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Analysis of Organizational Design Effectiveness in Enhancing Hospital Performance and Adaptability: A Systematic Review

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Abstract: *The complex dynamics of the healthcare environment require hospitals to have an effective organizational design to achieve superior performance and high adaptability. However, integrated evidence on which organizational design elements are most effective and how they relate to performance outcomes and adaptability remains fragmented. To review and synthesize recent empirical evidence on the effectiveness of various organizational designs (e.g., matrix, flat, or network structures) in improving the operational, financial, and clinical performance, as well as the adaptability of hospitals in the face of change. This systematic review will be conducted following the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines. A systematic literature search will be performed in electronic databases such as PubMed, Scopus, Web of Science, and ProQuest. Observational and experimental studies published in the last 10 years that investigate the relationship between organizational design and hospital performance and/or adaptability will be included. The quality of the studies will be assessed using appropriate critical appraisal tools. A narrative analysis will be conducted to synthesize the findings, and a meta-analysis will be considered if the data permits. (This section will be completed after the review. Example: "Out of 2,350 identified studies, 35 met the inclusion criteria. The synthesis of results indicates that differentiated-yet-integrated designs, as well as lean and decentralized structures, are consistently associated with improved clinical performance and operational efficiency. Meanwhile, a collaborative organizational culture and strong network structures were identified as key factors for enhancing adaptability.") The findings of this review are expected to provide an evidence-based guide for hospital managers and policymakers in redesigning organizational structures. Consequently, adopting proven-effective organizational design elements can be a critical strategy for building hospitals that are not only high-performing but also resilient and adaptive for the future.*

Keywords: *Organizational Design, Hospital Performance, Adaptability, Resilience, Systematic Review, PRISMA.*

Introduction

External environmental changes such as increasing complexity in healthcare services, advances in information technology, and post-pandemic policy pressures have compelled hospitals to continuously adapt. As complex organizations, hospitals operate within systems characterized by high interdependence among units and professions. Therefore, organizational design plays a strategic role in determining how effectively hospitals can improve performance and maintain adaptability to change (Atighechian et al., 2024).

Conceptually, organizational design regulates how human resources, technology, and service processes are structured to achieve strategic objectives. The main elements of organizational design include hierarchical structure, coordination mechanisms, communication patterns, and the level of centralization in decision-making (De Regge et al., 2020). Studies have shown that overly rigid organizational structures hinder innovation and

responsiveness to emergencies, while more decentralized structures promote flexibility and faster decision-making at the operational level (Prætorius et al., 2024).

In the hospital context, an effective organizational design must integrate clinical and administrative functions. Modern hospital governance models emphasize shared accountability between management and medical professionals to ensure quality and patient safety (Jalilvand et al., 2024). Recent research confirms that collaborative and transparent governance systems enhance cross-disciplinary coordination and reduce the risk of inter-unit conflict (Rigotti et al., 2022).

Global experience during the COVID-19 pandemic highlighted the importance of adaptive organizational design. Hospitals with flexible structures, strong cross-unit communication mechanisms, and decentralized responsibility demonstrated better capability in responding to patient surges, service reorganization, and human resource management (Huang et al., 2024). Conversely, organizations with rigid hierarchical systems experienced delays in decision-making and logistical coordination (Atighechian et al., 2024).

Beyond structural aspects, the advancement of digital transformation in healthcare has driven the need for organizational designs that can effectively integrate technology. The implementation of hospital information systems, telemedicine, and electronic health records can only be optimized when accompanied by process restructuring and managerial capacity strengthening (Mauro et al., 2024). Without organizational design adaptation, technology adoption often fails to significantly improve performance due to coordination barriers and employee resistance (Mastrangelo & Gittler, 2025).

Furthermore, the application of team-based multidisciplinary design and competency-based management has been proven to positively influence interprofessional collaboration and accelerate clinical decision-making (Purwadhi et al., 2025). Team structures enable direct communication, clear role distribution, and faster organizational learning. This model supports the principle of value-based care, where service success is measured not only by cost efficiency but also by patient health outcomes (De Regge et al., 2020).

Given the strategic role of organizational design in determining hospital competitiveness, an evidence-based management approach is needed to identify the most effective design models across different contexts. A systematic review serves as an appropriate method to synthesize empirical research findings from various countries and health systems. Using the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) framework, this study aims to identify, evaluate, and analyze empirical evidence related to the effectiveness of organizational design in improving hospital performance and adaptability over the past decade.

The results of this study are expected to contribute theoretically to the development of dynamic and collaborative hospital organizational design models. Practically, the findings may serve as a foundation for policymakers and hospital managers in designing structures, systems, and organizational cultures capable of adapting to environmental changes, health crises, and future technological advancements (Atighechian et al., 2024; Jalilvand et al., 2024; Mastrangelo & Gittler, 2025).

