COBIT Implementation for Healthcare IT Governance: A Systematic Literature Review

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Abstract

The growing complexity of healthcare IT environments, combined with increasing regulatory demands, has elevated the need for structured IT governance frameworks in clinical and administrative settings. However, the field still lacks a comprehensive synthesis of COBIT implementation in healthcare, especially in relation to domain applicability, recurring challenges, and critical success factors This study conducts a Systematic Literature Review (SLR) following the PRISMA protocol to analyze 57 empirical studies on COBIT implementation in healthcare organizations published between 2020 and 2025. The findings reveal a gradual transition toward COBIT 2019, with a pronounced focus on the APO domain, specifically APO12 (Managed Risk), reflecting a critical shift toward risk and security governance to address compliance pressures. Infrastructure and system performance issues, documentation and SOP deficiencies, and risk and security governance weaknesses were identified as the three most prevalent implementation challenges, while structured governance processes and management support emerged as the leading critical success factors. Practically, this study demonstrates that effective COBIT adoption in healthcare is contingent primarily on organizational readiness and institutional commitment rather than mere technical capability. These findings offer actionable guidance for healthcare managers and IT practitioners to prioritize formalized governance structures and top-down leadership support when aligning IT investments with regulatory compliance.

Keywords: capability level, COBIT, healthcare, IT governance, systematic literature review.

1 Introduction

The rapid expansion of digitalization has transformed how organizations handle information and create additional value. In the medical sector, the role of Information Technology (IT) has shifted from a support function to a strategic tool for improving patient care and operational efficiency, especially by turning large health datasets into actionable insights for clinical decisions. Yet without adequate governance, health information systems can create significant operational and administrative complexity, potentially leading to patient dissatisfaction [1] . IT governance is therefore essential to align technology investments with strategic goals and mitigate emerging risks. This need is further reinforced by regulatory demands. In Indonesia, for example, healthcare facilities must implement electronic medical records linked to the national SatuSehat platform under Ministerial Regulation No. 24 of 2022, and comply with the Personal Data Protection Law (UU PDP No. 27/2022) [6]. Such regulatory developments require strong IT governance mechanisms. It is important for healthcare organizations to understand which COBIT domains and objectives are most relevant to their operational context.

ISACA launched COBIT (Control Objectives for Information and Related Technology) in 1996 as an internationally accepted IT governance framework and has continued to evolve it ever since. The latest version of COBIT (COBIT 2019) introduces Design Factors, making the framework more adaptable and holistic in ensuring that IT investments deliver tangible business value while supporting effective risk management [2] . This gives an increased level of flexibility to allow organizations to develop customized governance systems in alignment with their strategic objectives, risk profiles and compliance requirements [3] . Despite its relevance, studies on COBIT implementation in the healthcare sector remain fragmented. Existing studies have largely focused on non-healthcare sectors

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or earlier versions such as COBIT 4.1 and COBIT 5, leaving a significant gap regarding how COBIT 2019 applies to the current dynamics [4] . In practice, the lack of standardized IT governance has led to both tangible and intangible losses, including suboptimal decision-making regarding IT investments, inefficient resource allocation, and inaccurate collection of patient data such as medical records [5] . Moreover, the current literature still lacks a comprehensive synthesis of the challenges and success factors in implementing COBIT in healthcare settings, such as regulatory compliance pressures, data privacy requirements, and the complexity of clinical information systems.

This study addresses these gaps through a Systematic Literature Review (SLR) of empirical research on COBIT implementation in healthcare contexts published between 2020 and 2025. The review follows the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) protocol. It aims to answer three main research questions: (1) Which versions of COBIT have been studied in healthcare IT governance research, and how has their usage trended over time? (2) Which COBIT domains and management objectives are often reviewed in the healthcare domain? (3) What critical success factors and challenges of COBIT implementation in healthcare organizations? Ultimately, this review provides a synthesized body of knowledge and offers actionable guidance for healthcare organizations and IT governance practitioners aiming to implement COBIT in clinical and administrative settings.

2 Literature Review

2.1 IT Governance in Healthcare Organizations

IT governance refers to the leadership, organizational structures, and processes that ensure an organization's IT sustains and extends its strategies and objectives [6]. In the healthcare context, effective IT governance encompasses five primary focus areas: strategic alignment, value delivery, risk management, resource management, and performance measurement [7]. These dimensions are particularly critical in healthcare organizations, where IT systems directly impact patient safety, data integrity, and regulatory compliance.

