

# Agile Leadership in Digital-Based Healthcare Services: A Study of Health Service Delivery at Community Health Centers in Lamongan Regency

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## Abstract

*This study aims to analyze the implementation of agile leadership in digital-based health service delivery at community health centers (Puskesmas) in Lamongan Regency, Indonesia. The rapid advancement of information technology, coupled with low work ethic, weak team collaboration, and resistance to digital innovation within Puskesmas, constitutes major challenges undermining public service effectiveness. Employing a qualitative approach, data were collected through in-depth interviews, observation, and documentation, and analyzed using the interactive model of Miles and Huberman.*

*The findings reveal that digitalization—manifested through electronic medical records, digital queuing systems, and telemedicine—has improved service efficiency and accessibility. However, its effectiveness remains constrained by inadequate technological infrastructure and limited digital competencies among healthcare personnel. Within the framework of agile leadership, Puskesmas leaders who exhibit context-setting agility are able to align strategic direction with technological dynamics; stakeholder agility is reflected in cross-sectoral collaboration; creative agility is evidenced by innovative responses to resource constraints; and self-leadership agility emerges in proactive team adaptation and internal change management.*

*Nonetheless, the digital transformation has yet to reach full optimization due to structural and cultural barriers within the organization. Therefore, strengthening technical and managerial capacities, enhancing digital literacy, and fostering a collaborative bureaucratic ecosystem are imperative prerequisites for accelerating adaptive and responsive digital health services under agile leadership.*

**Keywords:** Agile Leadership, Digitalization, Health Services, Community Health Centers, Digital Transformation, Public Administration

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## 1. INTRODUCTION

In the dynamics of modern organizations, leadership has undergone a significant transformation. Leaders are no longer merely directors but act as catalysts for change and strategic drivers of organizational success. This paradigm shift is particularly evident in the public sector, where bureaucratic complexity, environmental uncertainty, and heightened public expectations demand leadership that is both structurally strong and contextually adaptive.

Classical literature portrays the ideal leader as someone with a combination of mental, physical, and moral qualities. Terry (1960) characterizes such a leader as emotionally stable, communicative, and capable of teaching and analysis—traits that form the foundation for a productive organizational culture. However, in the contemporary context, leadership effectiveness is not solely determined by technical or intellectual capacity but also by ethical alignment with universal values such as integrity, responsibility, and empathy, which are vital to building public trust.

Susanto and Koesnadi (2003) describe leaders as individuals mandated to guide organizations toward their collective goals through effective mechanisms. Kartini Kartono (2015) further emphasizes leadership as the power to influence a group toward efficient goal attainment. From this perspective, leadership transcends formal titles and is better understood as an evolving social process.

Theories of leadership have shifted from structural approaches to more contextual and situational frameworks. Flippow (1987) highlights leadership styles that harmonize organizational objectives with individual needs. Kellerman (2018) sees leaders as decision-makers who inspire and direct through a clear

vision. Stoner (2021) reinforces this by framing leadership as the process of influencing and guiding individuals to collaborate effectively. These perspectives underscore the growing need for adaptive and reflective leadership amid today's complex and volatile environment.

Public sector leadership possesses distinct characteristics compared to its private counterpart. Van Wart (2003) underscores the importance of navigating bureaucratic systems, complex regulatory frameworks, and the dual demands of accountability and transparency. Public leaders are thus required to engage in institutional navigation, inter-sectoral collaboration, and innovation within regulatory constraints.

The challenges intensify as the public sector enters the digital era and faces technological disruption. Citizens now expect services that are fast, affordable, transparent, and responsive. In this context, digitalization becomes not only a technical tool but also a paradigm shift in public service delivery. Nonetheless, digital transformation often struggles against weak institutional capacity, organizational resistance, and limited digital literacy on both the supply and demand sides.

This phenomenon is particularly prominent in primary healthcare systems such as community health centers (Puskesmas), which serve as the frontline of Indonesia's national health infrastructure. These centers face substantial challenges in integrating digital technologies into service processes. The issues encountered are not solely technical—involving infrastructure and equipment—but also managerial, including limited human resource competencies, poor internal communication, and insufficient leadership to direct change.