Methodology

Research Approach

This study employs a *Systematic Literature Review* (SLR) approach, following the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines to ensure transparency, accuracy, and replicability of results. This approach was chosen because it enables researchers to identify, evaluate, and synthesize relevant empirical studies on the effectiveness of organizational design in improving hospital performance and adaptability during the period 2013–2024. SLR provides strong scientific contributions as it focuses on validated evidence rather than opinions or single-case outcomes (Moher et al., 2015).

Research Questions

This study is designed to answer two main research questions:

1. How effective are different organizational design models in improving hospital performance?
2. What are the characteristics of organizational designs that enhance hospital adaptability to environmental changes, including health crises and digital transformation?

Data Sources and Search Strategy

The literature search was conducted systematically across four major academic databases: Scopus, PubMed, ScienceDirect, and Google Scholar. The publication range was limited to 2015–2025 to ensure the relevance of findings to current conditions.

The search keywords were constructed using Boolean logic as follows: ("organizational design" OR "organizational structure" OR "organizational model") AND ("hospital performance" OR "healthcare performance" OR "service quality") AND ("adaptability" OR "resilience" OR "organizational flexibility").

In addition to the main search, a *snowballing technique* was applied by reviewing the reference lists of relevant articles to identify additional literature that met the inclusion criteria.

Inclusion and Exclusion Criteria

To maintain the relevance and quality of data, the inclusion criteria were as follows:

1. Articles published in English or Indonesian in reputable journals (indexed in Scopus, WoS, or Sinta 1–2).
2. Empirical research (quantitative, qualitative, or mixed-method) or systematic reviews related to hospital organizational design.
3. Focus on the relationship between organizational design and hospital performance, adaptability, or organizational transformation.
4. Published between 2015 and 2025.

The exclusion criteria included:

1. Non-scientific articles (policy reports, editorials, or opinion pieces).
2. Studies that did not involve the hospital context.
3. Articles with incomplete data or unclear methodology.

Article Selection Process (PRISMA Flow)

The literature selection process followed the four main stages of the PRISMA 2020 model (Page et al., 2021):

1. **Identification** – A total of 482 articles were's identified through the initial search in the four databases.
2. **Screening** – After removing duplicates (n = 112), 370 articles remained for title and abstract screening.
3. **Eligibility** – Eighty-five articles were fully reviewed to ensure they met the inclusion criteria. Of these, 48 were excluded because they did not focus on the hospital context or did not measure performance and adaptability.
4. **Included** – The final stage yielded 20 articles that met all criteria and were included in the final analysis.

The PRISMA flow diagram illustrates the sequence of these stages, from identification to the inclusion of the final studies.

Data Extraction and Analysis Process

From the 37 selected articles, data were systematically extracted using a *data extraction sheet*. The extracted information included:

- Author(s) and year of publication,
- Research objectives and context,
- Type of organizational design examined (e.g., functional structure, matrix, competency-based team, decentralization),
- Indicators of performance and adaptability measured,
- Key findings and managerial implications.

Subsequently, a *thematic synthesis* analysis was conducted to identify key patterns and themes across the studies. This process consisted of three stages:

1. **Open coding** of the main findings from each study,
2. **Grouping of codes** into conceptual themes such as "flexible structure," "adaptive governance," and "digital integration,"
3. **Thematic synthesis**, linking the themes to explain causal relationships between organizational design, hospital performance, and adaptability.

Result and Discussion

General Characteristics of the Studies

The literature selection process using the PRISMA model yielded 20 relevant articles published between 2015 and 2025, covering diverse geographical contexts — including Southeast Asia, Europe, and the Middle East. These studies examined the relationships between organizational design, organizational resilience, hospital structure, organizational support, and adaptability to changes in healthcare systems.

Most of the studies employed descriptive quantitative and cross-sectional designs, while others utilized systematic reviews, grounded theory, or mixed-method approaches. The research focus was distributed across five main areas:

1. The influence of organizational structure on hospital performance.

2. Organizational adaptability and resilience in responding to crises and environmental changes.
3. Implementation of hospital information management systems (HIMS).
4. Organizational factors affecting healthcare workers' well-being.
5. Innovation in hospital design based on processes and information technology.

The diverse findings suggest that organizational design is not merely about hierarchy or formal structure but also encompasses cultural dynamics, collaboration, and adaptive capacity in facing global healthcare system uncertainties.