The growing complexity of healthcare IT environments — characterized by the proliferation of Hospital Management Information Systems (SIMRS), electronic medical records (EMR), and national health data platforms — has significantly elevated the importance of structured IT governance. In Indonesia, this urgency is further amplified by regulatory mandates, including Ministerial Regulation No. 24 of 2022 requiring full EMR integration with the national SatuSehat platform as part of the broader SIMRS implementation, and the Personal Data Protection Law (UU PDP No. 27/2022), which imposes strict obligations on the handling of patient data [8].

2.2 COBIT as an IT Governance

COBIT (Control Objectives for Information and Related Technology), developed by ISACA, is one of the most widely adopted IT governance frameworks globally. The framework provides organizations with a comprehensive set of governance and management objectives, enabling structured evaluation and improvement of IT processes. Since its initial version in 1996, COBIT has undergone several iterations to address evolving governance challenges. The latest version, COBIT 2019, introduced significant enhancements including a flexible Design Factors mechanism that allows organizations to tailor their governance systems based on specific strategic profiles, risk appetites, compliance requirements, and technology adoption strategies [9].

COBIT 2019 organizes its governance and management objectives across five domains: Evaluate, Direct and Monitor (EDM); Align, Plan and Organize (APO); Build, Acquire and Implement (BAI); Deliver, Service and Support (DSS); and Monitor, Evaluate and Assess (MEA). Capability levels are measured using a scale from 0 to 5, adapted from the Capability Maturity Model Integration (CMMI), providing a quantifiable basis for assessing the current state of IT governance maturity [10].

2.3 Prior Research on COBIT in Healthcare

Research on COBIT implementation in healthcare has evolved from maturity assessment under COBIT 4.1 to more context-sensitive governance design under COBIT 2019. However, this evolution is not merely chronical; it reflects a shift in governance concerns from process maturity to regulatory alignment, risk prioritization, and institutional tailoring. Andry et.al [4], provide an early baseline by

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assessing an Indonesian military hospital using COBIT 4.1. Their Domain and Support (DS) domain average maturity scores ranged from 2.54 to 3.5, suggesting maturity levels between Defined and Managed & Measurable. However, because their study relies on COBIT 4.1 and focuses mainly on operational DS processes, its comparability with later COBIT 2019 studies remain limited. Soetomo and Abdulatif [5] partly addresses this limitation by showing that COBIT 2019 Design Factors can align hospital IT governance with Indonesia's Personal Data Protection Law (UU PDP). Their contribution is important because it links governance design to legal compliance, but the study remains framework-oriented and does not empirically verify whether such design choices improve capability or compliance outcomes.

A second stream of COBIT 2019 research moves closer to empirical assessment but remains fragmented. Sodik and Nugraheni [11] examine a medium-scale clinic in Central Java and identify capability levels between 3 and 4 in the Build, Acquire, and Implement (BAI) domain, while also exposing vendor dependency as a recurring governance constraint. Their findings are valuable for understanding resource-constrained healthcare settings, but the single-clinic, BAI-focused design limits generalization to large public hospitals. Moryanda et al. [12] similarly apply COBIT 2019 at Semen Padang Hospital and prioritize risk optimization and information security through Design Factors analysis. However, because the study stops at domain prioritization, it cannot show whether those priorities lead to improved governance capability. Compared with [11], [12] offer stronger contextual tailoring but weaker evaluative depth.

Although these studies contribute valuable insights, several research gaps remain apparent. First, many studies implementing COBIT 2019 in healthcare environments still have a relatively narrow scope, often focusing only on specific domains or ending at domain prioritization without conducting a full capability assessment. Second, studies examining IT governance in Indonesian public hospitals (RSUD) are still limited, resulting in insufficient understanding of governance challenges in government-owned healthcare institutions. Third, previous research has not yet provided a comprehensive synthesis across different COBIT versions and healthcare contexts to identify broader trends, recurring challenges, and critical success factors. This lack of synthesis is precisely the gap that this SLR addresses. By comparing studies across COBIT versions and healthcare contexts, this review moves beyond descriptive summaries to identify patterns, contradictions, and governance implications for healthcare IT.

