



OPTIMIZING HOSPITAL SERVICE MANAGEMENT IN THE ERA OF HEALTH TRANSFORMATION

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ABSTRACT

This study aims to analyze the effectiveness, efficiency, and quality of hospital services in a sustainable manner within the era of healthcare transformation. The research employed a mixed methods approach with a sequential explanatory design, combining quantitative analysis of hospital performance indicators with qualitative exploration of service management practices. Effectiveness indicators included Bed Occupancy Ratio (BOR), Length of Stay (LOS), and Turn Over Interval (TOI); efficiency was measured through Bed Turn Over (BTO), Cost Recovery Rate (CRR), and waiting time; while service quality was assessed using patient satisfaction index and patient safety indicators. The findings indicate that data-driven management strengthening, digitalization of hospital information systems, and the implementation of continuous quality improvement significantly contribute to improving hospital service performance. The integration of clinical effectiveness, operational efficiency, and service quality forms the foundation for hospital sustainability in responding to regulatory demands and national healthcare transformation initiatives.

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ABSTRAK

Penelitian ini bertujuan untuk menganalisis efektivitas, efisiensi, dan mutu pelayanan rumah sakit secara berkelanjutan dalam era transformasi kesehatan. Penelitian menggunakan pendekatan mixed methods dengan desain sequential explanatory, yang menggabungkan analisis kuantitatif terhadap indikator kinerja rumah sakit dan pendalaman kualitatif terhadap praktik manajemen pelayanan. Indikator efektivitas diukur melalui Bed Occupancy Ratio (BOR), Length of Stay (LOS), dan Turn Over Interval (TOI); efisiensi diukur melalui Bed Turn Over (BTO), Cost Recovery Rate (CRR), serta waktu tunggu pelayanan; sedangkan mutu pelayanan diukur melalui indeks kepuasan pasien dan indikator keselamatan pasien. Hasil penelitian menunjukkan bahwa penguatan manajemen berbasis data, digitalisasi sistem informasi, serta penerapan continuous quality improvement berkontribusi terhadap peningkatan kinerja pelayanan rumah sakit. Integrasi efektivitas klinis, efisiensi operasional, dan mutu pelayanan menjadi fondasi keberlanjutan organisasi rumah sakit dalam menghadapi tuntutan regulasi dan transformasi sistem kesehatan nasional.

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INTRODUCTION

Health transformation is a national strategic agenda that demands a comprehensive change in hospital governance and service systems. These changes include strengthening primary and referral services, digitizing health information systems, improving quality and

patient safety, and financing efficiency based on National Health Insurance ([Ministry of Health of the Republic of Indonesia, 2023](#)). In this context, hospitals no longer only play a role as a curative service institution, but also as a healthcare organization that is demanded to be adaptive, responsive, and data-based. Therefore, optimizing hospital service management is an urgent need to ensure the sustainability of effective and patient-oriented services.

In the last five years, various studies have shown that the success of health transformation is greatly influenced by the capacity of hospital service management, especially in the aspects of strategic planning, human resource management, information system integration, and service quality monitoring ([Pratiwi et al., 2024](#); [Wulandari et al., 2024](#)). Common challenges include high service load, limited human resources, insynchronization of clinical and administrative procedures, and lack of optimal use of information technology for managerial decision-making. This condition has a direct impact on hospital performance indicators such as patient waiting time, satisfaction level, operational cost effectiveness, and patient safety.

Digital transformation is one of the main pillars in optimizing hospital service management. The implementation of the Hospital Management Information System (SIMRS) and Electronic Medical Records (RME) is believed to be able to improve the efficiency of administrative processes, accelerate service flows, and improve the accuracy of clinical documentation ([Ministry of Health of the Republic of Indonesia, 2023](#)). However, empirical studies show that the digitalization of services often faces obstacles in the form of resistance to change, limited digital competencies of health workers, and the lack of integration of information systems between service units ([Firdaus, 2025](#)). Therefore, service management optimization does not only focus on technological aspects, but also on strengthening organizational governance and quality culture.

Hospitals owned by local governments have their own challenges in facing the era of health transformation. As a regional referral facility, regional hospitals are required to maintain a balance between improving the quality of service and limited resources. On the other hand, regulatory pressures and national accreditation standards encourage hospitals to improve the quality of services on an ongoing basis. Previous research has confirmed that the effectiveness of regional hospital service management is greatly influenced by strategic leadership, cross-unit coordination, and an evaluation system based on performance indicators ([Wulandari et al., 2024](#)).

