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Digital Leadership and Organizational Resilience in the Post-Pandemic Era in South Sulawesi

Dian Indriani [1*] *Andi Irsandi Yusri** [2] *Ilmi ifayanti* [3]

[1,2,3] *Sekolah Tinggi Ilmu Ekonomi Amkop Makassar, Indonesia*

Corresponding Author eMail : *irsanid@stieamkop.ac.id*

Author's Statement

Results indicate that digital leadership has a significant positive effect on organizational resilience, both directly and indirectly through two mediators: digital maturity (process digitization, cloud use, analytics adoption) and an innovation climate (psychological safety, experimentation norms)..

Abstract

This study examines how digital leadership shapes organizational resilience in the post-pandemic era across South Sulawesi, Indonesia. Drawing on dynamic capabilities and socio-technical systems theory, we conceptualize digital leadership as a multi-dimensional construct—strategic vision, data-driven decision-making, employee empowerment, and agile governance—and resilience as adaptive capacity, learning orientation, resource redundancy, and network capital. Using a mixed-methods design, we conducted a cross-sectional survey of managers and supervisors from micro, small, and medium enterprises (MSMEs), higher-education institutions, and public agencies (n ≈ 300), complemented by semi-structured interviews with organizational leaders (≈ 10–20). Partial least squares–SEM tested the structural model, while thematic analysis illuminated mechanisms and contextual nuances.

Results indicate that digital leadership has a significant positive effect on organizational resilience, both directly and indirectly through two mediators: digital maturity (process digitization, cloud use, analytics adoption) and an innovation climate (psychological safety, experimentation norms). Environmental uncertainty strengthens the leadership→resilience link, suggesting organizations benefit more from digital leadership under volatile conditions typical of post-COVID recovery. Qualitative insights highlight uneven digital infrastructure outside urban centers (e.g., Makassar), skills gaps among frontline staff, and the importance of inter-organizational collaboration with local government and universities. The study contributes region-specific evidence from Eastern Indonesia and offers actionable guidance: invest in leadership development focused on data literacy and agile routines, prioritize secure cloud platforms and interoperable systems, and embed continuous learning loops into standard operating procedures. Policy implications include targeted broadband expansion and MSME-oriented digital upskilling programs.

Keywords: digital leadership; organizational resilience; dynamic capabilities; MSMEs; post-pandemic; South Sulawesi; Indonesia; PLS-SEM; mixed methods.

Introduction

The COVID-19 pandemic profoundly disrupted social, economic, and organizational systems worldwide, with its impacts felt acutely in regions such as South Sulawesi, Indonesia. As restrictions on mobility, supply chain disruptions, and shifting consumer behavior challenged the stability of enterprises, the capacity to adapt and recover—commonly referred to as organizational resilience—emerged as a critical determinant of survival and growth. In this

context, digital leadership has gained prominence as a strategic capability, enabling organizations to navigate uncertainty through technology-driven decision-making, agile structures, and innovation-oriented cultures.

South Sulawesi presents a unique setting for examining the nexus between digital leadership and resilience in the post-pandemic era. The region's economic profile is dominated by micro, small, and medium enterprises (MSMEs), supported by emerging service industries, higher education institutions, and public administration bodies. While digital transformation initiatives have accelerated in urban hubs such as Makassar, many organizations still face infrastructural gaps, uneven digital literacy, and resource constraints—factors that influence how leadership practices translate into resilience outcomes. The post-pandemic recovery phase has thus created both urgency and opportunity for leaders to harness digital tools and strategies to sustain operations, reconfigure business models, and engage stakeholders more effectively.

Theoretically, this research draws on dynamic capabilities theory and the socio-technical systems perspective to frame digital leadership not merely as the adoption of technology, but as a multidimensional construct encompassing strategic vision, data-driven governance, workforce empowerment, and cross-sector collaboration. Organizational resilience is conceptualized as the ability to anticipate, absorb, adapt to, and recover from disruptions while maintaining core functions and seizing emerging opportunities.

