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Comparison of standards or frameworks for IT service desk implementation

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ABSTRACT

The service desk plays a significant part in implementing Information Technology Service Management (ITSM). However, there are some hurdles to its execution. Currently, there are several ITSM standards and frameworks accessible. However, its application is not simple. Therefore, this study aims to analyze the characteristics of the IT Service Desk standard or framework. The Study of Similarity of Models and Standards (MSSS) method was used in this study. Starting from selecting standard selection criteria or frameworks, analyzing to find similarities and differences, to presenting results. There are four selected standards or frameworks, namely ITIL V3, ITIL 4, ISO/IEC 20000, and COBIT 2019. All of them define the same process regarding the implementation of the IT Service Desk. However, all of them have specificity. COBIT 2019 defines processes related to the IT Service Desk, namely DSS 02 and DSS 03. While ITIL V3 and ITIL 4 provide more detailed explanations related to the procedures of each process. ITIL V3 also defines how to build an IT Service desk, both in terms of organizational structure and role requirements. Meanwhile, ISO 20000:2018 provides an overview of how an organization is to comply with the standard.

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1. INTRODUCTION

Information Technology Service Management (ITSM) plays a pivotal role in aligning IT services with organizational needs, and one of the key practices within ITSM is the service desk. As a single point of contact, the service desk will capture all incident complaints and service requests from service users (Axelos, 2019). Its strategic presence enables better responsiveness, accountability, and overall service quality, while also initiating a cultural shift in the way services are managed within the organization (Liu et al., 2022).

Despite its importance, organizations often face considerable challenges in implementing an effective service desk. As stated by Keel et al., there are four areas of challenge: technology, data, processes, and people (Keel et al., 2007). Employee resistance to change is one of the biggest challenges. This causes delays or stops the

ITSM implementation process (Diego, 2019). In addition, the lack of knowledge/skills related to the service desk is another major challenge organizations face (da Silva & Lins de Vasconcelos, 2020). The inadequacy of project management experience from the organization's core members also complicates its implementation (Heikkinen & Jäntti, 2012).

To assist organizations, several ITSM frameworks and standards have been developed, such as ITIL, ISO/IEC 20000, and COBIT. Ruiz et al. said that, according to the results of a survey conducted in 2017, the most often employed ITSM framework or best practice was ITIL (Ruiz et al., 2018). Even though there is quite a lot of material connected to the ITSM framework and standards for organizations or enterprises, certain companies, both government, state-owned, and private, have yet to be accredited for ITSM management (Cots & and Casadesús, 2015). However, studies have shown that the application of these frameworks is often complex and not straightforward (da Silva & Lins de Vasconcelos, 2020) (Göbel & Cronholm, 2015) (Lema et al., 2015). In practice, many organizations still struggle with proper adoption due to a lack of clear guidance and the complexity of integrating standards into existing organizational contexts(Nicho & Muamaar, 2016).

Although existing literature has explored individual frameworks or general ITSM adoption, there is limited comparative analysis that specifically focuses on how various standards/frameworks address service desk implementation. This presents a gap in current research, especially in understanding the distinct characteristics, strengths, and weaknesses of each framework in the context of service desk practices. Previous studies tend to focus on framework adoption as a whole or from a broad IT governance perspective, leaving a lack of practical insight for organizations aiming to select or combine frameworks specifically for service desk functions.

Therefore, this study aims to further analyze and compare the characteristics of several standards or frameworks related to service desk practice in IT Service Management. This article is structured as follows: first, an introduction to the service desk in ITSM is provided. Then the research method was used to select the model, and the standard was determined. Then the results of comparisons between standards or frameworks are displayed using table illustrations. Furthermore, a conclusion will be presented.

2. RESEARCH METHOD

The selection of a standard or framework for the determination of the analysis carried out must be supported and use a clear method. We applied the Method of Study of Similarity of Models and Standards (MSSS) to this research. This method has been used for selecting and analyzing risk management standards or frameworks in the software outsourcing industry. The MPSEI research group of the University of Madrid Polytechnic proposed the MSSS approach, which has been validated by writers from diverse fields of study (Calvo-Manzano et al., 2008). The MSSS method was developed through an extensive review of literature on mapping models and standards and has been proven effective in identifying similarities and differences between multiple frameworks.

