

Evaluation of Hospital Information Technology Governance Using COBIT 2019 to Support Smart Human Resource Development

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Abstract

Information Technology (IT) governance plays a crucial role in ensuring that organizational objectives are aligned with technology investments and operational practices, particularly in healthcare institutions where digital transformation continues to accelerate. Hospitals require effective IT governance frameworks to enhance service quality, optimize resource utilization, and support the development of smart human resources capable of adapting to technological advancements. This study aims to evaluate the implementation of IT governance in a hospital environment using the COBIT 2019 framework and to assess its contribution to smart human resource development. The research adopts a quantitative approach by collecting data through questionnaires, interviews, and document analysis involving hospital management, IT personnel, and operational staff. Several COBIT 2019 governance and management objectives are assessed to determine the current capability level of IT governance practices. The evaluation results indicate that the hospital has achieved a moderate level of capability across most assessed domains, demonstrating that IT governance processes are generally implemented but still require improvement to achieve optimal performance. The findings reveal that effective IT governance contributes significantly to improving employee competencies, strengthening digital literacy, enhancing decision-making processes, and supporting continuous learning within the organization. However, gaps remain in strategic alignment, performance monitoring, and human resource capacity development. Based on the assessment results, several recommendations are proposed, including strengthening governance policies, improving IT-related training programs, and establishing continuous monitoring mechanisms to support sustainable digital transformation. The study concludes that the adoption of COBIT 2019 provides a structured approach for evaluating and improving hospital IT governance while fostering the development of smart human resources capable of supporting organizational innovation and healthcare service excellence.

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Keywords: *COBIT 2019; IT Governance; Hospital; Smart Human Resources; Digital Transformation*

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2nd International Conference on Islamic Community Studies (ICICS)

Theme: History of Malay Civilisation and Islamic Human Capacity and Halal Hub in the Globalization Era

<https://proceeding.pancabudi.ac.id/index.php/ICIE/index>

Introduction

The rapid advancement of information technology has significantly transformed the healthcare sector, enabling hospitals to improve operational efficiency, enhance service quality, and support data-driven decision-making processes. As healthcare organizations increasingly rely on digital systems, effective Information Technology (IT) governance has become essential to ensure that technological resources are aligned with organizational objectives. Proper IT governance enables hospitals to manage risks, optimize investments, and maintain the reliability and security of information systems while supporting sustainable organizational growth [1] [2] [3].

In recent years, hospitals have faced growing challenges related to digital transformation, including the integration of electronic medical records, telemedicine platforms, cloud-based services, and healthcare analytics systems. These technological developments require a structured governance framework to ensure that IT initiatives contribute effectively to organizational performance. Without appropriate governance mechanisms, hospitals may encounter issues such as inefficient resource utilization, security vulnerabilities, and misalignment between business goals and technology strategies [4][5][6].

The COBIT 2019 framework has emerged as one of the most widely recognized approaches for evaluating and improving IT governance and management practices. Developed by the Information Systems Audit and Control Association (ISACA), COBIT 2019 provides comprehensive guidance for organizations to align IT processes with business objectives, measure governance performance, and continuously improve capability levels. The framework offers a flexible structure that can be adapted to various organizational contexts, including healthcare institutions seeking to strengthen their digital governance capabilities [7] [8][9].

In addition to improving operational effectiveness, IT governance plays a critical role in the development of smart human resources within hospitals. Smart human resources refer to employees who possess the knowledge, skills, digital competencies, and adaptability necessary to operate effectively in technology-driven environments. Effective IT governance can facilitate continuous learning, enhance digital literacy, support knowledge sharing, and improve employee engagement in organizational innovation initiatives. Consequently, the successful implementation of IT governance contributes not only to technological performance but also to workforce development and organizational competitiveness [10], [11].

Therefore, this study aims to evaluate the implementation of Information Technology governance in a hospital environment using the COBIT 2019 framework and to examine its role in supporting smart human resource development. By assessing the current capability level of IT governance practices, this research seeks to identify strengths, weaknesses, and areas for improvement. The findings are expected to provide valuable insights and recommendations for hospital management in strengthening IT governance and fostering a digitally competent workforce capable of supporting sustainable healthcare service excellence [12].