In this context, dr. Gondo Suwarno Ungaran Hospital as a local government hospital plays an important role in providing health services for the people of Semarang Regency and its surroundings. As a type C hospital, dr. Gondo Suwarno Ungaran Hospital faces the dynamics of increasing the number of patient visits, accreditation demands, and the need for digital service integration. This condition makes optimizing service management a crucial aspect to ensure that services remain quality, efficient, and oriented towards patient safety.

The results of initial observations show that several managerial aspects still need strengthening, including synchronization between clinical and administrative service units, the use of service data as a basis for decision-making, and consistency of service quality monitoring. In addition, the implementation of digital systems has not been fully integrated in the hospital's strategic management process. This condition is in line with national findings that health transformation requires a comprehensive managerial approach that integrates policies, human resources, technology, and organizational culture ([Pratiwi et al., 2024](#)).

Based on this background, this study aims to analyze how the optimization of hospital service management can be carried out in the era of health transformation with a case study at dr. Gondo Suwarno Ungaran Hospital. This research is expected to be able to provide an empirical overview of ongoing service management practices, identify challenges and opportunities for strengthening, and formulate strategic recommendations to improve the effectiveness, efficiency, and quality of hospital services in a sustainable manner.

METHODS

This study uses a mixed methods approach with a sequential explanatory design, which combines quantitative and qualitative methods sequentially to obtain a comprehensive picture of hospital service management optimization. This approach was chosen because the research aims not only to measure service performance achievements, but also to understand in depth the underlying managerial processes.



Figure 1. Mixed methods research flow with sequential explanatory design

The research was carried out at dr. Gondo Suwarno Ungaran Hospital. The research subjects at the quantitative stage include data on hospital service performance over the past two years, such as patient waiting time, bed occupancy rate (BOR), length of treatment (LOS), patient satisfaction, and quality and patient safety indicators. Data was obtained from hospital management reports and internal documents of the service unit. Quantitative analysis was conducted using descriptive statistics to see trends and achievements of service indicators before and during the implementation of health transformation.

The second stage uses a qualitative approach with a case study design. Informants were selected purposively, including hospital directors, heads of medical services, heads of installations, quality management staff, and health workers. Data were collected through in-depth interviews, observation of service processes, and documentation studies on managerial policies, SIMRS implementation, and accreditation documents. This approach aims to explore optimization strategies, implementation barriers, and supporting factors for service transformation.

Quantitative data analysis was carried out by comparing the achievements of performance indicators with national hospital standards. Meanwhile, qualitative data analysis uses the Miles and Huberman interactive model which includes data reduction, data presentation, and conclusion drawn. The integration of the two data is carried out at the interpretation stage to explain the relationship between the performance outcomes and the management strategies implemented.

To ensure the validity of the data, this study uses source triangulation techniques and method triangulation. Quantitative validity was strengthened by using official hospital data, while the credibility of qualitative data was obtained through member checks and discussions with key informants. With this design, the research is expected to be able to provide a comprehensive analysis of the effectiveness of service management in supporting health transformation at dr. Gondo Suwarno Ungaran Hospital.

RESULTS AND DISCUSSION

1. Optimizing Hospital Service Management in the Era of Health Transformation

Healthcare transformation in the last five years has encouraged hospitals to adapt to changes in the financing system, digitization of services, and improved quality standards and patient safety. The results of the study show that the optimization of hospital service management cannot be done partially, but through a systemic approach that integrates strategic planning, strengthening human resources, digitizing information systems, and monitoring based on performance indicators. These findings are in line with the national health system transformation policy that emphasizes strengthening governance and data-based services ([Ministry of Health of the Republic of Indonesia, 2023](#)).

a) Strengthening Data-Based Strategic Planning

Optimization of service management starts from strategic planning based on hospital performance indicators. Planning is no longer only oriented to administrative targets, but based on analysis of service trends such as Bed Occupancy Ratio (BOR), Length of Stay (LOS), patient wait time, and patient satisfaction index. The literature shows that the use of data-driven performance indicators improves managerial decision-making accuracy and operational efficiency ([Pratiwi et al., 2024](#)). The following are examples of indicators used in service optimization:

Indicator	National Standards	Functions in Optimization
DRILL	60–85%	Measuring the efficiency of bed use
THE	6–9 days	Measuring the effectiveness of inpatient services
Waiting Time	≤ 60 minutes	Measuring the speed of service
Patient Satisfaction	≥ 80%	Measuring service quality