Within this framework, the concept of agile leadership becomes increasingly relevant. Agile leadership emphasizes flexibility, adaptability, collaboration, and swift responsiveness to change. Joiner and Josephs (2007) define agile leadership as the ability to make wise and effective decisions in complex and dynamic environments. Leaders with agile characteristics must abandon traditional hierarchical models and instead adopt collaborative and values-based leadership approaches.

Agile leadership requires four core competencies: context-setting agility, stakeholder agility, creative agility, and self-leadership agility (Khamila et al., 2023). Context-setting agility refers to a leader's ability to align vision and strategy with external dynamics. Stakeholder agility involves building cross-sectoral partnerships. Creative agility reflects the ability to innovate despite resource limitations, while self-leadership agility focuses on self-awareness and a commitment to continuous learning.

Evidence from Puskesmas in Lamongan Regency shows that digitalization initiatives—such as electronic medical records and digital queuing systems—have improved service efficiency. However, the success of these initiatives hinges on the quality of institutional leadership. Heads of Puskesmas are expected to go beyond administrative functions and act as transformational leaders who can motivate, inspire, and effectively manage change.

According to Law No. 25 of 2009 on Public Services and Ministry of Health Regulation No. 75 of 2014 on Puskesmas, the responsibilities of a Puskesmas head include planning, implementing, and evaluating services. Within this mandate, leadership plays a pivotal role in developing healthcare systems that are not only technologically adaptive but also human-centered and inclusive. The primary challenge lies in fostering agile leadership within constrained bureaucratic structures and limited resources.

This study arises from an urgent need to explore how agile leadership can be operationalized in digital-based health services at the community level. By taking Lamongan Regency as a case study, this research contributes theoretically to the public leadership literature and offers practical insights for improving healthcare service quality in the digital age.

## 2. LITERATURE REVIEW

In the face of dynamic organizational environments marked by rapid technological shifts and increasing complexity, leadership and public service delivery theories have evolved significantly. Previous studies underscore that the success of digital transformation in the public sector—particularly in health services—is critically shaped by leadership that is adaptive, collaborative, and innovative. One of the increasingly relevant concepts in this context is agile leadership, which emphasizes mental agility, the ability to manage complexity, and rapid responsiveness to change.

AlNuaimi et al. (2022) proposed a conceptual model linking digital transformational leadership, organizational agility, and digital strategy as a moderating factor in driving digital transformation. Their

findings confirmed that digital transformational leadership significantly influences organizational agility, which in turn facilitates digital transformation in public sector institutions. This reinforces the argument that strategic and tactical leadership transformation is essential in enhancing organizational capability amidst fast-paced technological change.

Meanwhile, Ahmad et al. (2020) examined how agile leadership was applied by school principals in implementing "teach from home" policies during the COVID-19 pandemic. The study, using a qualitative approach, demonstrated leadership that was responsive, participatory, and adaptive in crisis conditions. Their findings highlight the critical role of agile leadership in navigating VUCA (Volatility, Uncertainty, Complexity, Ambiguity) environments—conditions that closely mirror those found in public healthcare services.

From a public organization theory perspective, Van Wart (2003) argued that leadership in the public sector entails unique challenges, such as bureaucratic rigidity and hierarchical decision-making. Public leaders thus require competencies beyond those of the private sector, including inter-sectoral collaboration, political acumen, and innovation within regulatory constraints. Agile leadership addresses these challenges by enabling leaders to overcome structural barriers and initiate change through participatory and value-driven approaches.

Joiner and Josephs (2007) outlined four core competencies of agile leadership: (1) context-setting agility, or the ability to align organizational vision with external dynamics; (2) stakeholder agility, the skill to establish strategic relationships across sectors; (3) creative agility, the capacity to innovate under complex constraints; and (4) self-leadership agility, which involves self-awareness and continuous learning to manage change.

