
Literature Review of Library Information System Audit Using COBIT 5 Framework

Annisa Khairani¹⁾, Dini Rahma Aliyah²⁾, Mudtiani Hakim Br Bangun³⁾, Yulia Ribuna Br Bangun⁴⁾,
Meigia Nidya Sari^{5*)}

¹²³⁴Accounting Study Program, Faculty of Social Science, University pembangunan Pancabudi Medan,
Indonesia

Corresponding Author :

Email : meigia@dosen.pancabudi.ac.id

Abstract

Modern libraries rely on information systems to support services and resource management. The reliability of library information systems is essential to ensure optimal service for users. This study aims to analyze the literature on the application of information system audits in libraries using the COBIT 5 framework. The literature review method is used to identify best practices, challenges, and recommendations for the implementation of COBIT 5-based audits. The findings reveal that the COBIT 5 framework provides a holistic approach to evaluating information system governance and management. In this study, it was found that several papers on IT/IS audits using COBIT 5 have different perspectives. Based on 10 journals obtained randomly, 3 journals were obtained entitled information system audits and discussed the information system audit process, while the other 7 journals were entitled information system audits but discussed the maturity level without discussing the audit process. This study is expected to provide new knowledge that information system audits are different from maturity levels, which are also studied in the COBIT 5 framework. This study shows that the application of COBIT 5 to library information systems can improve operational efficiency, compliance with standards, and mitigate technology risks. However, successful implementation depends on management commitment and a comprehensive understanding of the COBIT 5 framework. This study contributes to the development of a library information system audit framework and provides insights for library managers in adopting COBIT 5.

Keywords: *Library Information Systems, COBIT 5, IT Governance, Literature Review*

INTRODUCTION

Information science and technology for organizations now have a position that, almost all business sectors need technology to improve the competitiveness of companies, is important in improving organizational governance practices, because critical business processes usually automatically and depend on information provided by IT systems as their decision makers. This dependence on IT requires organizations to pay attention, especially to governance consisting of leadership, organizational structure, and business processes that can ensure that the IT adopted by the organization develops and can be aligned with the organization's strategy and goals (Nasution et al, 2024).

The rapid advancement of technology has profoundly influenced many sectors, including libraries, which have transitioned from traditional repositories of printed materials to modern information hubs that rely heavily on sophisticated information systems. These systems are integral to the day-to-day operations of libraries, supporting critical functions such as catalog management, digital resource delivery, user services, and administrative processes. The effective implementation of library information systems ensures seamless access to information, enhances user satisfaction, and promotes operational efficiency. However, this reliance on technology also

introduces various challenges, such as ensuring system reliability, safeguarding sensitive data, meeting user expectations, and complying with relevant policies and standards. These challenges necessitate a robust framework for the governance and management of information systems to maximize their value while minimizing associated risks.

One of the most prominent frameworks for information system governance is COBIT 5 (Control Objectives for Information and Related Technologies). Developed by ISACA, COBIT 5 is widely recognized as a comprehensive and flexible framework designed to bridge the gap between business goals and IT operations. It provides a structured approach for organizations to align their IT strategies with overall business objectives, manage technological risks, and enhance decision-making processes. COBIT 5's focus on delivering value through effective governance makes it an ideal tool for addressing the unique challenges faced by libraries in managing their information systems.

COBIT 5 consists of five key domains: Align, Plan, and Organize (APO); Build, Acquire, and Implement (BAI); Deliver, Service, and Support (DSS); Monitor, Evaluate, and Assess (MEA); and the overarching principles of governance and management. These domains provide a comprehensive roadmap for evaluating and improving IT systems, addressing critical aspects such as strategic alignment, resource optimization, performance monitoring, and risk mitigation. When applied to library information systems, COBIT 5 can help ensure that these systems are reliable, secure, and capable of meeting the demands of an increasingly diverse and digital user base.