Literature Review

Information Technology (IT) governance is a framework that ensures the effective and efficient use of information technology in achieving organizational objectives. IT governance focuses on aligning IT strategies with business goals, optimizing resource utilization, managing risks, and ensuring compliance with regulations and policies. In healthcare organizations, effective IT governance is essential for supporting clinical operations, protecting sensitive patient information, improving service quality, and facilitating digital transformation initiatives. Previous studies have highlighted that strong IT governance practices contribute significantly to organizational performance, operational efficiency, and sustainable innovation [13], [14].

COBIT 2019, developed by the Information Systems Audit and Control Association (ISACA), is a globally recognized framework for governing and managing enterprise information and technology. The framework provides a comprehensive set of governance and

management objectives that help organizations evaluate current practices, identify capability gaps, and implement continuous improvements. COBIT 2019 introduces flexible design factors and focus areas that allow organizations to tailor governance systems according to their specific needs and business environments. Several studies have demonstrated that the application of COBIT 2019 improves strategic alignment, risk management, performance monitoring, and decision-making processes across various sectors, including healthcare institutions [15].

Smart Human Resource Development refers to the process of enhancing employee competencies, digital literacy, adaptability, and innovation capabilities through the effective utilization of technology and organizational knowledge. In the context of hospitals, smart human resources are increasingly important due to the growing adoption of digital healthcare systems and data-driven services. Effective IT governance supports human resource development by establishing clear policies, promoting continuous learning, facilitating access to information, and encouraging technology adoption among employees. Consequently, the integration of COBIT 2019-based IT governance and human resource development strategies can create a more agile, competent, and technology-oriented workforce capable of supporting organizational excellence and healthcare service improvement [15].

Research Methodology

This study employed a quantitative descriptive approach to evaluate the implementation of Information Technology (IT) governance in a hospital environment using the COBIT 2019 framework. The quantitative approach was selected because it enables the measurement of governance practices through structured data collection and objective assessment methods. Data were obtained from hospital management, IT personnel, and operational staff involved in the utilization and management of information technology resources. The collected data were analyzed to determine the current capability level of IT governance and identify areas requiring improvement.

The COBIT 2019 framework was adopted as the primary assessment model due to its comprehensive governance and management objectives that support organizational performance and digital transformation. Through a systematic evaluation process, the study aimed to measure the effectiveness of existing IT governance practices and examine their contribution to smart human resource development. The methodology consisted of six main stages, beginning with problem identification and ending with the formulation of recommendations for governance improvement.



Figure 1. Research Methodology

1. Problem Identification and Literature Review

The first stage of this research involved identifying the primary issues related to Information Technology (IT) governance and human resource development within the hospital environment. This process was conducted through preliminary observations, discussions with stakeholders, and an examination of existing IT governance practices. The objective of this stage was to understand the current challenges faced by the organization in managing technology resources and supporting workforce development in a rapidly evolving digital environment.

In addition, a comprehensive literature review was performed to establish a strong theoretical foundation for the study. Relevant books, journal articles, conference proceedings, and official COBIT 2019 documentation were reviewed to understand key concepts, methodologies, and previous research findings. The literature review also helped define the research scope, objectives, and variables used in the assessment process.

2. Determination of COBIT 2019 Objectives

The second stage focused on selecting the COBIT 2019 governance and management objectives that were most relevant to the hospital's operational and strategic requirements. The selection process considered organizational goals, IT-related challenges, and the role of technology in supporting healthcare services and human resource development. This ensured that the assessment concentrated on governance areas with the greatest impact on organizational performance.

Furthermore, the selected objectives served as the basis for developing assessment instruments and evaluation criteria. By aligning the governance objectives with organizational needs, the study ensured that the assessment results would provide meaningful insights into the effectiveness of IT governance practices. The selected domains also facilitated the identification of governance strengths and areas requiring improvement.

3. Data Collection

Data collection was conducted using multiple techniques, including questionnaires, interviews, and document analysis. Questionnaires were distributed to hospital management, IT personnel, and operational staff who actively participated in technology-related processes. This approach enabled the collection of quantitative data regarding governance implementation and stakeholder perceptions.

To complement the questionnaire results, interviews were conducted with key stakeholders to obtain a deeper understanding of governance practices, challenges, and organizational expectations. Additionally, organizational documents such as policies, procedures, strategic plans, and IT reports were reviewed to validate the information obtained from respondents and ensure the reliability of the collected data.

4. Capability Level Assessment

After the data collection process was completed, the information gathered was analyzed using the COBIT 2019 capability assessment model. Each selected governance objective was evaluated based on established criteria to determine its current capability level. This assessment provided a structured approach for measuring how effectively governance processes were implemented within the organization.