In public service contexts, Parasuraman et al.'s SERVQUAL model serves as a key analytical framework for evaluating service quality across five dimensions: reliability, responsiveness, assurance, empathy, and tangibles. These dimensions are essential for assessing the effectiveness of digital health services. For digitalization to yield tangible benefits, leaders must ensure system reliability, accelerate service responsiveness, safeguard data privacy (assurance), sustain human-centered care (empathy), and provide adequate infrastructure (tangibles). Agile leaders must simultaneously manage and enhance all five service quality dimensions.

Digital health services are also intrinsically linked to the broader concept of electronic government (e-government), defined by Heeks (2006) as the use of information technology to enhance efficiency, transparency, and participation in governance. Within the health sector, this includes electronic medical records, telemedicine, digital queueing systems, and mobile service applications. However, successful e-government implementation depends on infrastructure readiness, human resource competencies, and institutional support. This aligns with Janssen et al. (2012), who argued that effective e-government requires synergy among technological, organizational, and institutional elements.

Leadership in healthcare services must also be grounded in principles of good governance—accountability, transparency, participation, efficiency, and responsiveness. Agile public leaders are expected to translate these principles into policy and practice that align with citizens' evolving expectations. Thus, digital transformation should not be viewed merely as technological adoption, but as a shift in organizational values and culture.

Contemporary leadership theories further affirm the relevance of transformational leadership in conjunction with agile approaches. Bass and Avolio (1994) emphasized the transformational leader's role in vision-building, inspiring change, and empowering individuals through intrinsic motivation and strategic communication. When combined with agile principles, transformational leadership provides a robust foundation for fostering adaptive, innovative, and service-oriented public organizations.

Bennis and Nanus' (1985) VUCA framework is also highly applicable for framing the challenges of digital health services. In a world shaped by uncertainty and ambiguity, public leaders must demonstrate flexibility, risk awareness, and rapid decision-making. Within this framework, agile leadership is not merely a methodological option, but a structural necessity for managing public service delivery in the digital era.

In summary, the literature indicates that successful digital transformation in health services—particularly at the community health center level—is inseparable from agile leadership. Leaders with cognitive and

operational agility are uniquely positioned to bridge the gap between technological innovation and citizen needs, ensuring that digital health transformation leads to more inclusive, efficient, and sustainable service delivery.

### 3. RESEARCH METHODS

#### 3.1. Type and Approach of the Study

This study, titled *Agile Leadership in Digital-Based Health Services*, employs a qualitative descriptive approach with historical characteristics. This approach was chosen to allow for in-depth interpretation of complex social dynamics, particularly in the context of leadership implementation in public health service settings. It enables the flexible interpretation of social reality and facilitates the inductive development of theoretical insights (Babie, 2004).

The analysis is descriptive and focuses on the meaning of the observed phenomena in the field. Rather than aiming for statistical generalization, the study seeks to produce contextual, reflective, and interpretative findings on the practice of agile leadership within digitized health services.

#### 3.2. Focus and Locus of the Study

The study centers on the forms, processes, and dynamics of implementing agile leadership in digital health services. It investigates how heads of community health centers (Puskesmas), as public leaders, apply agile leadership principles to enhance the effectiveness and efficiency of service delivery through digital technologies.

The research was conducted at two Puskesmas—Payaman and Kalitengah—located in Lamongan Regency, East Java. These sites were selected purposively, based on their varying levels of digital maturity, social dynamics, and leadership practices. Both locations demonstrate a relatively high intensity of digital intervention in service delivery and have organizational structures that enable the practical observation of agile leadership.

#### 3.3. Data Collection Techniques

Data were collected through three main techniques:

3.3.1. **Observation:** Non-participant observation was conducted to examine service processes, team interactions, use of digital systems (e.g., electronic queuing, e-medical records), and the leadership behavior of Puskesmas heads.

3.3.2. **In-depth Interviews:** Interviews were conducted with key informants, including heads of Puskesmas, health workers, administrative staff, and service users. Interview guidelines were developed based on the theoretical framework of agile leadership (Joiner & Josephs, 2007) and service quality dimensions (SERVQUAL).

