

R Square (R^2) Values.

Table 4. R^2 test results

Construct	R-square	R-square adjusted
Organizational Resilience	0.796	0.793
Mediation (Organizational Learning, Digital Innovation, Crisis Preparedness)	0.698	0.695

Based on Table 4, the R^2 value for organizational resilience is 0.796, while the R^2 value for the mediation variable is 0.698. These results indicate that the model explains 79.6% and 69.8% of the variance in the respective latent variables. Both values fall within the strong category, demonstrating that the model has a high explanatory power. Figure 2 presents the PLS-SEM Algorithm output, illustrating the R^2 values of the research model.

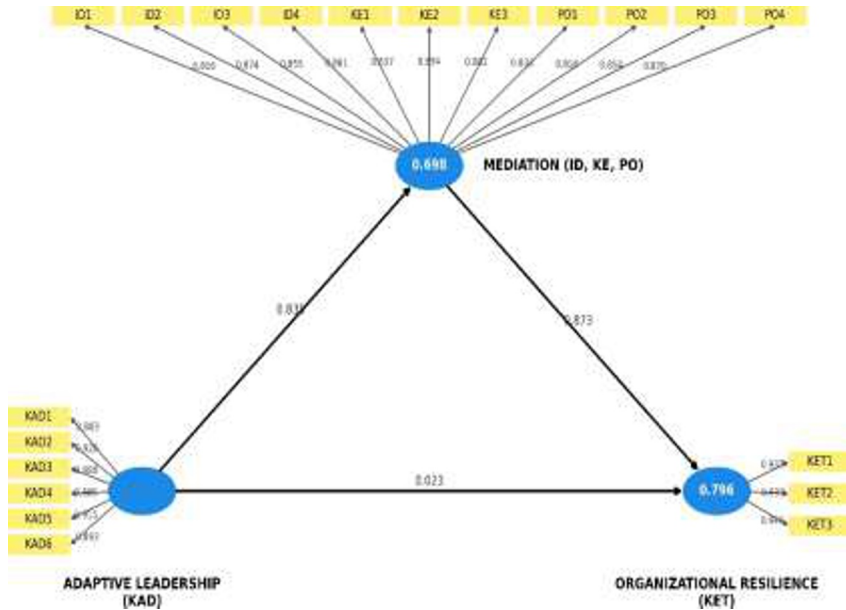


Fig. 2. PLS-SEM algorithm output illustrating the R² values
 Source: Author’s analysis using SmartPLS 4 (2025)

Effect Size (f²). Effect size (f²) assesses the specific impact of each independent variable on the dependent variable by examining changes in the R² value when a predictor is removed from the model. Values of f² below 0.02 indicate a small effect, between 0.02 and 0.15 a medium effect, and above 0.35 a large effect. This measure helps identify the relative contribution of each independent variable, providing deeper insight into the structural relationships among latent constructs. The effect size analysis results are reported in Table 5.

Table 5. Effect size (f²) analysis results

	Adaptive Leadership	Organizational Resilience	Mediation (Organizational Learning, Digital Innovation, Crisis Preparedness)
Adaptive Leadership	-	0.001	2.306
Organizational Resilience	-	-	-
Mediation (Organizational Learning, Digital Innovation, Crisis Preparedness)	-	1.128	-

Based on the results presented in Table 5, the findings can be explained as follows:

- Adaptive Leadership → Organizational Resilience
The f^2 value for this path is 0.001, which is considered very small, indicating that Adaptive Leadership has a negligible effect on Organizational Resilience.
- Adaptive Leadership → Mediation (Organizational Learning, Digital Innovation, Crisis Preparedness)
The f^2 value for this path is 2.306, which is considered very large, suggesting that Adaptive Leadership has a strong and substantial effect on the Mediation construct (Organizational Learning, Digital Innovation, and Crisis Preparedness). Adaptive Leadership exerts a highly significant impact in enhancing these mediating mechanisms.
- Mediation (Organizational Learning, Digital Innovation, Crisis Preparedness) → Organizational Resilience
The f^2 value for this path is 1.128, which is also very large, indicating that the Mediation construct has a strong and substantial effect on Organizational Resilience. This finding demonstrates that Organizational Learning, Digital Innovation, and Crisis Preparedness collectively provide a highly significant contribution to strengthening Organizational Resilience.