Despite its potential benefits, the application of COBIT 5 in the library sector remains relatively underexplored. While research on IT governance has expanded across various industries, studies focusing specifically on the audit and governance of library information systems using COBIT 5 are limited. This lack of attention represents a significant gap in the literature, as libraries face unique operational and technological challenges that differ from other organizations. For instance, libraries often serve a wide range of users, from students and researchers to community members, each with distinct needs and expectations. Additionally, the rapid digitization of library resources has created new vulnerabilities, such as data breaches and system outages, underscoring the importance of effective IT governance.

From various previous studies related to information system audits using the COBIT 5 framework, they can be categorized into two, namely information system audit research but discussing maturity/capability levels and information system audit research and discussing the information system audit process. The differences in the content of these studies are very interesting to review in order to gain insight into information system audits using the COBIT 5 framework. So this study will review information system audits from previous studies to get an idea of how information system audits are carried out using the COBIT 5 framework. is an activity of collecting and testing data, carried out by competent and independent parties in order to determine the conformity of the audited information with the standards that have been set to be conveyed to interested parties (Nasution et al., 2024).

Information system audit is the process of collecting data and evidence by the auditor to determine whether the computer system that is running can perform its functions optimally to achieve the company's goals effectively and utilize resources efficiently (Nasution et al., 2021). Meanwhile, according to Gondodiyoto, information system audit is defined as research conducted to measure the level of suitability between applications and information systems that have been implemented by the company, have been designed and implemented so that they can

be optimally utilized by the company in achieving business goals [5]. In the information system audit, the auditee is the IT department.

By synthesizing findings from previous studies, this research seeks to offer valuable insights for libraries looking to enhance their IT governance and management practices. The results of this study are expected to contribute to the growing body of knowledge on COBIT 5 applications and provide practical guidance for library administrators, auditors, and policymakers. Moreover, it underscores the importance of adopting a structured and holistic approach to IT governance in libraries, ensuring that their information systems deliver optimal value while maintaining security and efficiency.

In conclusion, as libraries continue to embrace digital transformation, the need for effective IT governance becomes increasingly critical. The COBIT 5 framework offers a proven methodology for addressing the complexities of library information systems and aligning them with institutional goals. Through this study, we aim to highlight how COBIT 5 can be leveraged to improve the management and auditing of these systems, ultimately supporting libraries in fulfilling their mission of providing accessible and reliable information services to users.

RESEARCH METHODS

This study employs a qualitative approach through a systematic literature review to explore the application of the COBIT 5 framework in auditing library information systems. The research method is designed to identify, analyze, and synthesize findings from existing studies to provide a comprehensive understanding of the topic.

The study adopts a systematic literature review approach to gather and analyze data from previous research on COBIT 5 and its application in library information systems. This method allows for the identification of trends, best practices, and gaps in the existing body of knowledge. Data were collected from peer-reviewed journals, conference proceedings, books, and credible online resources.

With this method, information is obtained by studying writings from books or scientific works that have been made previously. Data is obtained from several journals that are in accordance with the research topic and then taking the essence of the journal according to needs. Literature studies are conducted on scientific papers published in journals or national proceedings in Indonesia that contain the title of information system audit (Nasution, 2023).

RESULTS AND DISCUSSION

Information System Audit Journal Review

COBIT 5 is the only framework used for governance and management for companies that use IT as a driver of business processes (ISACA, 2017). This framework is a development and expansion of COBIT 4.1 with the addition of ISACA's Val IT and Risk IT frameworks, ITIL, and the International Organization for Standardization (ISO) (Andry and Christianto, 2018). COBIT 5 is general in nature so it can be used as a reference for various companies such as commercial, non-profit and government companies. By using the 5 main domains in COBIT 5 for corporate IT governance and management, the implementation of the system in accordance

with company procedures ensures that effective governance and management can be built that can optimize all resources and assets to achieve business goals and profits. Cobit 5 is a general framework that can be used for all enterprise standards, whether commercial, non-profit or public sector. Cobit 5 is based on five main principles for enterprise IT management and governance (Nasution & Welly, 2023).