3.3.3. **Document Analysis:** Institutional documents such as organizational structures, internal policies, digitalization reports, and public service archives were reviewed.

Prior to fieldwork, the researcher prepared a comprehensive list of data requirements and developed interview guides and observation sheets based on the theoretical framework.

#### 3.4. Data Sources and Types

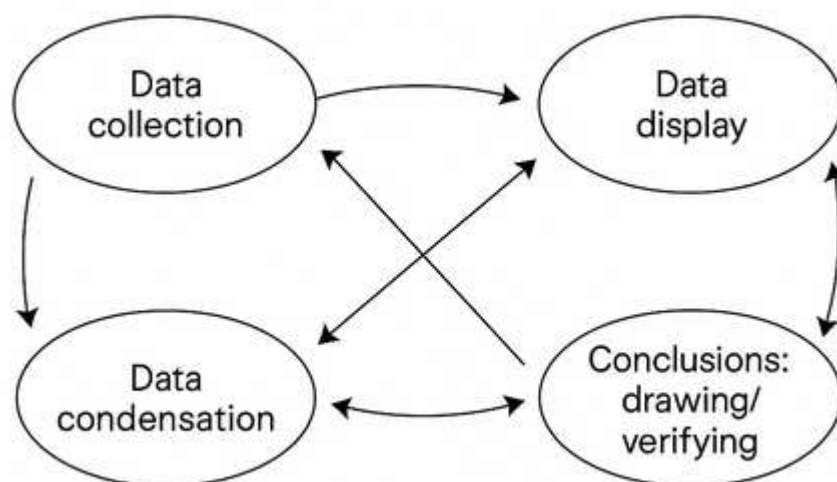
The study utilized:

- **Primary Data**, obtained directly through interactions with key informants via interviews and observation.
- **Secondary Data**, acquired through literature reviews, institutional reports, news media, and regulatory documents from local and central government agencies.

#### 3.5. Data Analysis Technique

Data were analyzed using the interactive model of Miles and Huberman, comprising three core components:

1. **Data Reduction:** The process of selecting, simplifying, and transforming raw data into meaningful information aligned with the research focus.
2. **Data Display:** Organized in thematic narratives, matrices, and categorical tables based on agile leadership dimensions and service quality metrics.
3. **Conclusion Drawing and Verification:** Conducted iteratively throughout the data collection process to identify patterns and formulate theoretical propositions.



**Figure 3.1. Components of the Interactive Model of Data Analysis**

This figure illustrates the cyclical and dynamic nature of the analytical process, in which data collection, condensation, display, and conclusion-drawing are interrelated and non-linear.

### 3.6. Data Validity and Reliability

To ensure the credibility of findings, the study employed triangulation techniques:

- **Source Triangulation:** Comparing data across different informants.
  - **Method Triangulation:** Comparing findings from interviews, observations, and documents.
  - **Time Triangulation:** Repeating interviews at different times to confirm information consistency.
- Member checking and peer debriefing were also conducted to validate and strengthen the objectivity of the findings.

### 3.7. Research Instrument

The primary research instrument was the researcher (human instrument), who directly interacted with research subjects. The researcher's active engagement enabled a deep understanding of the local social and cultural context. Supporting instruments included interview guides, observation sheets, and coding templates, which structured the analytical process and enhanced data traceability.

### 3.8. Conceptual Framework

This study adopts the four pillars of agile leadership proposed by Joiner & Josephs (2007):

1. **Context-Setting Agility:** The ability to align organizational strategies with external dynamics.
2. **Stakeholder Agility:** The capacity to foster collaborative relationships with internal and external actors.
3. **Creative Agility:** The ability to explore innovative solutions to complex problems.
4. **Self-Leadership Agility:** The capacity to lead oneself and model adaptive behavior in the face of change.

The SERVQUAL model (Parasuraman et al.) was also applied to evaluate the impact of leadership on service quality, covering five dimensions: tangibles, reliability, responsiveness, assurance, and empathy. These frameworks served as analytical tools to assess how agile leadership influences the digital transformation of health services.