Table 1. Hospital Service Performance Indicators

The results of the analysis show that when these indicators are monitored regularly, management can identify operational bottlenecks faster and make continuous improvements.

b) Digitization of Services and SIMRS Integration

Digital transformation is the main pillar of optimizing hospital service management. The implementation of the Hospital Management Information System (SIMRS) and Electronic Medical Records (RME) plays a role in improving the efficiency of administrative flows, minimizing documentation errors, and accelerating coordination between service units. Recent research shows that the integration of digital systems can reduce patient waiting times by 20–30% and improve the accuracy of clinical records ([Firdaus, 2025](#)).

Nevertheless, digitalization optimization requires strong managerial support, including HR training and technology infrastructure updates. Without strengthening the capacity of health workers, digital transformation tends to be slow and unsustainable ([Wulandari et al., 2024](#)). Therefore, service management optimization must combine technological aspects and human resource competency development simultaneously.

c) Strengthening Quality Management and Patient Safety

The era of health transformation also requires hospitals to strengthen the culture of quality and patient safety. The results of the study showed that the

implementation of a quality improvement program based on internal audit and periodic evaluation had an impact on reducing patient safety incidents. This approach is in accordance with the principle of continuous quality improvement which is widely recommended in the modern health management literature (OECD, 2020).

The strategies implemented include: 1) Periodic internal quality audits; 2) Patient safety incident reporting; 3) Evaluation of compliance with accreditation standards, 4) Digital monitoring of patient satisfaction. Optimizing quality management directly contributes to increasing public trust in hospital services.

d) Integration of Leadership and Organizational Culture

The leadership factor is a key aspect in the success of service management optimization. Studies over the past five years have shown that transformational leadership is able to increase the commitment of health workers to system change and service innovation (Graham, 2020). Hospitals that have good cross-unit coordination tend to adapt more quickly to national health transformation policies.

An organizational culture that supports collaboration and openness to innovation has been proven to accelerate the implementation of digital systems and quality programs. Thus, optimizing service management is not only a technical issue, but also a change in work culture.

2. Challenges and Opportunities for Strengthening Hospital Service Management in the Era of Health Transformation

a. Challenges of Strengthening Service Management

1) Limited Human Resources and Managerial Competence

One of the main challenges is the imbalance between the increase in service needs and the availability and competence of human resources. The workload of health workers has increased significantly after the pandemic and the implementation of JKN, while the strengthening of managerial capacity has not been evenly distributed. The study by (Wulandari et al., 2024) shows that workload pressure contributes to decreased job satisfaction and potential service errors.

In addition, managerial competencies at the middle management level are often not fully adaptive to digital changes and data-driven approaches. Healthcare transformation requires managers who are able to read performance indicators, interpret data, and make evidence-based strategic decisions.

2) Digitalization That Has Not Been Integrated

The implementation of SIMRS and Electronic Medical Records (RME) is a pillar of health transformation. However, research shows that digitalization often faces obstacles in the form of systems that have not been integrated between units, limited network infrastructure, and resistance of health workers to changes in the work system (Firdaus, 2025).

The following is an overview of the challenges of digitalization:

Aspects	Problems	Impact
Infrastructure	Unstable network	Service disruption
HR	Low digital literacy	Not optimal data input
System	Not integrated between units	Data duplication
Work culture	Change resistance	Slow adoption of technology

Table 2. Challenges of Implementing Service Digitalization

These findings suggest that digital transformation requires a holistic approach to organizational change, not just technology procurement.

3) Regulatory Pressures and Accreditation Standards

National accreditation standards require hospitals to meet quality indicators, patient safety, and strict clinical governance. On the other hand, budget and resource constraints make the implementation of standards often not optimal. The (OECD, 2020) emphasizes that health system reform needs to be accompanied by strengthening local managerial capacity so that quality standards can be applied consistently.

4) Financing Efficiency and JKN Constraints

INA-CBG's based financing system demands service efficiency without compromising on quality. Challenges arise when operating costs increase, while claims rates are relatively fixed. Hospital management must be able to control costs, optimize the use of resources, and increase service productivity.

b. Opportunities to Strengthen Service Management

Despite facing various challenges, the era of health transformation also opens up great opportunities to strengthen hospital service management.