Model Fit. Based on Table 6, the model fit results indicate that all criteria were satisfactorily met. The SRMR value of 0,048 (< 0.10) confirms an excellent model fit, while $d_ULS = 0.493$ and $d_G = 0.786$ demonstrate adequate empirical alignment. The NFI (0.836) and GoF (0.537) values fall within the strong category, reflecting high structural explanatory power. Moreover, the Q^2 values for Organizational Resilience (0.553) and the Mediating Construct (0.683) indicate strong predictive relevance. Overall, the research model exhibits excellent fit, stability, and reliability in explaining the relationships among latent variables.

Table 6. Model fit test results

Parameter	Rule of thumb	Estimated model	Description
RMR	< 0.10	0.048	Excellent fit
d_ULS	> 0.05	0.493	Fit
d_G	> 0.05	0.786	Fit
Chi-square	χ^2 statistic $\geq \chi^2$ table	536.928 > 30.144	Model fit confirmed
NFI	Close to 1	0.836	Fit
GoF	0.10 (small), 0.25 (medium), 0.36 (large)	0.537	Strong fit
Q^2 Predictive Relevance	$Q^2 > 0$: predictive relevance present $Q^2 < 0$: no predictive relevance	Q^2 Organizational Resilience = 0.553 $>$ 0	Strong predictive relevance
	0.02 (weak), 0.15 (moderate), 0.35 (strong)	Q^2 Mediation = 0.683 $>$ 0	

Bootstrapping Significance Test (Hypothesis Testing). The significance test using the bootstrapping method was conducted to assess the strength of relationships among latent variables in the PLS-SEM model. Based on Table 7, it can be concluded that adaptive leadership has no direct effect on organizational resilience ($O = 0.023$; $P = 0.36$), but it has a significant indirect effect through the mediating variables ($O = 0.729$; $P < 0.001$). Therefore, a full mediation model is confirmed in this study, indicating that the influence of adaptive leadership on organizational resilience occurs entirely through organizational learning, digital innovation, and crisis preparedness.

Table 7. Hypothesis testing results

Hypothesis	Original sample	T statistics	P values	Description
Adaptive Leadership → Organizational Resilience	0.023	0.357	0.36	Not significant
Adaptive Leadership → Mediation (Organizational Learning, Digital Innovation, Crisis Preparedness)	0.835	18.035	0.000	Significant
Mediation (Organizational Learning, Digital Innovation, Crisis Preparedness) → Organizational Resilience	0.873	14.412	0.000	Significant
Adaptive Leadership → Mediation (Organizational Learning, Digital Innovation, Crisis Preparedness) → Organizational Resilience	0.729	11.272	0.000	Significant

5 Discussion

5.1 Hypothesis Test 1 - The Direct Effect of Adaptive Leadership on Organizational Resilience

The results indicate that the direct path is not significant ($O = 0.023$; $T = 0.357$; $P = 0.361$). This suggests that adaptive leadership is not sufficient to shape organizational resilience. This finding aligns with [6], who emphasizes that organizational resilience is formed through more complex mechanisms, such as continuous learning, mature preparedness, and digital innovation development.

However, these findings differ from the general view [3, 26] which emphasizes the direct role of adaptive leadership. This difference is due to the research context, which considers internal systematic factors as prerequisites for resilience amid external uncertainty

5.2 Hypothesis Test 2 - The Influence of Adaptive Leadership on Mediators

The results of the test show that adaptive leadership has a very significant effect on the mediator variable ($O = 0.835$; $T = 18.035$; $P = 0.000$). This finding confirms the role of

adaptive leadership as a driver of change and renewal in organizations. Adaptive leaders encourage organizational learning by fostering a culture of reflection, facilitating knowledge exchange, and developing the capabilities of organizational members. With this approach, organizations are not only able to understand past experiences but also continue to adapt relevant strategies and practices [10].

Adaptive leaders play a crucial role in facilitating digital innovation and promoting the adoption of technologies that not only improve operational efficiency but also strengthen organizational flexibility in the face of rapid environmental change [3, 16]. In addition, adaptive leaders improve crisis preparedness by fostering a culture of anticipation and implementing robust contingency planning systems. This approach enables organizations to respond quickly and effectively to external challenges, thereby minimizing the impact of crises [23].

Overall, the findings of this study are consistent with the literature that places adaptive leadership as a key driver of organizational renewal. This style of leadership encourages continuous learning, adaptation, and innovation, thereby strengthening the long-term resilience of organizations.