### 3.9. Research Ethics

The study adhered to ethical research principles, including:

- Obtaining informed consent from all participants.
- Maintaining confidentiality and protecting personal data.
- Ensuring data integrity and avoiding manipulation.
- Respecting local norms and social values throughout the research process.

### 3.10. Study Limitations

As an exploratory case study confined to two Puskesmas, the findings are not intended for broad generalization. Nevertheless, the depth of analysis and the strength of the theoretical framework offer valuable contributions to the development of public leadership models in digital service contexts.

## 4. RESULTS AND DISCUSSION

This study aimed to explore the implementation of agile leadership in digital-based health services at community health centers (Puskesmas), using Lamongan Regency as a case study. Situated within the metropolitan Gerbangkertosusila region and characterized by diverse geographical and demographic profiles, Lamongan represents a significant case for examining public leadership dynamics in semi-rural areas undergoing digital transformation.

Administratively, Lamongan Regency comprises 27 subdistricts, 462 villages, and 12 urban wards. Spatially, it is projected by the East Java Provincial Government to become a hub for industry- and agriculture-based economic development. The Bengawan Solo River, which bisects the region, has a direct impact on service distribution, including access to healthcare. This context necessitates leadership that is responsive to geographical, social, and digital challenges.

Field data from the two research sites—Payaman and Kalitengah Puskesmas—revealed variations in the application of agile leadership principles. The head of Payaman Puskesmas demonstrated a high degree of *context-setting agility*, evidenced by the alignment of digital service initiatives with patient needs, such as implementing digital queuing and online referral systems. In contrast, the head of Kalitengah Puskesmas exhibited strong *stakeholder agility*, successfully fostering collaboration among healthcare staff, village officials, and local community leaders to expand community-based digital services.

These findings reinforce Joiner & Josephs' (2007) theoretical framework, which emphasizes cognitive flexibility and social competence as essential components in navigating VUCA environments (Volatility, Uncertainty, Complexity, Ambiguity). In the Puskesmas context, effective agile leadership transcends technological orientation; it requires the ability to build trust, enable cross-actor communication, and drive innovative problem-solving.

The analysis of *creative agility* illustrates that leaders with institutional autonomy are more capable of facilitating internal innovation, such as customizing e-medical record systems to align with the capacities of local human resources. However, low levels of digital literacy among both the community and administrative personnel present significant barriers to smooth implementation. This supports the findings of AlNuaimi et al. (2022), who argue that organizational capacity and digital readiness act as mediating variables between leadership style and successful digital transformation in the public sector.

Overall, the application of agile leadership significantly contributes to improving the quality of digital health services. This is reflected in SERVQUAL dimensions, particularly *responsiveness* and *reliability*, as service speed increases due to digital tools and patient data accuracy improves through electronic systems. Nonetheless, the dimensions of *empathy* and *assurance* remain underdeveloped, especially regarding data security and public trust in app-based services.

The findings suggest that digitalization alone does not guarantee service improvement without an adaptive, participatory, and context-sensitive leadership approach. Agile leadership emerges as a strategic means of bridging the gap between technological potential, organizational realities, and community needs.

Furthermore, the success of agile leadership is influenced by organizational culture and regional policy support. Local government policies that permit innovation flexibility and offer performance-based incentives were found to enhance leadership motivation at the operational level.

Therefore, this study contributes to the theoretical discourse by affirming that agile leadership in the public sector is not only relevant during crises but also instrumental in managing long-term structural and cultural transformations within public institutions.

## 5. CONCLUSION

The implementation of digital-based healthcare services in Lamongan Regency demonstrates that the successful integration of digital technologies into public service systems is strongly influenced by the

effectiveness of leadership. In this context, agile leadership emerges as a relevant leadership framework to address the challenges of a complex, uncertain, and dynamic environment, as exemplified in the transformation processes at the community health center (Puskesmas) level.