3 Research Method

3.1 Research Design

This study adopts a Systematic Literature Review approach based on the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) protocol. The Systematic Literature Review (SLR) method was chosen because it offers a structured, transparent, and reproducible process for analyzing and synthesizing existing empirical studies. In addition, the use of predefined inclusion and exclusion criteria helps reduce potential selection bias in the review process [13]. This approach is considered suitable for the objectives of the study, as it allows for a comprehensive examination of COBIT implementation across various healthcare settings and organizational contexts.

3.2 Search Strategy

A systematic search was conducted across four electronic databases: Google Scholar (accessed via Publish or Perish software version 8.19), Garuda (Garba Rujukan Digital — the Indonesian national academic repository), IEE Xplore, and Scopus. These databases were selected to ensure comprehensive coverage of both international peer-reviewed literature and Indonesian national academic publications. The search was conducted in May 2026, covering publications from 2020 to 2025. The lower bound of 2020 was set to ensure articles reflect mature applications of COBIT 2019, which was officially released in 2018.

For Google Scholar, multiple search queries were executed across different keyword combinations and year ranges to maximize retrieval coverage while staying within Publish or Perish's retrieval limits per query. The use of Publish or Perish (version 8.19) enabled bulk retrieval and structured export of search results, minimizing manual selection bias. Queries were conducted using the following keyword variations, with Title Words restricted to "COBIT" throughout: (1) "COBIT rumah sakit tata kelola kapabilitas"; (2) "COBIT clinic health center IT governance maturity"; (3)

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"COBIT 2019 hospital capability level assessment"; and (4) "COBIT healthcare hospital IT governance". Each keyword combination was searched across multiple year ranges to avoid exceeding retrieval limits, yielding a total of 470 records from Google Scholar prior to deduplication.

For Scopus and IEEE, the following structured query was applied using the Advanced Search function:

TITLE-ABS-KEY("COBIT" OR "COBIT 2019" OR "COBIT 5" OR "COBIT 4.1") AND TITLE-ABS-KEY("healthcare" OR "hospital" OR "health information system" OR "electronic medical record") AND TITLE-ABS-KEY("IT governance" OR "information technology governance" OR "capability level" OR "maturity level").

Results were filtered to Article and Conference Paper document types, yielding 5 records from Scopus and 8 records from IEEE Xplore. For Garuda, two keyword searches were conducted using the platform's title-based search function: "COBIT rumah sakit" and "COBIT kesehatan", filtered to the period 2020–2025, yielding 40 records in total. The combined initial yield across all three databases was 523 records prior to deduplication and screening.

3.3 Inclusion and Exclusion Criteria

The selected articles had to satisfy several inclusion criteria. First, the studies needed to be published in peer-reviewed journals or indexed conference proceedings. Second, only publications released between 2020 and 2025 were considered. Third, the articles had to be written in either English or Indonesian. Fourth, the main focus of the study needed to involve the implementation of any version of COBIT for purposes such as IT governance evaluation, auditing, or governance design. Finally, the research had to be conducted within a healthcare-related environment, including hospitals, clinics, community health centers, or healthcare agencies.

On the other hand, several exclusion criteria were also applied during the screening process. Studies were excluded if they consisted of non-empirical publications, such as editorials, opinion articles, or commentaries. Articles that mentioned COBIT only as a secondary or supporting framework were also omitted. In addition, studies conducted outside the healthcare sector were not included in the review. Duplicate records identified across multiple databases were removed, and articles without accessible full-text versions were excluded from further analysis.

3.4 Selection Process

The selection process followed a two-stage screening procedure consistent with PRISMA guidelines. In Stage 1, titles and abstracts of all retrieved records were screened against the inclusion and exclusion criteria. Records that were clearly irrelevant were excluded at this stage. In Stage 2, full texts of articles that passed Stage 1 were retrieved and assessed in detail. Articles that did not meet the inclusion criteria upon full-text review were excluded, with reasons documented.

All screening decisions were made by the primary researcher using a standardize screening instrument. Eligibility criteria and a screening protocol were established in a priori to minimize possible selection bias, and every exclusion decision was documented with a specific rationale (E1-E5) and illustrated in the PRISMA flow diagram in Figure 1. The second author provided methodological guidance on the review process and documentation structure but was not involved in screening or data extraction. The reliance on single-reviewer screening is acknowledged as a limitation of this review.