COBIT 5 contains a combination of value delivery, risk management, information security, and IT audit features. COBIT 5 combines several other frameworks including COBIT 4.1 (IT governance and control), Val IT 2.0 (Value delivery), and risk management. Information system audits within the COBIT framework can be IT Assurance, capable of providing evaluations related to IT governance, and providing feedback that can be used by companies to improve management. In COBIT, the relationship between components can be described as in Figure 1.

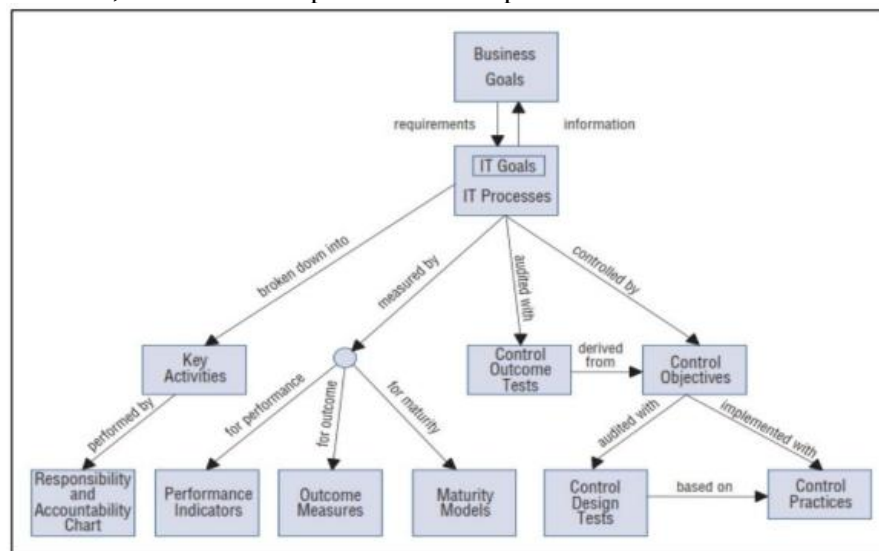


Figure 1. Component Relationships in COBIT

With the relationship of components in COBIT in information system audits, it can be assessed whether the existing and implemented IT processes can support IT objectives by taking control of the results produced. The results produced are based on the control objectives of each method. Currently, many studies use the title of information system audits but discuss the level of maturity or maturity model. If viewed from the relationship of each component in COBIT, it can be said that information system audits are different from the level of maturity. The level of maturity or maturity model is part of the stages carried out in the audit process which aims to:

- 1) Provide awareness to IT management regarding the responsibility for controlling ongoing IT,
- 2) To ensure that existing IT control requirements are carried out properly,
- 3) Optimize and prioritize IT resources, and
- 4) Bridge IT governance.

In the information system audit process, several findings can be taken that can be used by organizations related to what causes IT objectives not to be achieved. While the maturity level only produces a value that describes the position of IT to support the organization's business processes. Several studies in the form of journals were searched for with the title of information system audit which came from random data and obtained 10 journals as in Table 1. Of the 10 journals obtained, only 3 journals were titled information system audit and discussed the

information system audit process in full. While the other 7 journals were titled information system audit, but discussed the maturity level. From this it can be concluded that there are still differences in research that are both titled information system audit. This study is expected to provide new knowledge for other researchers to focus their research especially in the field of information system audit.