Leadership in Lamongan's healthcare sector—both at the structural level (Health Office) and operational level (Puskesmas)—is required to possess a clear vision, strong commitment, and innovative capacity to respond to digital technological developments. A vision oriented toward healthcare digitalization, such as the implementation of electronic medical records, online queuing systems, and telemedicine services, has served as a foundational step in promoting service efficiency, accountability, and accessibility.

However, such a vision will be ineffectual without the internalization of values and active participation from all organizational elements. Agile leadership must foster a sense of ownership among health personnel through open communication, involvement in innovation processes, and continuous capacity building. In this regard, the dimensions of *stakeholder agility* and *self-leadership agility* are essential to creating a collaborative, adaptive, and learning-oriented organizational ecosystem.

The findings reveal that the success of digitalization implementation is influenced not only by technological infrastructure and regulatory readiness but also by the leader's ability to manage organizational cultural change. This change entails a shift from administrative bureaucracy toward data- and technology-driven service orientation, which demands a transformation in mindset, work patterns, and inter-actor relationships within the health system.

The application of agile leadership has proven to accelerate this transformation process, particularly through leadership strategies that are flexible, contextually reflective, and responsive to user needs. Puskesmas leaders with a high degree of agility are capable of initiating service innovations aligned with local resource capacity and creating cross-sector collaboration mechanisms to broaden the impact of digital innovation.

These findings reinforce the relevance of Joiner and Josephs' (2007) theory on the four pillars of agile leadership—context-setting agility, stakeholder agility, creative agility, and self-leadership agility—as an applicable conceptual framework for public sector leadership. Moreover, the integration of SERVQUAL theory highlights that public service quality dimensions can be significantly enhanced through leadership that aligns technological innovation with community needs and expectations.

In conclusion, the digitalization of healthcare services at the local level cannot be separated from transformative and contextual leadership. Agile leadership functions not merely as a managerial tool, but as a strategic approach that emphasizes collaboration, sustainability, and organizational empowerment. As such, this leadership model can serve as a reference for designing policies and strategic interventions aimed at strengthening the institutional capacity of public services in the face of ongoing digital disruption.

## **6. Recommendations**

Based on the findings and conclusions of this study on the implementation of agile leadership in digital-based healthcare services in Lamongan Regency, the following recommendations are proposed to contribute to practical improvements, theoretical development, and policy formulation:

### **1. Strengthening Agile Leadership Capacity at the Puskesmas Level**

Local governments should implement continuous training programs on agile leadership for heads of Puskesmas and healthcare personnel. These programs should not only focus on digital technology skills but also emphasize adaptive capacity, collaborative communication, and context-sensitive strategic thinking. This approach will enhance *context-setting agility* and *creative agility*, both of which are critical in managing the complexities of public service delivery.

### **2. Developing Cross-Sector Collaboration Models**

Systematic coordination mechanisms are needed between Puskesmas, the Health Office, the Communication and Informatics Agency, private sector actors, and local communities to support the development and management of digital service systems. This collaboration can be institutionalized through integrative forums and inter-agency agreements that embed *stakeholder agility* into the governance of digital healthcare delivery.

### 3. Investing in Infrastructure and Digital Literacy

Local governments must increase budget allocations for information technology infrastructure in Puskesmas, including internet connectivity, hardware, and data security systems. Additionally, digital literacy programs should be implemented for both healthcare staff and service users, tailored to local needs. These efforts will accelerate equitable adoption of digitalization and reduce resistance to change.

### 4. Mainstreaming Agile Leadership in Regional Policy

Agile leadership should be integrated into local policy documents, such as the Strategic Plan of the Health Office, the Regional Mid-Term Development Plan (RPJMD), and technical standard operating procedures (SOPs). This ensures that agile leadership is not merely an individual practice but is institutionalized within the public service management system.

### 5. Theoretical Implications and Recommendations for Further Research

Theoretically, this study provides a foundation for developing a conceptual model of agile leadership in digital public service contexts. Future research is encouraged to broaden the scope of case studies and explore the relationship between agile leadership and public service outcomes, such as user satisfaction, operational efficiency, and organizational innovation.

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