Effectiveness of Organizational Design on Hospital Performance

Organizational design plays a crucial role in shaping work patterns, communication, and managerial effectiveness. According to Sipayung et al. (2023), a mechanistic organizational design—with high formalization yet clear division of labor—can reduce burnout and enhance nurse performance efficiency. Although overly rigid structures may hinder creativity, in hospital contexts that demand procedural accuracy, this approach helps maintain operational stability.

In a study using the McKinsey 7S Framework, Chmielewska et al. (2022) found that the social aspects of an organization, such as leadership style and employee motivation, significantly affect organizational performance. However, the variables "staff," "skills," and "style" scored relatively low, indicating that while systems and structures are important, human elements and work culture remain the primary drivers of hospital performance.

Additionally, Durojaiye et al. (2025) emphasized the importance of *process-oriented hospital design* (POHD) in improving organizational performance. This approach restructures hospitals based on patient care processes rather than traditional departmental divisions. Using the *Balanced Scorecard* (BSC) framework, the study demonstrated that hospitals adopting process-based designs achieved significant improvements across the four BSC dimensions: financial, customer, internal processes, and learning and growth. POHD effectively reduces service fragmentation, enhances inter-unit coordination, and accelerates decision-making.

Organizational Adaptability and Resilience in Healthcare Contexts

Organizational adaptability is closely linked to the ability to endure and transform during crises. The COVID-19 pandemic provided empirical evidence showing that hospitals with adaptive organizational designs were better able to sustain services and maintain workforce well-being.

Kaczmarski et al. (2023) found that hospital organizational resilience played a crucial role in maintaining healthcare workers' well-being during the pandemic. Key resilience factors included collaborative leadership, crisis training, and integrated psychosocial support within the organizational structure. The study also highlighted the importance of government intervention and hospital preparedness funding to strengthen the adaptive capacity of health systems.

Meanwhile, Lyng et al. (2022) identified ten key resilience capacities in healthcare systems, including structure, learning, coordination, leadership, risk awareness, engagement, competence, and communication. These capacities are interdependent and cannot be strengthened in isolation. An effective organizational design must balance structure and collaboration to ensure optimal resilience functioning.

Complementing these perspectives, Ignatowicz et al. (2021) discussed the challenges of measuring hospital organizational resilience. Reviewing 35 empirical studies, they found no consensus on appropriate indicators for assessing organizational resilience. Some approaches focused on responses to shocks, while others evaluated preparedness before crises. The study emphasized that a resilient organizational design must include adaptive evaluation systems aligned with hospital context and resources.

Organizational Support, Leadership, and Healthcare Workforce Well-being

Hospital organizational effectiveness is also strongly influenced by internal support mechanisms for healthcare workers. Effendi et al. (2024) found that organizational support, individual resilience, and job satisfaction were directly related to lower turnover intention among nurses. This finding suggests that successful organizational design should be measured not only through service output but also through employees' psychological well-being and motivation.

El Riz et al. (2024) added a social dimension through a study on workplace violence against nurses in emergency departments. The results showed that personal resilience, strengthened through communication training and organizational support, reduced turnover intention by up to fourfold. Thus, an organizational design that fosters a *psychosocial safety climate* is key to retaining high-quality healthcare personnel.

In a broader context, Alsaqqa (2023) reviewed organizational characteristics and factors in healthcare management through a scoping review of 15 studies. The research revealed that variables such as organizational culture, patient trust, and strategic-operational factors are primary drivers of hospital management success. However, the study also exposed a gap in current management practices, which often focus on technical aspects while neglecting social and cultural organizational factors.

Organizational Design, Information, and Decision-Making

One significant finding from the literature review is the relationship between organizational design and information processing efficiency. Windari et al. (2019) highlighted that the success of Hospital Information Management System (HIMS) implementation is highly determined by organizational factors such as leadership, work culture, regular evaluation, and infrastructure support.

Similarly, Winasti et al. (2023) applied *information entropy theory* to analyze hospital organizational structures in the Netherlands. They found that *positional entropy* (uncertainty in job positioning) and *task allocation entropy* (uncertainty in task distribution) can be used to evaluate the effectiveness of organizational design. The lower the entropy, the more efficient the interdepartmental coordination and decision-making processes. This study

introduced a novel quantitative approach to assessing hospital organizational structure effectiveness.

Both studies underline the importance of integrated information systems and communication mechanisms as essential components of adaptive and efficient organizational design.

Innovation, Technology, and Organizational Learning

Digital transformation in healthcare systems requires hospitals to develop organizational designs that support innovation and continuous learning. Ekasari et al. (2024) demonstrated that adopting digital management systems and technologies enhances hospital business performance and operational efficiency. However, the success of such transformation depends on human resource readiness, technology training, and long-term investment in digital capacity building.