5.3 Hypothesis Test 3 - The Influence of Mediators on Organizational Resilience

The results of the test show that adaptive leadership has a very significant effect on the mediator variable ($O = 0.837$; $T = 14.412$; $P = 0.000$). This finding confirms the role of adaptive leadership as a driver of change and renewal in organizations. Adaptive leaders encourage organizational learning by fostering a culture of reflection, facilitating knowledge exchange, and developing the capabilities of organizational members. With this approach, organizations are not only able to understand past experiences but also continue to adapt relevant strategies and practices [10].

Organizational learning plays a pivotal role in transforming crisis experiences into new sources of knowledge, enabling organizations to learn from the challenges they encounter and to continuously refine their strategies [11, 8]. Digital innovation enhances organizational adaptability by leveraging technologies that promote efficiency and flexibility, allowing organizations to adjust to rapidly changing environmental dynamics [14]. Meanwhile, crisis preparedness ensures that organizations are able to respond to emergencies swiftly, accurately, and systematically. By cultivating an anticipatory culture and establishing robust contingency planning, organizations become better equipped to navigate external uncertainties [15]. Overall, this study asserts that organizational resilience emerges from the interaction among continuous learning, digital innovation, and crisis preparedness, all of which are strengthened by adaptive leadership.

5.4 Hypothesis Test 4 – Mediation Effect

The results of the analysis indicate that the indirect effect of adaptive leadership on organizational resilience is highly significant ($O = 0.729$; $T = 11.272$; $P = 0.000$), while

the direct effect is not significant. This condition indicates the presence of full mediation.

This shows that adaptive leadership can improve organizational resilience through the mediating role of organizational learning, digital innovation, and crisis preparedness. These findings explain that adaptive leadership works indirectly by building a systematic organizational foundation.

5.5 Implication and Critical Reflections

This study provides important theoretical implications by enriching the study of adaptive leadership. The findings indicate that the influence of adaptive leadership on organizational resilience does not occur directly, but is fully mediated by internal organizational mechanisms, namely continuous learning, crisis preparedness, and digital innovation. These results reinforce the view of [3], who emphasize that adaptive leadership can be understood as an enabler rather than a direct driver in building organizational resilience. From a practical perspective, the findings of this study provide strategic guidance for Perum LPPNPI and other public organizations in high-risk environments to build three important pillars: a continuous learning system that can transform crisis experiences into new knowledge; structured and cross-unit crisis preparedness procedures to strengthen coordination; and digital innovation that drives faster decision-making and efficiency.

Thus, the effectiveness of adaptive leadership does not solely depend on the individual capabilities of a leader but also on systematic support and a robust organizational infrastructure. This study provides important theoretical implications by enriching the study of adaptive leadership. The findings indicate that the influence of adaptive leadership on organizational resilience does not occur directly, but is fully mediated by internal organizational mechanisms, namely continuous learning, crisis preparedness, and digital innovation. These results reinforce the view of [3], who emphasize that adaptive leadership can be understood as an enabler rather than a direct driver in building organizational resilience. From a practical perspective, the findings of this study provide strategic guidance for Perum LPPNPI and other public organizations in high-risk environments to build three important pillars: a continuous learning system that can transform crisis experiences into new knowledge; structured and cross-unit crisis preparedness procedures to strengthen coordination; and digital innovation that drives faster decision-making and efficiency. Thus, the effectiveness of adaptive leadership does not solely depend on the individual capabilities of a leader but also on systematic support and a robust organizational infrastructure

6 Conclusion

This study shows that adaptive leadership plays a significant role in strengthening organizational resilience, although its influence is not direct but rather through mediating mechanisms such as organizational learning, crisis preparedness, and digital innovation. Thus, adaptive leadership can be understood as a catalyst that drives the learning

process, strengthens crisis preparedness, and promotes digital innovation, which synergistically enhances an organization's ability to survive and adapt in crisis situations.

These findings emphasize that organizational resilience is not merely the result of individual leaders' capabilities but rather the product of the interaction between leadership styles and the organization's structured internal systems. For public organizations in high-risk sectors, such as Perum LPPNPI, resilience-building strategies should focus on developing robust internal mechanisms to ensure that adaptive leadership can function optimally in responding to increasingly complex uncertainties.