In adapting the MSSS to the IT Service Desk context, the research followed a systematic process, including framework selection, definition of comparison indicators, extraction of relevant components, and tabulation of results. This adaptation was guided by ensuring that each comparison criterion was relevant to service desk practices, including process definitions, role structures, compliance requirements, and implementation guidelines. This adaptation is aligned with prior research approaches that applied MSSS to different but related domains, thereby ensuring contextual validity in ITSM.

For the data analysis method, we used a combination of manual qualitative analysis and matrix-based comparison. The frameworks were analyzed through document review and interpreted using thematic categorization. Each identified aspect—such as organizational structure, process detail, certification purpose, and implementation guidance—was coded and mapped across the four frameworks using a structured comparison table. This method allows for identifying both similarities and nuanced differences across standards.

The MSSS method has several stages, according to the phases it proposes. These phases are shown in Figure 1:

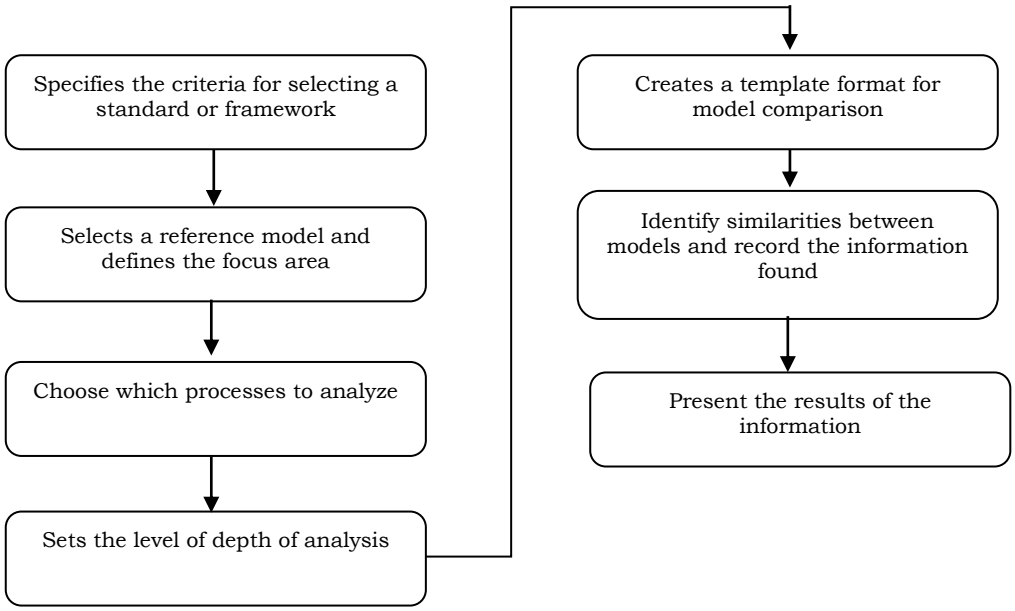

Figure 1. MSSS Phase

The phases or stages of the MSSS method are still general and will be adapted for this research article. For this reason, the following methodology will be used to compare standards or frameworks for IT Service Desk implementation, shown in Table 1.

Table 1. Adaptation from MSSS Method

Methodology	Phase	Adaptation from MSSS Method
Selection	A	Determine standard or framework selection criteria
	B	Describes the chosen standard or framework
Analysis	C	Determine the purpose of the analysis
	D	Determine focus areas for comparisons related to IT Service Desk
Result	E	Comparing standards or frameworks according to the specified focus area
	F	Gather results from the information obtained

In conducting this research, the method used is a literature review. A systematic approach was carried out by identifying and selecting relevant frameworks and standards for IT Service Desk implementation, including ITIL V3, ITIL 4, ISO/IEC 20000, and COBIT 2019.

3. RESULTS AND DISCUSSIONS

3.1. Standard or framework selection criteria

The selection of standards or frameworks is based on the following criteria: (a) Standards or frameworks related to the IT Service desk, (b) Standards or frameworks that have publicly accessible data and information, and (c) Standards or frameworks that discuss processes related to the IT Service desk.