Lyng et al. (2022) further emphasized the importance of organizational learning as a core resilience capacity. Collective learning among professionals, cross-unit collaboration, and reflective evaluation of crisis experiences form part of an *adaptive learning system* that sustains hospital resilience in the future.

Synthesis of Findings and Integrative Model

Based on the synthesis of the reviewed literature, the effectiveness of hospital organizational design can be understood through three main pillars:

1. **Structural Pillar:** Includes hierarchy systems, task distribution, coordination procedures, and information systems (Windari et al., 2019; Winasti et al., 2023; Sipayung et al., 2023). Efficient structures reduce uncertainty and accelerate decision-making.
2. **Social and Leadership Pillar:** Involves organizational culture, leadership support, individual resilience, and interpersonal communication (Effendi et al., 2024; El Riz et al., 2024; Chmielewska et al., 2022). This pillar influences job motivation, satisfaction, and workforce stability.
3. **Adaptive and Innovative Pillar:** Relates to the organization's ability to adapt to crises and technological change (Kaczmarski et al., 2023; Lyng et al., 2022; Durojaiye et al., 2025). This pillar ensures service continuity through collective learning, cross-unit collaboration, and organizational flexibility.

The integrative model of these three pillars suggests that the ideal hospital organizational design must combine structural efficiency, strong social support, and adaptive mechanisms to respond to environmental changes. Hospitals that balance these three dimensions tend to exhibit superior performance, higher employee satisfaction, and stronger resilience against systemic disruptions such as pandemics or operational pressures.

Conclusion

Based on the results of a systematic review of twelve empirical and conceptual studies analyzed using the PRISMA 2020 approach, it can be concluded that the effectiveness of hospital organizational design has a significant impact on improving

organizational performance, operational efficiency, and adaptive capacity in response to changes in the healthcare environment.

Conceptually, the effectiveness of organizational design is influenced by three main dimensions:

1. **Structural Dimension**, which includes organizational governance, clear role distribution, and interdepartmental coordination systems. A decentralized structure with open communication channels has been proven to enhance efficiency and accelerate decision-making (Sipayung et al., 2023; Winasti et al., 2024).
2. **Social and Cultural Dimension**, encompassing leadership, collaborative work culture, and organizational support. These elements play a critical role in maintaining healthcare workers' motivation and well-being, which in turn improves both individual and organizational performance (Effendi et al., 2024; Chmielewska et al., 2022).
3. **Technological and Adaptive Dimension**, referring to the organization's ability to integrate digital innovations, data-driven processes, and patient-oriented design (process-oriented hospital design). This approach has been shown to enhance organizational performance across all *Balanced Scorecard* perspectives—financial, customer, internal processes, and learning and growth (Durojaiye et al., 2025; Ekasari et al., 2024).

Moreover, organizational resilience serves as the connecting factor between structural design and performance outcomes. Resilience capacities—including structure, learning, coordination, risk awareness, and leadership (Lyng et al., 2023; Ignatowicz et al., 2021)—have been proven to strengthen hospitals' ability to cope with crises such as the COVID-19 pandemic (Kaczmarski et al., 2023).

Therefore, hospitals with adaptive, collaborative, and technology-driven organizational designs are better equipped to maintain service continuity, enhance healthcare worker and patient satisfaction, and achieve competitive advantage in dynamic healthcare systems.

Recommendations

Based on the findings of this review, several strategic recommendations can be proposed for different stakeholders:

1. **For Hospital Management**
    a. Implement *process-oriented design* to enhance coordination and reduce inter-unit fragmentation.
    b. Strengthen internal communication systems and change management processes to support organizational adaptability toward technological and policy innovations.
    c. Integrate Hospital Information Management Systems (HIMS) with *data-driven decision-making* mechanisms to improve operational efficiency.
2. **For Policymakers (Regulators and the Ministry of Health)**
    a. Develop national standards for assessing hospital organizational resilience indicators, covering structural, social, and digital dimensions to evaluate healthcare service quality.

   b. Promote managerial and adaptive leadership training for hospital leaders to enable rapid and effective responses to crises and healthcare system changes.
3. **For Researchers and Academics**
   a. Conduct longitudinal and quantitative meta-analyses to assess the causal relationships between organizational design, resilience, and hospital performance outcomes.
   b. Develop integrative conceptual models combining the McKinsey 7-S Framework, Balanced Scorecard, and Resilience Capacities Framework for a comprehensive analysis of organizational design effectiveness.
4. **For Healthcare Professionals and Practitioners**
   a. Foster a collaborative culture grounded in continuous learning and innovation.
   b. Increase healthcare workers' participation in decision-making processes to ensure a more contextual and highly adaptive organizational design.

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