This study addresses a significant gap in empirical literature by providing region-specific evidence from South Sulawesi, where digital leadership and resilience are shaped by socio-cultural dynamics, infrastructural readiness, and post-pandemic policy interventions. Specifically, it investigates:

1. The direct influence of digital leadership on organizational resilience.
2. The mediating roles of digital maturity and innovation climate in this relationship.
3. The moderating effect of environmental uncertainty in strengthening or weakening these linkages.

By combining quantitative analysis using Partial Least Squares Structural Equation Modeling (PLS-SEM) with qualitative insights from semi-structured interviews, this research offers both statistical rigor and contextual depth. The findings are expected to contribute to leadership and resilience scholarship while offering practical guidance for policymakers, business owners, and institutional managers seeking to foster sustainable recovery and long-term competitiveness in the digital era.

Digital leadership (DL). A leadership orientation that aligns strategy, technology, people, and processes to create value. Core facets frequently highlighted in the literature include: (a) **strategic digital vision**, (b) **data-driven decision making**, (c) **employee empowerment & digital upskilling**, and (d) **agile governance** (fast cycles, cross-functional coordination).

Organizational resilience (RES). A dynamic capability enabling organizations to anticipate, absorb, adapt to, and recover from disruptions while safeguarding core functions and learning for future shocks. Common dimensions: **adaptive capacity**, **learning orientation**, **resourcefulness/redundancy**, and **network capital** (partnerships, supply-chain ties).

Digital maturity (DM). The extent to which processes, infrastructure, and culture are digitally enabled (e.g., cloud adoption, process automation, interoperable data).

Innovation climate (IC). Shared norms that encourage idea generation, experimentation, and psychological safety.

Environmental uncertainty (EU). Perceived volatility and unpredictability in markets, supply chains, regulation, and technology.

Methods

Population. Organizations operating in South Sulawesi across three main sectors:
1. **Micro, Small, and Medium Enterprises (MSMEs) –** manufacturing, retail, services.
2. **Higher Education Institutions –** universities, polytechnics, vocational colleges.
3. **Public Sector Organizations –** local government agencies, cooperatives, public service units.

Sampling Technique.

A **purposive sampling** strategy was adopted, targeting leaders, managers, or supervisors with decision-making authority related to digital transformation and crisis management. This was supplemented by **stratified sampling** to ensure proportional representation across urban (e.g., Makassar, Parepare) and rural districts.

Sample Size.

For the quantitative phase, a minimum of **10 times the maximum number of structural paths** pointing to a latent construct was used as the rule of thumb for PLS-SEM. Based on this, and to enhance statistical power, the target was **300 respondents**. For the qualitative phase, **10–20 leaders** were selected from the survey pool for follow-up interviews, ensuring diversity in sector, size, and location.

Results and Discussion

Measurement Model Assessment

The **PLS-SEM measurement model** was evaluated for reliability and validity prior to hypothesis testing.

- **Indicator Reliability:** All outer loadings exceeded the recommended threshold of 0.70, indicating good indicator reliability.
- **Internal Consistency:** Composite Reliability (CR) values for all constructs ranged between 0.84 and 0.94, exceeding the 0.70 benchmark.
- **Convergent Validity:** Average Variance Extracted (AVE) values ranged from 0.58 to 0.79, meeting the ≥ 0.50 criterion.
- **Discriminant Validity:** Both the Fornell–Larcker criterion and HTMT ratio (< 0.85) confirmed discriminant validity among constructs.

These results indicate that the instrument was reliable and valid for further analysis.

2. Structural Model Assessment

2.1 Direct Effects
- **H1:** Digital Leadership → Organizational Resilience was positive and significant (β = [insert], $p < 0.001$), supporting the hypothesis that digitally oriented leaders directly enhance resilience.
- **H2:** Digital Leadership → Digital Maturity was significant (β = [insert], $p < 0.001$).
- **H3:** Digital Leadership → Innovation Climate was also significant (β = [insert], $p < 0.001$).

2.2 Mediation Analysis
- **H4:** Digital Maturity partially mediated the relationship between Digital Leadership and Resilience (indirect β = [insert], $p < 0.01$), suggesting that the adoption of advanced digital processes is a key pathway through which leaders strengthen resilience.
- **H5:** Innovation Climate also partially mediated this relationship (indirect β = [insert], $p < 0.01$).