Table 1. Results of the Review of Scientific Papers on the Topic of IT AUDIT

No	Paper Title	Paper Category	
		Discussing the level of maturity or no discussion of the audit process	Discussing the information system audit process
1	Audit Sistem Informasi Pelayanan Perpustakaan Menggunakan Framework COBIT 5.0 (Efendi dkk., 2019)	✓	
2	Audit Sistem Informasi Akademik Menggunakan COBIT 5 di Universitas Jenderal Achmad Yani (Ekowansyah dkk., 2017)	✓	
3	COBIT 5 UNTUK TATA KELOLA AUDIT SISTEM INFORMASI PERPUSTAKAAN (Mz, 2021)	✓	
4	Audit Sistem Informasi Pelayanan Perpustakaan Binjai Menggunakan Framework Cobit 5 (Yulia Ningsih dkk., 2024)	✓	
5	Audit Sistem Informasi Perpustakaan dengan Pendekatan Framework COBIT 5 (Setyaningrum & Andarwati, 2024)	✓	
6	Audit Sistem Informasi pada Perpustakaan ARS University Menggunakan Framework Cobit 5 (Amalia dkk., 2020)	✓	
7	Audit Sistem Informasi/Teknologi Informasi Dengan Kerangka Kerja COBIT Untuk Evaluasi Manajemen Teknologi Informasi Di Universitas XYZ (Fitrianah, t.t.)		✓
8	Audit Sistem Informasi Pada Lampung Post Menggunakan Framework COBIT 5 (Wijaya & Aziz, 2019)		✓
9	Audit Sistem Informasi Pengiriman Barang Pada PT. JATI EXPRESS Lampung Menggunakan COBIT 5.0 (Purnamayati, 2019)		✓

10	Audit Sistem Informasi pada Dinas Perpustakaan dan Kearsipan Kota Salatiga Menggunakan Framework COBIT 4.1 Domain Monitor And Evaluate (Patawala & Manuputty, 2021)	✓	
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Information system audit and maturity level are interrelated, but very different when discussed in a study. Maturity level or maturity model is one of the processes in information system audit activities. A review of 10 journals was conducted in order to examine the contents of the journal whether they were in accordance with the title of information system audit. Of the 10 journals obtained randomly, 3 journals were obtained entitled information system audit and discussed the information system audit process, while the other 7 journals were entitled information system audit but discussed the level of maturity without discussing the audit process. This study is expected to provide new knowledge that information system audit is different from the level of maturity, which is also studied in the COBIT 5 framework.

Benefits of Using COBIT 5 in Library Information Systems

The literature highlights several benefits of applying COBIT 5 to library information systems. First, COBIT 5 provides a structured framework that allows libraries to align their IT processes with organizational objectives, ensuring that technology supports both operational needs and strategic goals. This alignment is particularly evident in the APO (Align, Plan, and Organize) domain, which emphasizes resource optimization, strategic planning, and IT risk management. Operational efficiency is another key benefit of using COBIT 5. By standardizing processes, such as service delivery and incident management (under the DSS domain), libraries can reduce downtime, improve system reliability, and enhance user satisfaction. For instance, the DSS02 process, which focuses on managing service requests and incidents, enables libraries to handle user issues more effectively, ensuring timely resolutions and maintaining service quality.

Risk mitigation is also a critical advantage of the framework. COBIT 5's MEA (Monitor, Evaluate, and Assess) domain helps libraries identify vulnerabilities, implement internal controls, and monitor compliance with regulatory requirements. This capability is especially valuable in protecting sensitive user data and ensuring the security of digital library resources. Additionally, COBIT 5 facilitates better decision-making by providing a clear governance structure and reliable performance metrics. This is particularly relevant for library administrators, who often face challenges in balancing resource limitations with increasing user demands. The APO05 process (Manage Portfolio) ensures that IT investments align with the library's overall priorities, maximizing the value delivered to stakeholders.

Challenges in Implementing COBIT 5

Despite its benefits, several challenges hinder the effective implementation of COBIT 5 in libraries. One of the primary obstacles is resource constraints. Many libraries, particularly smaller public libraries, operate with limited budgets and insufficient IT staff, making it difficult to allocate the necessary resources for a full-scale COBIT 5 implementation. A lack of expertise is another significant challenge. The complexity of the COBIT 5 framework requires skilled personnel who are familiar with IT governance principles and the specific processes outlined in the framework. Unfortunately, many libraries lack access to such expertise, especially in regions where professional development opportunities for IT governance are limited. Resistance to change among staff members further complicates implementation efforts. Library employees,

accustomed to traditional workflows, may perceive the introduction of COBIT 5 as unnecessary or disruptive. This resistance is often fueled by a lack of awareness about the benefits of IT governance frameworks and their potential to improve service delivery.