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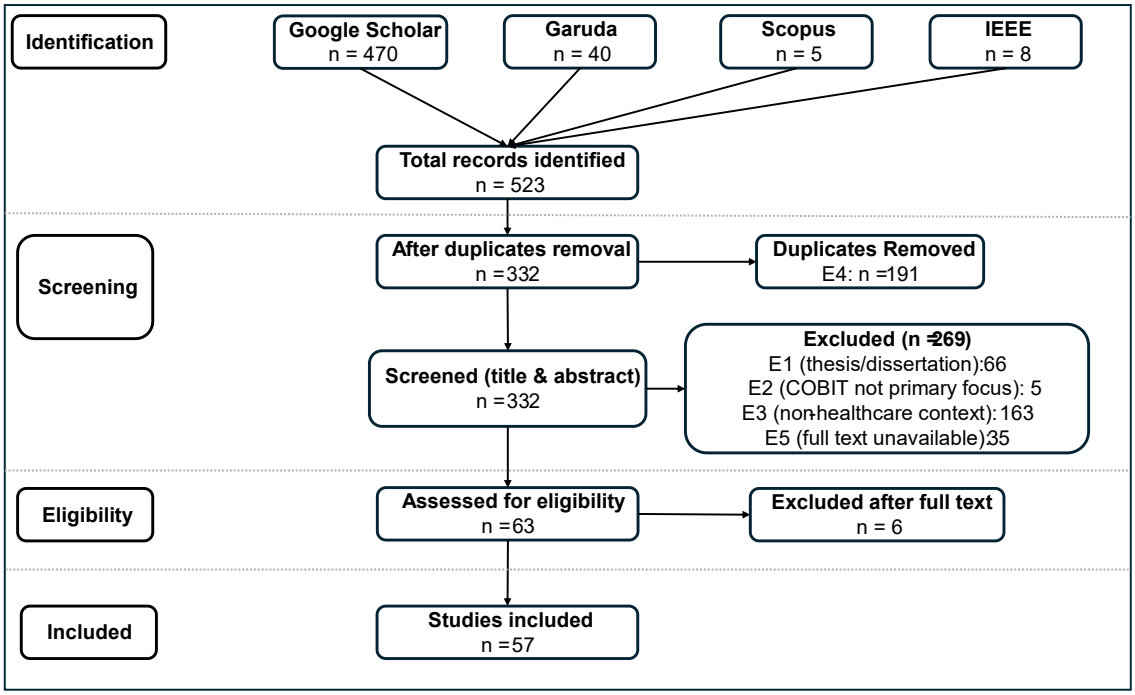


Fig. 1. PRISMA flow diagram of the systematic literature review process.

3.5 Data Extraction

For each selected article, data were extracted systematically using a predefined extraction form to ensure consistency throughout the review process. The extracted information included: (1) author names, publication year, article title, journal or conference proceeding name, and DOI; (2) country of study and organizational setting; (3) the COBIT version implemented; (4) the COBIT domains and objectives analyzed; (5) the research methodology used; (6) findings related to capability or maturity levels; (7) major challenges identified in the study; (8) reported success factors; (9) recommendations proposed by the authors; and (10) research gaps highlighted in each publication.

The data extraction process was conducted by the primary researcher. In cases where the information presented in an article was unclear or open to interpretation, the decisions made during extraction were documented together with the underlying rationale to maintain transparency and consistency in the review process.

3.6 Data Synthesis

The extracted data were analyzed using descriptive and thematic synthesis approaches. Descriptive analysis was used to map the distribution of articles by year, country, COBIT version, and healthcare context. Thematic synthesis was employed to identify recurring patterns in COBIT domain focus, implementation challenges, and success factors across studies. Findings were organized to directly address each of the three research questions outlined in Introduction section.

4 Results and Analysis

4.1 Study Selection

The systematic research across four electronic databases yielded a total 523 records: 470 from Google Scholar (accessed via Publish or Perish), 40 from Garuda, 8 from IEEE Xplore, and 5 from Scopus. Following the removal of duplicate records, 332 unique records were screened at the title and abstract stage. Of these, 63 proceeded to full-text review. After applying the inclusion and exclusion criteria, a final set of 57 articles was included in the synthesis. The complete selection process is illustrated in the PRISMA flow diagram in Figure 1.

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4.2 RQ1: COBIT Versions and Usage Trends in Healthcare Research

4.2.1 Distribution by Publication Year

The 57 included studies were published between 2020 and 2025. As illustrated in Figure 2, the annual distribution reveals a fluctuating yet generally increasing trend in research output over the review period. Publication volume was lowest in 2020 and 2022, with 6 articles each year; rose to 9 in 2021; and reached its highest in 2024 with 15 articles. The reduction in 2025 (13 articles) might partially be due to incomplete indexing of publications from that year at the time of the search.