3.2. Description of the selected standard or framework

Based on the standard criteria or framework that has been determined, the standard or framework is selected as follows: (a) Information Technology Infrastructure Library (ITIL) V3:2011 (Al-Ashmoery et al., 2021)(Cronholm & Persson, 2016). ITIL V3 2011 offers best practices related to IT service management as the main business function within the organization. The service desk is defined as a vitally important function in an IT organization. It explains the process, organizational structure, and performance measurement. (b) Information Technology Infrastructure Library (ITIL) V4:2019 (Ayuh & Chernovita, 2021)(Harjanto & Aji, 2024). ITIL V4 2019 is the latest version of ITIL with the renewal of many broader ITSM (Information Technology Service Management) practices in information technology service management. Has 34 practices, one of which is explaining the Service desk practices. (c) ISO/IEC 20000-1:2018, Information Technology-Service management (Van Der Haven, 2020)(Grishaeva, 2022). ISO/IEC 20000 guides the management of IT services from the requirements given in each clause. The ISO 20000 standard defines the required processes and their interactions, according to the requirements in the ISO 20000 document. (d) Control Objectives for Information and Related Technologies (COBIT) 2019 (Fuada, 2019)(Justitia et al., 2021). COBIT 2019 is the latest version of COBIT, which maximizes IT utilization with a comprehensive framework of various management. The IT Service desk is included in the Deliver, Service, and Support (DSS) domain, specifically in the Management Objective DSS02 Managed Service Requests and Incidents and DSS03 Managed Problems.

3.3. The Purpose of the Analysis

This analysis was conducted to determine the characteristics and scope of standards or frameworks regarding IT Service desks in IT Service Management. This is important considering that each standard and model has its focus related to the IT Service desk. Understanding this will help optimize its utilization.

3.4. Focus Areas of Analysis

To achieve the objective of the analysis, the focus area must first be determined. The Service Desk Standard from the Service Desk Institute (SDI) is used as a basis for determining focus areas. The reason for choosing it is that the Service Desk Standard provides a quality standard for the service desk management process. The focus area in question includes HR management, organizational structure, processes, and procedures. HR management related to role description, minimum competency, and reward mechanisms. The organizational structure relates to an explanation of the executor's functions. While processes and procedures are related to the scope of the process in implementing the service desk (SDI, n.d.).

3.5. Comparison of IT Service Desk Standards or Frameworks

Based on the description of each, it is known that each standard or framework has its uniqueness. Nonetheless, one thing in common with all standards or frameworks has been identified. The four of them explained the process of implementing the IT Service

desk. A more detailed description of the characteristics of each related to compliance with the focus areas is presented as follows.

As a framework, ITIL V3 fulfils all three focus areas related to the IT Service desk. In this framework, the service desk is defined as one of the functions in the IT department. Serves as a single point of contact that will capture all complaints, both incidents and requests related to IT services. To carry out its functions, there are two main roles in the Service desk function, namely Service desk manager and Service desk analyst. In connection with the function of the Service desk, which is responsible for every problem report and service user request, it is recommended that each Service desk staff member have the following knowledge and skills (Hardjati & Febrianita, 2019): (a) interpersonal skills, such as communication skills and empathy, (b) business understanding, such as understanding the business and organizational structure, (d) technical knowledge and skills, at least understand IT, and be able to operate Service desk applications, (e) knowledge and skills of procedures and documentation, such as Service Level Agreement (SLA), problem handling procedures, and problem escalation procedures.

Concerning the process, the service desk plays a role in service operations. There are three main processes handled by the service desk as follows: (a) Incident management, namely, handling service disruptions, (b) Request fulfillment, namely fulfilling customer requests, (c) Access management, namely managing service user access rights

Not only defined processes, ITIL V3 also provides an explanation of the procedures for each process along with details of the roles involved. In contrast to ITIL V3, in ITIL 4 the service desk is defined as a separate practice. This kind of definition puts the service desk in the same position as the processes in ITIL V3 (El-Sharif & Khaled, 2024). However, this has not been complemented by the definition of roles and organizational structure as presented in ITIL V3 (Ernawati & Wang, 2023).