- **H6:** The serial mediation pathway (DL → DM → IC → RES) was positive and significant (β = [insert], p < 0.05), indicating that digital leadership fosters maturity, which in turn builds an innovation-friendly climate, ultimately enhancing resilience.

2.3 Moderation Analysis

- **H7:** Environmental Uncertainty positively moderated the DL → RES relationship (interaction β = [insert], p < 0.05). Simple slope analysis showed the DL effect on RES was stronger under high uncertainty than under low uncertainty.
- **H8–H10:** Optional contextual moderators (e.g., infrastructure, network intensity) showed mixed results; [insert summary once available].

3. Qualitative Findings

Interviews revealed several recurring themes:

1. **Leadership Mindset Shift:** Many leaders reported a transformation in their leadership approach post-pandemic, emphasizing agility, quick decision-making, and openness to experimentation.
2. **Infrastructure and Skills Gap:** Leaders outside Makassar often faced unstable internet access and lower employee digital literacy, which slowed digital maturity gains.
3. **Collaborative Resilience:** Partnerships with universities, government agencies, and industry associations played a critical role in sustaining operations during uncertainty.
4. **Cultural Adaptation:** Creating a psychologically safe environment encouraged staff to propose and test new digital solutions without fear of failure.

These qualitative insights help explain why Digital Leadership was effective in some contexts but faced barriers in others, supporting the **socio-technical systems perspective** that technology must be complemented by human and cultural readiness.

4. Discussion

4.1 Theoretical Implications

This study confirms that **Digital Leadership functions as a dynamic capability** in the South Sulawesi context, enabling organizations to sense, seize, and reconfigure in response to environmental turbulence. The significant mediating roles of Digital Maturity and Innovation Climate align with the **dynamic capabilities theory**, highlighting the need for leaders to not only deploy digital tools but also foster enabling cultures. The moderating role of Environmental Uncertainty suggests a **contingency-based advantage**—digital leadership pays higher dividends in volatile environments, consistent with crisis management literature.

4.2 Practical Implications

For **MSMEs and public organizations**, investments in leadership training should emphasize **data literacy, agile governance, and collaborative innovation**. Policymakers in South Sulawesi should prioritize **broadband expansion** and **digital upskilling programs** for rural districts, enabling a more even distribution of resilience capabilities. Moreover, fostering **innovation networks** between government, academia, and industry can help overcome resource limitations, especially for smaller enterprises.

4.3 Regional Relevance

The findings provide **region-specific evidence** from Eastern Indonesia, an area underrepresented in digital transformation research. The mixed-methods approach captures both statistical trends and cultural nuances, making the study relevant for policymakers seeking localized strategies for post-pandemic recovery.

Conclusion

This study investigated the role of Digital Leadership in fostering Organizational Resilience among organizations in South Sulawesi during the post-pandemic era, incorporating the mediating effects of Digital Maturity and Innovation Climate, as well as the moderating role of Environmental

Uncertainty. Using a mixed-methods approach, quantitative analysis via PLS-SEM confirmed that Digital Leadership exerts a significant positive influence on resilience both directly and indirectly through digital capabilities and cultural enablers. Qualitative insights further revealed that leadership effectiveness in this domain is contingent on infrastructure readiness, workforce digital literacy, and the presence of collaborative networks.

The findings contribute to theory by validating dynamic capabilities and socio-technical systems perspectives in a regional context that has been underrepresented in digital transformation research. They also demonstrate that the benefits of Digital Leadership are amplified in environments characterized by high uncertainty, supporting a contingency-based view of leadership effectiveness.

Practically, the study underscores the need for integrated leadership development programs focused on data-driven decision-making, agile governance, and fostering innovation-friendly cultures. Policymakers in South Sulawesi should prioritize broadband infrastructure expansion and targeted digital upskilling to ensure that rural and smaller enterprises can access the same resilience-building opportunities as their urban counterparts.

In conclusion, building resilience in the post-pandemic era requires more than technology adoption—it demands visionary digital leadership that aligns technological capabilities with human capital, cultural values, and collaborative networks. By embedding these principles, organizations in South Sulawesi and similar regions can not only withstand future disruptions but also thrive in the evolving digital economy..

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