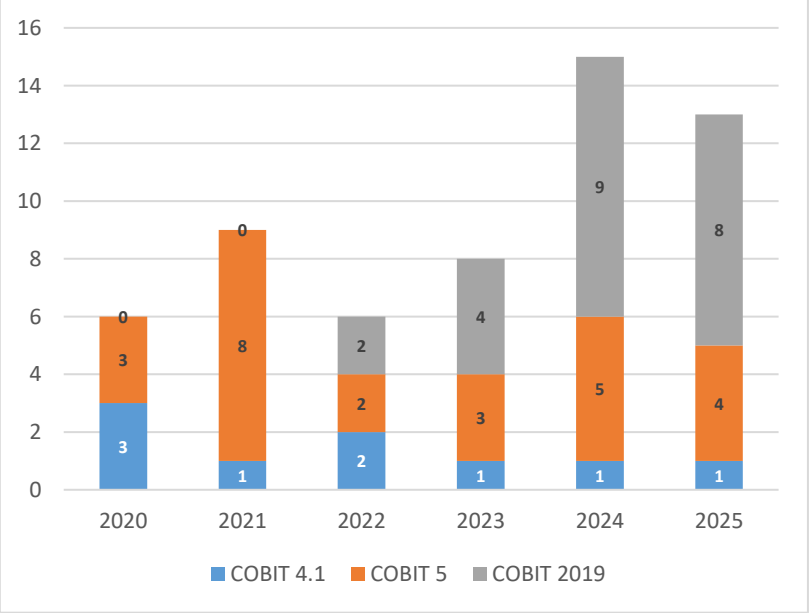


Fig. 2. Distribution of included studies by COBIT version and publication year (2020-2025).

4.2.2 COBIT Version Trends

As shown in Figure 2, among the 57 included studies, COBIT 5 was the most frequently applied version (25 studies, 44%), followed by COBIT 2019 (23 studies, 40%), and COBIT 4.1 (9 studies, 16%). A notable temporal shift is evident across the review period: COBIT 4.1 usage remained relatively consistent before declining in later years, while COBIT 2019 adoption increased substantially from 2022 onward. COBIT 5 remained prominent throughout the period, though its share relative to COBIT 2019 narrowed in later years, suggesting a gradual transition toward the latest framework version in recent healthcare IT governance research.

4.3 RQ2: COBIT Domains and Management Objectives in Healthcare Research

4.3.1 Frequently Reviewed Domains

Across the 48 studies utilizing COBIT 5 and COBIT 2019, the APO (Align, Plan, and Organize) domain was the most extensively examined, appearing in 31 studies, followed by DSS (Deliver, Service, and Support) in 19 studies, MEA (Monitor, Evaluate and Assess) and BAI (Build, Acquire and Implement) each in 16 studies, and EDM (Evaluate, Direct, and Monitor) in 15 studies (see Table 1). A closer comparison between the two framework versions reveals a notable divergence in domain emphasis. APO was disproportionately prominent in COBIT 2019 studies, appearing 18 of 23 studies (78.3%), compared to 13 of 25 COBIT 5 studies (52%). This pattern suggests that the Design Factors mechanism introduced in COBIT 2019, which emphasizes risk management and strategic alignment, directs healthcare research toward planning and organizational governance activities. In contrast, MEA appeared more frequently in COBIT 5 studies, being examined in 11 of 25 studies (44%) compared with only 5 of 23 COBIT 2019 studies (21.7%). This finding indicates that COBIT 5 research placed greater attention on monitoring and evaluating existing IT performance, reflecting an emphasis on assessing governance maturity levels rather than developing targeted governance enhancements.

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Table 1. Distribution of included studies by COBIT domain (COBIT 5 and COBIT 2019).

Domain	Description	COBIT 5 (n=25)	COBIT 2019 (n=23)	Total (n=48)
APO	Align, Plan, and Organize	13	18	31
DSS	Deliver, Services, and Support	9	10	19
BAI	Build, Acquire, and Implement	8	8	16
MEA	Monitor, Evaluate, and Assess	11	5	16
EDM	Evaluate, Direct, and Monitor	8	7	15

Note: A single study may examine objectives from multiple domains.