As befits a standard, ISO 20000 provides requirements for how IT service management is defined by an organization. The contents of ISO 20000 related to the Service desk are included in clause 8 (Operation of the SMS) (Mesquida & Mas, 2015). Precisely in clause 8.6 Resolution and fulfillment, which consists of 3 things, namely Incident management, Service Request management, and Problem management. All three are defined requirements that must be met.

Lastly is COBIT 2019. In this framework, the discussion on the IT Service desk focuses on defining the processes and roles involved. There are two processes related to its function, namely DSS 02 (Manage service requests and incidents) and DSS 03 (Manage problems). In each process, activity details are defined along with a RACI diagram. It's just that the roles that exist in RACI are not specific roles on the service desk. Rather, a general role within the IT department. Another thing described by COBIT 2019 is the indicators for each key management practice of the process (Solekhan et al., 2024). Other relevant standards or frameworks are also defined. This shows that in its implementation, COBIT 5 requires collaboration with other best practices.

The critical analysis highlights that the differences among the frameworks stem from their fundamental purposes—ITIL focuses on operations, ISO 20000 on compliance, and COBIT on governance. These distinctions influence the way each framework supports service desk implementation. For instance, organizations seeking certification may prioritize ISO 20000, while those emphasizing detailed workflow optimization may benefit from ITIL. The implications of these differences suggest that no single framework is universally superior; instead, organizations should consider a hybrid approach. By combining the detailed processes of ITIL, the compliance structure of ISO 20000, and the strategic control of COBIT, organizations can address both operational efficiency and governance requirements. A summary comparison of IT Service desk standards and frameworks based on compliance with the focus areas is presented in Table 2. To support

this integrative analysis, a comparative table was developed using a matrix with ✓ (present/strongly defined), ✕ (not defined), and ~ (partially defined or weakly addressed) symbols across key focus areas.

Table 2. Comparison Standard or Framework ITSM

Methodology	ITIL V3	ITIL 4	ISO 20000:2018	COBIT 2019
Human Resource Management	✓	✕	✓	✕
Organization Structure	✓	✕	✓	✓
Organization Structure	✓	✓	✓	✓

4. CONCLUSION

A study of ITIL V3, ITIL 4, ISO 20000:2018, and COBIT 2019 shows that there are similarities and differences regarding the IT Service Desk. As an IT service desk standard or framework, the four of them equally define the process of implementing an IT Service Desk. But furthermore, the four have specificity. COBIT 2019 defines processes related to the IT Service Desk, namely DSS 02 and DSS 03. On the other hand, ITIL V3 and ITIL 4 provide a more detailed explanation regarding the procedures for each process. Not only that, ITIL V3 also defines how to build an IT Service desk, both in terms of organizational structure and role requirements. Meanwhile, ISO 20000:2018 provides an overview of how an organization can comply with standards by fulfilling requirements. This is important for certification purposes. Therefore, through the identification of these characteristics, it is expected that organizations can choose standards or frameworks that suit their needs. Not only that, but the collaboration of the four in the successful implementation of the service desk is a necessity.

The results of the study show that each standard or framework has certain characteristics. Meanwhile, until now, it has been identified that the implementation of IT Service Desk in organizations still has challenges. One of them is the difficulty of implementing a certain standard or framework. The strategic implications of this study are significant for organizations in the process of transitioning to service digitization. Leveraging established ITSM frameworks can accelerate digital transformation by providing structured guidance and minimizing inefficiencies in process development. However, the study highlights that there is no one-size-fits-all solution; organizations must strategically select and adapt the most appropriate framework(s) based on their specific needs, operational maturity, and regulatory context. Successful adoption requires not only technical implementation but also organizational commitment, planning, and alignment with business goals. Therefore, further research that can be proposed is the use of the four standards or frameworks to develop an IT Service desk model according to its roles and characteristics. It is hoped that integrating the strengths of ITIL V3, ITIL 4, ISO 20000:2018, and COBIT 2019 will lead to the development of a more comprehensive and adaptable IT Service Desk model, capable of addressing the diverse challenges faced by organizations during service digitization.

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