Adoption Trends and Contextual Factors

The adoption of COBIT 5 varies across different types of libraries. Academic and research libraries are more likely to implement the framework compared to public or community libraries. This trend is largely due to the higher accountability standards in academic institutions, where performance metrics and strategic planning are prioritized. Moreover, academic libraries often have access to greater financial and human resources, enabling them to invest in IT governance initiatives. Public libraries, on the other hand, tend to face more significant barriers to adoption. Limited budgets, diverse user demographics, and a focus on community outreach rather than operational efficiency make it challenging for these institutions to justify the costs associated with COBIT 5 implementation.

The literature identifies several best practices for overcoming the challenges associated with COBIT 5 implementation. One effective approach is phased implementation, where libraries gradually adopt the framework by focusing on specific domains or processes. For example, starting with the DSS domain allows libraries to improve service delivery before addressing more complex areas like strategic alignment and risk management. Providing training and capacity-building programs for staff is another critical best practice. These programs help employees understand the value of IT governance and equip them with the skills needed to implement and manage COBIT 5 processes effectively. Furthermore, integrating COBIT 5 with existing library policies ensures a smoother transition by minimizing disruptions to established workflows.

Relevance of COBIT 5 in Libraries

The findings underscore the relevance of COBIT 5 in addressing the unique challenges of library information systems. Unlike other IT governance frameworks, COBIT 5 offers a holistic approach that integrates governance and management practices. This makes it particularly suitable for libraries, where IT systems must support a wide range of services, from catalog management and digital resource delivery to administrative tasks and user support. For instance, the APO domain enables libraries to develop IT strategies that prioritize user needs, while the BAI (Build, Acquire, and Implement) domain focuses on ensuring that new technologies are implemented effectively. Together, these domains provide a comprehensive roadmap for improving library operations and enhancing user satisfaction. To overcome the challenges associated with COBIT 5 implementation, libraries can adopt collaborative strategies such as resource-sharing networks and partnerships with academic institutions. These collaborations provide access to expertise and funding that might otherwise be unavailable. Additionally, incremental adoption allows libraries to test the framework in specific areas before scaling it to the entire organization, reducing the risks associated with large-scale implementation. As libraries continue to digitize their collections and services, the importance of IT governance frameworks like COBIT 5 will only increase. Emerging technologies such as artificial intelligence, big data analytics, and cloud computing present new opportunities for libraries to enhance their operations but also introduce additional risks and complexities. By adopting COBIT 5, libraries can ensure that their information systems are equipped to handle these challenges while delivering reliable and user-centric services.

CONCLUSION

This study highlights the critical role of COBIT 5 in auditing and managing library information systems. As libraries increasingly rely on technology to deliver services and manage resources, the need for robust IT governance frameworks has become essential. The findings from the literature review reveal that COBIT 5 provides significant benefits, including improved operational efficiency, enhanced risk mitigation, and better alignment of IT processes with organizational goals. Its structured approach helps libraries streamline workflows, ensure compliance, and support informed decision-making.

However, the implementation of COBIT 5 is not without challenges. Resource constraints, limited expertise, and resistance to change are among the most common barriers faced by libraries. Addressing these challenges requires tailored strategies such as phased implementation, staff training, and integration with existing policies. Libraries can also benefit from collaborative initiatives, such as resource sharing and partnerships with academic institutions, to overcome resource limitations and access technical expertise.

The study also demonstrates that COBIT 5 is particularly relevant for academic and research libraries, where accountability and performance metrics are critical. While public libraries face greater obstacles in adopting COBIT 5, the framework's scalability and flexibility make it adaptable to various organizational contexts. Looking ahead, the adoption of COBIT 5 is expected to play a pivotal role in helping libraries navigate the complexities of digital transformation. Emerging technologies such as artificial intelligence, big data, and cloud computing offer new opportunities for libraries to enhance their services, but they also require effective governance to manage risks and ensure sustainable implementation. By leveraging the strengths of COBIT 5, libraries can position themselves as resilient, user-centric institutions that are equipped to meet the demands of the digital age.

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