Among the nine studies that employed COBIT 4.1, the PO (Plan and Organize) domain was the most commonly analyzed, appearing in seven studies, followed by AI (Acquire and Implement) in six studies. The DS (Deliver and Support) and ME (Monitor and Evaluate) domains were addressed in three studies (see Table 2). These results illustrate the more limited and infrastructure-focused orientation that characterized earlier applications of the framework within healthcare environments.

Table 2. Distribution of included studies by COBIT process group (COBIT 4.1).

Domain	Description	Number of Studies
PO	Plan and Organize	7
AI	Acquire and Implement	6
DS	Deliver and Support	3
ME	Monitor and Evaluate	3

Note: A single study may examine process groups from multiple domains; total exceeds 9.

4.3.2 Frequently Reviewed Management Objectives

At the individual objective level, the analysis reveals three notable thematic patterns across framework versions. A pronounced shift from monitoring-oriented to risk and security-oriented governance is observed as studies transition from COBIT 5 to COBIT 2019. In COBIT 5 studies, the monitoring cluster comprising MEA01, MEA02, and MEA03 collectively appeared 15 times, reflecting a predominant concern with evaluating existing IT performance and conformance. In contrast, COBIT 2019 studies exhibited a sharp concentration on risk and security objectives, with APO12 (Managed Risk), APO13 (Managed Security), EDM03 (Ensured Risk Optimization), and DSS05 (Managed Security Services) collectively appearing 31 times, nearly four times that of the equivalent cluster in COBIT 5 studies as shown in Table 3. This thematic shift may reflect the growing regulatory pressure on healthcare organization, particularly in Indonesia, where the enactment of the Personal Data Protection Law (UU PDP No.27/2022) [3] and Ministerial Regulation No. 24 of 2022 [14] arguably elevated risk and data security governance as institutional priorities, potentially steering researchers and practitioners towards risk and security-focused governance objectives when applying COBIT 2019. Notably, EDM03 appeared exclusively in COBIT 2019 studies (6 studies, 0 in COBIT 5), which is arguably consistent with the more explicit risk governance design embedded in COBIT 2019's framework structure.

A further cross-version pattern concerns APO07 (Managed Human Resources), which emerged as a consistently prominent objective across both COBIT 5 (7 studies) and COBIT 2019 (4 studies), with its functional equivalent PO7 also appearing in COBIT 4.1 studies. This cross-version consistency suggests that human resource management in IT remains a persistent governance concern in healthcare settings, likely reflecting the chronic shortage of competent IT personnel and the heavy reliance on non-specialist staff to operate complex clinical information systems.

Table 3. Most frequently examine management objectives (COBIT 5 and COBIT 2019).

Rank	COBIT 2019 Objectives	Freq.	COBIT 5 Objectives	Freq.
1	APO12 – Managed Risk	13	APO07 – Managed Human Resources	7
2	APO13 – Managed Security	7	DSS01 – Managed Operations	7

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3	EDM03 – Ensured Risk Optimization	6	MEA01 – Managed Performance and Conformance Monitoring	7
4	DSS05 – Managed Security Services	5	EDM04 – Ensured Resource Optimization	5
5	DSS02 – Managed Service Requests and Incident	5	APO01 – Managed I&T Management Framework	5
6	BAI02 – Managed Requirements Definition	4	MEA03 – Managed Compliance with External Requirements	4
7	BAI03 – Managed Solutions Identification and Build	4	MEA02 – Managed System of Internal Control	4
8	BAI07 – Managed IT Change Acceptance and Transitioning	4	APO02 – Managed Strategy	4
9	APO07 – Managed Human Resources	4	BAI04 – Managed Availability and Capacity	3
10	DSS03 – Managed Problems	4	APO12 – Managed Risk	3

In contrast to the more evaluative and risk-focused scope of COBIT 5 and COBIT 2019 studies, COBIT 4.1 studies were predominantly concentrated on foundational planning and infrastructure objectives, with PO2 (Define the Information Architecture) and PO8 (Manage Quality) each appearing in 4 studies, and AI3 (Acquire and Maintain Technology Infrastructure) in 3 studies as shown in Table 4. This pattern is indicative of an earlier stage of IT governance maturity, where healthcare organizations were primarily concerned with establishing basic IT structures rather than conducting comprehensive governance evaluations.