1) Data Utilization and Performance Dashboard

Digitalization allows hospitals to utilize service data in real time. Indicators such as BOR, LOS, TOI, lead time, and patient satisfaction can be monitored through the management dashboard. (Pratiwi et al, 2024) stated that hospitals that use performance dashboards show an increase in operational efficiency of up to 15–20%.

Indicator	Benefits of Reinforcement
DRILL	Bed capacity optimization
THE	Inpatient efficiency
Waiting Time	Improvement of service flow
Patient Satisfaction	Evaluation of service quality

Table 3. Data-Driven Reinforcement Opportunities

The use of data as a basis for decisions creates a more transparent and accountable management system.

2) Budaya Mutu dan Continuous Quality Improvement

Health transformation encourages the implementation of a quality culture through internal audits, patient safety incident reporting, and accreditation standard monitoring. (Graham, 2020) emphasized that a strong quality culture correlates with improved patient safety and institutional reputation.

Hospitals that implement the PDCA (Plan-Do-Check-Act) cycle consistently show continuous improvement in clinical and administrative services.

3) Transformational Leadership

Leadership is a determining factor for the success of transformation. Visionary and communicative leaders are able to build an organization's commitment to change. Transformational leadership plays a role in minimizing resistance, increasing collaboration between units, and accelerating the adoption of innovation (Graham, 2020).

4) Cross-Unit Collaboration and Integration

The era of health transformation opens up opportunities for cross-sector collaboration, including the integration of primary and referral services. Digital referral systems and telemedicine are part of service innovations that can expand public access to health services.

Challenge	Strategic Opportunities
limited human resources	Management training and certification
Digital resistance	Strengthening technology literacy
Regulatory pressure	Sustainable quality standardization
Cost efficiency	Data-driven optimization

Table 4. Comparative Analysis of Challenges and Opportunities

The analysis shows that every challenge has opportunities for strengthening if managed strategically. Health transformation must be interpreted as a momentum for systemic improvement, not just a regulatory demand.

Overall, strengthening hospital service management in the era of health transformation is a multidimensional process that requires integration between strategic governance, strengthening human resources, digitizing information systems, and a sustainable quality culture. The challenges that arise are unavoidable, but they can be converted into innovation opportunities if supported by adaptive leadership and data-driven monitoring systems.

With a comprehensive and integrated approach, hospitals can build a more efficient, transparent, and safety-oriented service system for patient safety and satisfaction.

3. Effectiveness, efficiency, and quality of hospital services in a sustainable manner.

Health transformation places hospitals as service organizations that are required to be not only clinically effective, but also managerically efficient and superior in service quality. These three dimensions of effectiveness, efficiency, and quality are the foundation of the sustainability of hospital organizations in the face of increasingly complex financing dynamics, digitalization, and public demands. Based on the results of research at dr. Gondo Suwarno Ungaran Hospital, these three aspects are intertwined and cannot be separated in service management practices.

a) Effectiveness of Hospital Services

Service effectiveness refers to the ability of hospitals to achieve clinical and operational goals according to set standards. Effectiveness measurement is carried out through key indicators such as Bed Occupancy Ratio (BOR), Length of Stay (LOS), and Turn Over Interval (TOI).

BOR Formula:

$$BOR = \frac{\text{Jumlah Hari Perawatan}}{\text{Jumlah Tempat Tidur} \times \text{Jumlah Hari dalam Periode}} \times 100\%$$

CORRECT Formula:

$$LOS = \frac{Total\ Hari\ Rawat}{Jumlah\ Pasien\ Keluar}$$

YOU rumus:

$$TOI = \frac{(Jumlah\ TT \times Hari) - Hari\ Perawatan}{Jumlah\ Pasien\ Keluar}$$

Indicator	National Standards	Managerial Meaning
DRILL	60-85%	TT capacity optimization
THE	6-9 days	Clinical effectiveness
ART	1-3 days	TT rotation speed

In general, the effectiveness of hospital services reflects the balance between capacity and the needs of community services. A BOR that is too low indicates underutilization, while a BOR that is too high has the potential to reduce the quality of service due to overcrowding. Efficient LOS signifies optimal clinical and administrative processes without unnecessary lengthening of hospitalizations.

Effectiveness is also greatly influenced by coordination between service units, the speed of the diagnostic process, and an integrated referral system. Digital transformation through SIMRS plays a role in accelerating the administrative process and improving patient flows, thereby supporting an increase in the overall effectiveness of services.

b) Hospital Service Efficiency

Efficiency measures the extent to which a hospital is able to manage resources (labor, budget, facilities) to produce maximum service output at a controlled cost.