References

1. International Air Transport Association (IATA).: Annual Review 2020. IATA Annual Review 76th Annual General Meeting, Amsterdam, November (2020)
2. Perum LPPNPI.: Laporan Tahunan 2020. Perum LPPNPI, Jakarta (2020)
3. Heifetz, R., Grashow, A., Linsky, M.: The practice of adaptive leadership: Tools and tactics for changing your organization and the world. Harvard Business, (2009)
4. Uhl-Bien, M., Arena, M.: Leadership for organizational adaptability: A theoretical synthesis and integrative framework. *The Leadership Quarterly*, 29(1), 89-104 (2018)
5. Hosen, M., Abdullah, M., Rahman, A.: The key role of innovation and organizational resilience in improving business performance during crises: A mixed-methods approach. *Journal of Innovation & Knowledge*, (2024)
6. Dajani, M. A. Z.: Adaptive leadership, organizational resilience and the mediating effect of change management amid Egyptian academia crises. *International Business Research*, 15(12), 56-57 (2022)
7. Douglas, S., & Haley, G.: Connecting organizational learning strategies to organizational resilience. *Development and Learning in Organizations*, (2023)
8. Easterby-Smith, M., Lyles, M. A.: *The Blackwell handbook of organizational learning and knowledge management* (2nd ed.). Wiley-Blackwell, (2015)
9. Garvin, D. A., Edmondson, A. C., Gino, F.: Is yours a learning organization? *Harvard Business Review*, 86(3), 109–116 (2008)
10. Argyris, C., Schön, D. A.: *Organizational learning: A theory of action perspective*. Addison-Wesley. (1978)
11. Dodgson, M.: Organizational learning: A review of some literatures. *Organization Studies*, 14/3, 375-395 (1993)
12. Fiol, C. Marlene., Lyles, M. A.: Organizational Learning. *Academy of Management Review*, Vol. 10, No. 4, 803-813 (1985)
13. Jonathan, G. M., Kuika Watat, J.: Organizational Agility and IT Alignment in Public Organisations. *AMCIS 2020 Proceedings*, (2020)
14. Vial, G.: Understanding digital transformation: A review and a research agenda. *The Journal of Strategic Information Systems*, 28(2), 118 (2019)
15. Bundy, J., Pfarrer, M. D., Short, C. E., Coombs, W. T.: Crises and crisis management: Integration, interpretation, and research development. *Journal of Management*, 43(6), 1661-1692 (2017)
16. Wamba, S. F., Dubey, R., Gunasekaran, A., & Akter, S.: The performance effects of big data analytics and supply chain ambidexterity: The moderating effect of environmental dynamism. *International Journal of Production Economics*, 13-14 (2020)
17. Wildavsky, A.: *Culture and Social Theory*. New Brunswick.(1998)

18. Lengnick-Hall, C. A., Beck, T. E., Lengnick-Hall, M. L.: Developing a capacity for organizational resilience through strategic human resource management. *Human Resource Management Review*, 21(3) (2011)
19. International Civil Aviation Organization (ICAO): Safety Management Manual (SMM), Doc 9859. 4th ed. Montreal: ICAO; (2021)
20. Brown, T. A., Campbell, L. A., Lehman, C. L., Grisham, J. R., Mancill, R. B.: Current and lifetime comorbidity of the DSM-IV anxiety and mood disorders in a large clinical sample. *Journal of Abnormal Psychology*, 110(4), 585-599 (2001)
21. Luthar, Suniya S. (Ed.): Resilience and Vulnerability: Adaptation in the Context of Childhood Adversities. Cambridge University Press. (2003)
22. Saleebey, D.: The Strengths Perspective in Social Work Practice. 3rd edition, (2001)
23. Jerez-Gómez, P., Céspedes-Lorente, J., Valle-Cabrera, R.: Organizational learning capability: A proposal of measurement. *Journal of Business Research*, 58(6), 715–725 (2005)
24. Mitroff, I. I., Shrivastava, P., Udvardia, F. E.: A framework for crisis management. *The Academy of Management Executive*, 7(1), 48-59 (2006)
25. Somers, S.: Measuring resilience potential: An adaptive strategy for organizational crisis planning. *Journal of Contingencies and Crisis Management*, 17(1), 12-23 (2009)
26. Hess, T., Matt, C., Benlian, A., Wiesböck, F.: Options for formulating a digital transformation strategy. *MIS Quarterly Executive*, 15(2), 123 (2016)
27. Latukha, M., Pitubaeva, T., Khasieva, D., Kriklivetc, A., Yan, K.: External mentoring as a talent attraction tool in the talent shortage context. *BRICS Journal of Economics*, 6(1), 163–183 (2025)

Open Access This chapter is licensed under the terms of the Creative Commons Attribution-NonCommercial 4.0 International License (<http://creativecommons.org/licenses/by-nc/4.0/>), which permits any noncommercial use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter's Creative Commons license, unless indicated otherwise in a credit line to the material. If material is not included in the chapter's Creative Commons license and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.