Table 4. Distribution of COBIT 4.1 processes across included studies (n=9).

Domain	Process	Frequency
Plan and Organize (PO)	PO2 – Define Information Architecture	4
Plan and Organize (PO)	PO8 – Manage Quality	4
Acquire and Implement (AI)	AI3 – Acquire and Maintain Technology Infrastructure	3
Deliver and Support (DS)	DS3 – Manage Performance and Capacity	3
Monitor and Evaluate (ME)	ME1 – Monitor and Evaluate IT Performance	3
Acquire and Implement (AI)	AI2 – Acquire and Maintain Application Software	2
Deliver and Support (DS)	DS5 – Ensure Systems Security	2

Note: A single study may examine process groups from multiple process.

4.4 RQ3: Challenges and Critical Success Factors of COBIT Implementation in Healthcare

4.4.1 Challenges

The thematic analysis of challenges reported across the 57 studies identifies six recurring categories, with infrastructure and system performance issues emerging as the most pervasive concern, appearing in 21 studies as shown in Table 5. These challenges encompass network connectivity failures, inadequate server specifications, system errors and bottlenecks, and insufficient backup mechanisms. Ultimately, these technical flaws directly hinder the dependable delivery of IT-based healthcare services. Closely related, documentation and SOP deficiencies were identified in 20 studies, indicating that IT processes in many healthcare organizations are performed on an ad hoc basis without adequate formalization, standardization, or institutional documentation. Risk and security governance weaknesses appeared in 18 studies, reflecting persistent vulnerabilities in how healthcare organizations identify, assess, and respond to IT-related threats, particularly those involving patient data protection and information security. HR and competency gaps were cited in 13 studies, underscoring the chronic challenge of recruiting and retaining qualified IT personnel in healthcare settings. Data integration and quality issues were identified in 9 studies, pointing to

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fragmentation across clinical and administrative information systems, while management awareness and commitment deficiencies appeared in 6 studies. Taken as a whole, these patterns indicate that the fundamental issues in healthcare IT governance are more organizational than technical. Specifically, they stem from a lack of formal procedures, limited human resource capabilities, and weak institutional commitment to structured governance.

Table 5. Key challenges in COBIT implementation across healthcare settings.

Theme	Number of Studies
Infrastructure & System Performances	21
Documentation & SOP	20
Risk & Security Governance	18
HR & Competency	13
Data Integration & Quality	9
Management Awareness & Commitment	6

Note: A single study may be classified under multiple challenge themes.

4.4.2 Critical Success Factors

Regarding critical success factors, as shown in Table 6, a structured and systematic governance process was the most frequently reported enabler, appearing in 9 studies. This was followed by management support and leadership commitment in 7 studies, strategic alignment in 5 studies, and both regulatory drivers and HR competency in 4 studies each. The prominence of structured governance processes indicates a telling implication: successful COBIT implementation in healthcare relies more on an organization's deliberate commitment to formalizing its IT governance structures than on resource availability or technological sophistication. This finding contrasts directly with the documentation and SOP deficiencies noted as the second most prevalent challenge. It implies that the dividing line between organizations that succeed and those that struggle often depends on whether governance processes are systematically institutionalized. Furthermore, while regulatory and policy drivers are cited less frequently, their role is highly relevant in the Indonesian context. Mandates such as Ministerial Regulation No. 24 of 2022 and the Personal Data Protection Law (UU PDP No. 27/2022) act as external catalysts, compelling healthcare organizations to prioritize IT governance improvements. Ultimately, these results show that sustainable COBIT implementation in healthcare demands a combination of top-down leadership engagement, formal governance structures, and external regulatory accountability.

Table 6. Critical success factors in COBIT implementation across healthcare settings.

Theme	Number of Studies
Structured Governance Process	9
Management Support & Leadership	7
Strategic Alignment	5
Regulatory & Policy Driver	4
HR Competency & Knowledge Management	4

Note: Not all included studies explicitly reported critical success factors. A single study may be classified under multiple themes.

4.5 Managerial Implication

The findings of this review carry several implications to the management of health institutions, especially hospitals, clinics and community health centers in Indonesia. As more organizations adopt COBIT 2019, healthcare managers should start or accelerate the transition from older COBIT version. Organizations still using COBIT 5 can leverage existing assessment results as a baseline, but they should recognize that COBIT 5 emphasizes monitoring and evaluating existing IT performance (MEA), whereas COBIT 2019 embeds risk and security governance more explicitly through its Design Factors and objectives such as EDM03, APO12, and APO13. Managers who follow COBIT 5

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are only treating the symptoms of governance deficiencies and not the fundamental risk frameworks required by UU PDP No. 27/2022 [15] and Ministerial Regulation No. 24 of 2022 [14].