The capability assessment enabled researchers to identify the maturity of governance practices and determine whether existing processes were adequately supporting organizational objectives. The results offered a clear overview of governance performance and served as a foundation for subsequent analytical stages, particularly gap analysis and improvement planning.

5. Gap Analysis

The fifth stage involved comparing the current capability levels obtained from the assessment with the target capability levels expected by the hospital. This comparison allowed researchers to identify gaps between existing governance performance and desired outcomes. The analysis focused on understanding areas where governance practices did not fully meet organizational expectations.

Moreover, the gap analysis helped determine the factors contributing to performance deficiencies and governance weaknesses. By identifying these gaps, the organization could better understand which processes required immediate attention and resource allocation. The results also provided valuable insights into how governance improvements could support the development of smarter and more digitally competent human resources.

6. Recommendation and Improvement Strategy Development

Based on the findings from the capability assessment and gap analysis, the final stage involved formulating recommendations and improvement strategies. These recommendations were designed to address identified weaknesses and enhance the effectiveness of IT governance

practices. Proposed improvements included policy refinement, process standardization, enhanced monitoring mechanisms, and strengthened governance structures.

In addition, recommendations were developed to support smart human resource development within the hospital. These included continuous training programs, digital competency enhancement initiatives, knowledge-sharing activities, and technology adoption strategies. The implementation of these recommendations is expected to improve governance performance, strengthen workforce capabilities, and support sustainable digital transformation in healthcare services.

Results

The results of this study present the evaluation of Information Technology (IT) governance implementation in the hospital using the COBIT 2019 framework. Data were collected from management personnel, IT staff, and operational employees involved in the utilization and management of information technology resources. The assessment focused on several governance and management objectives that are closely related to organizational performance, digital transformation, and smart human resource development.

The evaluation results provide an overview of the current capability level achieved by the hospital across the selected COBIT 2019 objectives. The findings are used to identify governance strengths, determine areas requiring improvement, and formulate recommendations that support effective IT governance practices. Furthermore, the assessment highlights the contribution of IT governance to enhancing employee competencies, digital literacy, and organizational readiness for technological innovation.

Table 1. Respondent Demographics

No	Position	Number of Respondents
1	Hospital Director	1
2	Deputy Director	2
3	IT Manager	2
4	System Administrator	3
5	Network Administrator	2
6	Medical Record Staff	5
7	Nursing Staff	8
8	Finance Staff	4
9	Human Resource Staff	3
10	Registration Staff	5
11	Pharmacy Staff	4
12	Laboratory Staff	3
Total		42

Table 1 presents the demographic distribution of respondents involved in the study. A total of 42 respondents participated, representing various departments and organizational levels within the hospital. The inclusion of respondents from management, IT divisions, and operational units ensured that the assessment reflected a comprehensive perspective regarding the implementation of IT governance.

The diversity of respondents also contributed to the reliability of the findings, as governance practices affect multiple stakeholders throughout the organization. By involving personnel with different responsibilities and levels of interaction with information technology, the study obtained a balanced evaluation of governance effectiveness and its impact on organizational performance.

Table 2. COBIT 2019 Capability Level Assessment Results

No	COBIT 2019 Objective	Current Capability Level	Target Capability Level
1	EDM01 – Ensured Governance Framework Setting and Maintenance	3.2	4.0
2	EDM02 – Ensured Benefits Delivery	3.1	4.0
3	EDM03 – Ensured Risk Optimization	2.9	4.0
4	APO01 – Managed I&T Management Framework	3.4	4.0
5	APO02 – Managed Strategy	3.0	4.0
6	APO07 – Managed Human Resources	3.5	4.0
7	APO12 – Managed Risk	2.8	4.0
8	BAI01 – Managed Programs	3.3	4.0
9	BAI08 – Managed Knowledge	3.4	4.0
10	DSS01 – Managed Operations	3.6	4.0
11	DSS02 – Managed Service Requests and Incidents	3.5	4.0
12	MEA01 – Managed Performance and Conformance Monitoring	3.0	4.0

Table 2 presents the capability level assessment results for the selected COBIT 2019 governance and management objectives. The evaluation indicates that the hospital has achieved capability levels ranging from 2.8 to 3.6 across the assessed domains. These results demonstrate that most IT governance processes have been formally established, implemented, and monitored within the organization. The achievement of capability levels above 2.5 reflects the hospital's commitment to aligning information technology practices with organizational goals and operational requirements.