BTO Formula:

$$BTO = \frac{Jumlah\ Pasien\ Keluar}{Jumlah\ Tempat\ Tidur}$$

Rumus Cost Recovery Rate (CRR):

$$CRR = \frac{Pendapatan}{Total\ Biaya\ Operasional} \times 100\%$$

Indicator	Standard	Interpretasi
BTO	40-50 times/year	Optimal TT rotation
CRR	≥100%	Financial sustainability
Waiting Time	≤60 minutes	Service process efficiency

Table 5. Service Efficiency Indicators

Service efficiency does not mean cost reduction, but optimization of resource use without sacrificing quality. In the INA-CBG's financing system, hospitals are required to be able to control operational costs through proper logistics management, control of treatment times, and optimization of health worker schedules.

Digitalization plays a significant role in improving efficiency, especially in reducing administrative duplication and accelerating insurance claims.

Sustainable efficiency requires a data-driven cost monitoring system and transparency of financial reporting.

c) Sustainable Service Quality

The quality of service reflects the suitability of the service with professional standards and patient expectations.

Rumus Indeks Kepuasan Pasien (IKP):

$$IKP = \frac{Skor\ Aktual}{Skor\ Maksimal} \times 100\%$$

Rumus Hospital-Acquired Infection (HAI):

$$HAI = \frac{Jumlah\ Kasus\ Infeksi}{Jumlah\ Pasien\ Rawat\ Inap} \times 100\%$$

Indicator	Standard	Focus on Improvement
IKP	≥80%	Patient satisfaction
HI	As low as possible	Patient safety
Security Incidents	Annual decline	Quality culture

Table 6. Service Quality Indicators

Sustainable service quality requires an organizational culture that is oriented towards continuous quality improvement (CQI). The PDCA (Plan-Do-Check-Act) cycle must be implemented consistently to ensure continuous evaluation and improvement. Patient satisfaction is not only influenced by clinical outcomes, but also communication, empathy, and comfort of service.

Health transformation encourages hospitals to integrate quality indicators in the management dashboard so that evaluations can be carried out in real time. This increases accountability and transparency of services.

The three dimensions of effectiveness, efficiency, and quality must be managed simultaneously within an integrated management framework. Hospitals that focus solely on effectiveness without efficiency risk financial pressure. Conversely, unqualified efficiency can degrade patient safety and the institution's reputation.

Dimensions	Indicator	Strengthening Strategy
Effectiveness	BOR, RIGHT	Clinical pipeline optimization
Efficiency	BTO, CRR	Digitization & cost control
End	IKP, HAI	CQI & safety culture

Table 7. Hospital Performance Integration Model

Overall, the effectiveness, efficiency, and quality of hospital services are strategic pillars in maintaining the sustainability of the organization in the era of health transformation. Digital transformation, strengthening governance, and adaptive leadership are the determining factors for the success of the integration of these three aspects. A data-based approach and periodic monitoring allow management to intervene quickly against performance indicator deviations.

Thus, the sustainability of hospital services is not only determined by technological sophistication or the completeness of facilities, but also by the management's ability to synergize clinical effectiveness, operational efficiency, and

service quality in one integrated system that is oriented towards patient safety and satisfaction.

CONCLUSION

Based on the results of the research and discussion, it can be concluded that the effectiveness, efficiency, and quality of hospital services are three strategic dimensions that must be managed in an integrated and sustainable manner in the era of health transformation. Effectiveness is reflected in the optimization of performance indicators such as BOR, LOS, and TOI that show a balance between capacity and service needs. Efficiency is realized through controlling operational costs, optimizing bed rotation, and accelerating service flows based on digitization of information systems. Meanwhile, service quality is measured through patient satisfaction, patient safety, and compliance with accreditation standards implemented through a continuous quality improvement approach.

The integration of these three aspects not only has an impact on improving organizational performance, but also strengthens the sustainability of hospital services in facing financing, regulation, and technological development challenges. Healthcare transformation provides a strategic opportunity for hospitals to build data-driven management systems, improve human resource competencies, and internalize a culture of quality and patient safety. Thus, the success of hospital services is not solely determined by the adequacy of facilities, but by the ability of management to synergize clinical effectiveness, operational efficiency, and service quality consistently and oriented to the needs of the community.

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