Secondly, the dominance of APO12, APO13, EDM03, and DSS05 in COBIT 2019 demonstrates that risk and security governance should be a priority at the board level, not only among IT personnel. Managers must ensure the formal assignment of risk ownership, conducting periodic risk assessments, and having documented and rehearsed incident response procedures. The risk optimization implied by EDM03, within the COBIT 2019 analysis, emphasizes the necessity of having a well-defined governance model at the top of the organization.

Third, the fact that APO07 remains relevant across all versions of COBIT indicates that this is a systemic problem, and not a one-off problem. Healthcare managers should work to improve IT literacy, define roles for clinical and IT staff, and decrease dependence on non-expert staff to oversee clinical information systems. Training and retention efforts should be aligned with the enterprise IT governance objectives, rather than treated as separate administrative tasks.

Fourth, the challenges identified in this review—infrastructure and system efficacy, deficiencies in documentation and standard operating procedures, and lack of risk governance—imply that managerial attention should focus on institutionalizing processes rather than on technology acquisition only. The gap between poor documentation (20 studies) and structured governance processes as the top critical success factor (9 studies) suggests that the key factor is not the availability of resources but the organization's commitment to formalization. Management needs to focus on creating formalized IT procedures, conducting periodic evaluations, and implementing performance tracking systems.

Finally, the importance of managerial support and leadership commitment (7 studies) reinforces that sustainable COBIT implementation cannot be steered solely by IT departments. Hospital directors and healthcare executives should actively sponsor IT governance initiatives, invest in infrastructure redundancy and security, and leverage regulatory requirements to cultivate institutional buy-in. Collectively, these implications indicate that successful COBIT implementation in healthcare requires a combination of executive leadership, established governance structure, and regulatory accountability.

5 Conclusion

This systematic literature review synthesized 57 empirical studies on the implementation if COBIT in healthcare settings, providing a comprehensive overview of framework usage trends, domain and objective focus areas, along with implementation challenges and success factors. The findings demonstrate a gradual transition from COBIT 5 toward COBIT 2019 in recent years. The main concern in the research context of COBIT 2019 is risk and security governance, a tendency probably driven by rising regulatory pressures in the healthcare sector. Key barriers to implementation are still the lack of HR competencies and established governance processes in all iterations of the framework, whereas managerial endorsement and commitment to structured governance are key success factors of implementation in all iteration of the framework. These findings carry practical implications for healthcare organizations and IT governance practitioners seeking to adopt COBIT in clinical and administrative contexts. Managers should be able to choose the COBIT version as a strategic choice, emphasize risk and security governance according to UU PDP No. 27/2022 and Ministerial Regulation No. 24 of 2022, and focus on institutionalizing governance processes not just getting technology. The sustained relevance of HR-related objectives in all versions of COBIT shows that the development of competencies and definition of roles should be treated as basic governance responsibilities and not as mere administrative afterthoughts. This review is nonetheless subject to limitations, including its geographic concentration on Indonesian studies and the involvement of a single researcher in the screening and extraction process. These constrains limit the applicability of the results and are a threat of selection bias which should be addressed in future reviews by independent dual screening. Future research should advance beyond descriptive assessments to more contextually informed, prescriptive questions. Three specific recommendations are made. First, scholars should develop COBIT implementation framework appropriate to specific national contexts, especially in developing countries where the regulatory systems, digital infrastructure, and governance of healthcare differ significantly from those in advanced economies. Models need to be sensitive to regional regulatory requirements, resource constraints and organizational cultures.

Secondly, further research should develop COBIT implementation framework for different types of healthcare facilities, such as public hospital (RSUD), private hospitals, clinics, and community health centers (Puskesmas). These facilities differ in size, funding, degree of autonomy and technological sophistication. Nevertheless, recent research tends to group them together as homogeneous unit. Third, longitudinal studies are required to track capability levels over time and to assess the long-term impact of implementing COBIT on service quality, data security, and compliance with regulations. This kind of research would clarify if the application of COBIT leads to sustainable improvements of governance or only to short-term evaluation activities.

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