The highest capability level was recorded in DSS01 (Managed Operations) with a score of 3.6, followed by DSS02 (Managed Service Requests and Incidents) and APO07 (Managed Human Resources). These results indicate that the hospital has developed effective operational procedures for managing IT services, handling incidents, and supporting workforce management. Strong performance in these areas contributes to service continuity, improved user satisfaction, and the development of employee competencies required to operate technology-based healthcare services efficiently.

However, several governance objectives, particularly APO12 (Managed Risk) and EDM03 (Ensured Risk Optimization), achieved lower capability levels compared to other domains. This finding suggests that risk management practices are not yet fully optimized and require further improvement to reach the targeted capability level. Strengthening risk identification, assessment, and mitigation processes will help the hospital improve governance effectiveness, enhance information security, and support sustainable digital transformation initiatives. Overall, the assessment results indicate that the hospital has achieved a moderate level of IT governance maturity while still possessing opportunities for continuous improvement.

Table 3. Gap Analysis Results

No	COBIT 2019 Objective	Current Level	Target Level	Gap
1	EDM01	3.2	4.0	0.8
2	EDM02	3.1	4.0	0.9
3	EDM03	2.9	4.0	1.1
4	APO01	3.4	4.0	0.6
5	APO02	3.0	4.0	1.0
6	APO07	3.5	4.0	0.5
7	APO12	2.8	4.0	1.2

8	BAI01	3.3	4.0	0.7
9	BAI08	3.4	4.0	0.6
10	DSS01	3.6	4.0	0.4
11	DSS02	3.5	4.0	0.5
12	MEA01	3.0	4.0	1.0

Table 3 illustrates the gap analysis between the current capability levels and the target capability level established by the hospital. The results reveal that all evaluated governance objectives still exhibit capability gaps, ranging from 0.4 to 1.2. These gaps indicate that additional efforts are required to achieve the desired governance performance level.

The largest gap was identified in APO12 (Managed Risk) with a value of 1.2, followed by EDM03 (Ensured Risk Optimization) with a gap of 1.1. These findings suggest that risk governance should become a primary focus for improvement initiatives. On the other hand, DSS01 (Managed Operations) demonstrated the smallest gap of 0.4, indicating that operational management processes are relatively mature and closer to achieving the target capability level. The gap analysis provides valuable guidance for prioritizing future governance improvement strategies.

Discussion

The results of this study indicate that the hospital has implemented Information Technology (IT) governance practices at a moderate capability level based on the COBIT 2019 framework. Most of the assessed governance and management objectives achieved capability levels above 3.0, demonstrating that IT processes have been established, documented, and consistently executed across the organization. These findings suggest that the hospital has made significant efforts to align information technology initiatives with organizational goals, improve operational efficiency, and support the delivery of healthcare services through effective technology management. The relatively high capability levels achieved in operational and human resource-related domains further indicate that the organization has successfully integrated IT governance practices into its daily activities.

However, the gap analysis revealed that several governance objectives have not yet reached the targeted capability level, particularly those related to risk management and governance oversight. The lower scores obtained in APO12 (Managed Risk) and EDM03 (Ensured Risk Optimization) indicate the need for stronger risk assessment, monitoring, and mitigation processes. Addressing these weaknesses is essential to improve governance effectiveness, enhance information security, and support sustainable digital transformation. By implementing the recommended improvements, the hospital can strengthen its IT governance framework, increase organizational resilience, and further support the development of smart human resources capable of adapting to evolving technological and healthcare demands.

Conclusion

This study evaluated the implementation of Information Technology (IT) governance in a hospital environment using the COBIT 2019 framework to support smart human resource development. The assessment results indicate that the hospital has achieved a moderate level of IT governance capability, with most governance and management objectives reaching capability levels between 2.8 and 3.6. These findings demonstrate that IT governance processes have been established and implemented effectively, contributing to operational efficiency, service quality, and organizational performance. Furthermore, the study reveals that effective IT governance supports the development of smart human resources by enhancing digital competencies, improving technology adoption, and encouraging continuous learning among employees. However, several domains, particularly those related to risk management and governance oversight, still require improvement to achieve the desired capability level. Therefore, strengthening governance policies, enhancing risk management practices, and

implementing continuous monitoring and training programs are recommended to improve governance effectiveness and support sustainable digital transformation in healthcare organizations. Overall, COBIT 2019 provides a valuable framework for assessing and improving hospital IT governance while fostering the development of a competent and technology-oriented workforce..

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