

## IT Service Management (ITSM) Using ITIL Domain Service Operation Method in Hospitals

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### ABSTRACT

The hospital is an institution operating in the healthcare sector, which is an integral part of social and health organizations. The increasing complexity and unstructured nature of hospital operations necessitate the importance of implementing information technology to aid in managing hospital operations. One effective method to implement is the ITIL domain service operation method. The methodology used in this research is a literature review, where the research is based on tested data and facts that have been proven true. This research also explains the important processes and aspects involved in hospital service management using the ITIL domain service operation. Furthermore, it discusses barriers, benefits, and the service desk within hospital IT service management. The study also includes an explanation of customer satisfaction in using hospital services effectively. This research is beneficial in providing a comprehensive understanding of hospital IT service management using the ITIL domain service operation method.

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## 1. INTRODUCTION

Hospitals are integral parts of social and health organizations. According to the World Health Organization (WHO), hospitals are healthcare institutions that provide comprehensive individual healthcare services, disease treatment (curative), and disease prevention (preventive) to the public [1]. Hospitals also provide inpatient, outpatient, and emergency care services as stipulated in the Republic of Indonesia Law No. 44, 2009 [2]. Nowadays, hospitals greatly require advanced technology to help improve the quality and delivery of healthcare services. Information technology plays a crucial role in healthcare services [3]. Because digital technology assists humans in creating, processing, and delivering information more quickly and efficiently [4]. The development of information technology can also bring about significant changes in the business world [5]. This is due to the frequent difficulties experienced such as constant pressure to improve medical services, reduce service errors, provide timely access, and monitor and control regulations and operational costs [6]. To address the challenges faced by hospitals, an integrated management information system is needed. An information system must be planned, built, and maintained to achieve desired information and comply with relevant rules in IT governance [7].

The governance of Information Technology (IT) in hospitals is a crucial aspect in ensuring smooth operations and quality service to patients [8]. In this context, the Information Technology Infrastructure Library (ITIL) emerges as an important framework for effectively managing IT services [9]. ITIL offers a set of best

practices that can be applied in various domains, including Service Operation, which is a primary focus in IT service management in hospitals. Implementing ITIL in hospitals promises improvements in operational efficiency, better incident management, and enhanced patient safety [10].

In the context of hospitals, the implementation of ITIL in the Service Operation domain becomes increasingly important considering the evolving complexity of the healthcare environment. ITIL practices require continuous attention to ensure that IT services support the overall operational effectiveness of the hospital. By adopting ITIL principles, hospitals can enhance incident response, optimize service availability, and improve patient satisfaction [11].

However, the implementation of ITIL in hospitals is often confronted with several challenges [12]. One of the main issues is the lack of adequate understanding of both IT and ITIL concepts [13] among hospital personnel. Additionally, the lack of resources, budget constraints, and resistance to change often hinder the adoption of more complex and detailed ITIL practices [14]. Solutions to overcome the challenges of implementing ITIL in hospitals include conducting intensive education and training on ITIL concepts, allocating adequate resources, building an organizational culture that supports innovation, and adopting a sustainable approach to managing change and continuous evaluation to ensure successful implementation [15].

This research aims to gain a deeper insight into IT service management aligned with the ITIL methodology in the service operation domain within hospitals. Various aspects of IT service management in hospitals will be discussed in this research, such as the aspects present in hospital ITSM, the challenges and benefits of hospital using IT service management. This research also delves into the service desk, which is closely related to service operation. With the existence of a service desk, a hospital will receive feedback on customer satisfaction regarding the service management implemented by the hospital.

## 2. METHOD

The methodology used in this research employs the literature review method. The reason for choosing this method is that the identified research focuses on the implementation of ITIL in hospitals, where the collected data must be factual and validated [16]. Literature reviews are generally conducted by reading relevant sources [17]. Therefore, the literature review in this scholarly work involves gathering data from journals and articles. The collected data are then processed, and the results are used for the creation of this journal [18]. The gathered data serve as a guide in determining the research objectives and issues, as well as providing explanations for the conducted research [19].

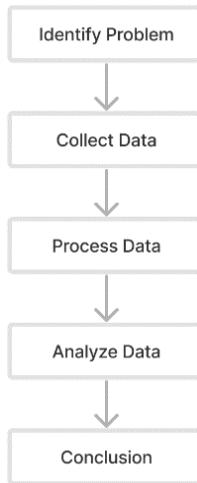


Figure 2. 1 Research Method

Based on Figure 2.1, the research method consists of 5 stages. The first stage is to identify existing problems. This is followed by data collection through articles and journals, then the data is processed, and the processed data results will be analyzed to draw conclusions from the research findings. In conducting research, the first step involves identifying the problem by examining the root issues using a broader perspective. In the second stage, relevant data is sought according to the discussion of the research we will undertake. Data is gathered through articles and journals available on the internet, such as on websites like Google Scholar, ResearchGate, and Garuda. Data is collected as much as possible to obtain a wider and more comprehensive reference related to our research object. All collected data is then processed in the third stage. Data is processed

by sorting through various sources that have been collected, and only factual and accountable data is utilized. Once the data is ready for processing, the next stage involves analyzing the data. We divide the collected data into two broad categories: qualitative data and quantitative data. This is done to facilitate the analysis of the collected data, making it easier to filter through. The final stage involves drawing conclusions from all the processed and analyzed data, leaving only the essence of the gathered data. These data cores are then used in conducting our research using the literature study method.

The information and data to be traced and summarized, to address the issues occurring in the implementation of IT Service Management using the ITIL domain service operation in hospitals, the following research questions (RQs) are formulated in this journal:

RQ1: What are three suitable processes and aspects in ITSM using ITIL service operation in hospitals?

RQ2: What are the challenges and benefits of implementing ITSM with the ITIL Domain Service Operation method in hospitals?

RQ3: How is ITSM with the ITIL Domain Service Operation method related to the Service Desk and user satisfaction with services in hospitals?

### 3. RESULTS AND DISCUSSION

In research on the implementation of IT Service Management with the ITIL domain service operation method in hospitals, studies on the application of ITIL in hospitals have yielded interesting findings. The research results indicate that the adoption of the ITIL framework has brought significant positive impacts in terms of operational efficiency and improvement in service quality across various hospital units. Specifically, processes related to service management, change management, and incident management have seen tangible improvements, resulting in increased responsiveness to patient needs and better readiness to handle medical emergencies [20]. However, there are several challenges faced during the ITIL implementation process. One of the main challenges is resistance to change, both from medical and non-medical staff, who may feel uncomfortable with changes to established work processes. Additionally, budget constraints are also a serious barrier, as this implementation often requires significant initial investment in technology infrastructure and human resource training [21].

Despite these challenges, this research also highlights that with human resource development training and swift management support, the implementation of ITIL can provide significant long-term benefits for hospitals. Targeted training will ensure that employees have the necessary knowledge and skills to manage ITIL processes effectively, while management support will ensure the smoothness and continuity of the implementation [22].

In this context, the recommendation provided emphasizes the importance of continued funding and management support for the ITIL program. Additionally, periodic evaluations of the effectiveness of the implemented ITIL processes will help identify areas that require further improvement or adjustment and require good resource management [23]. Thus, this research provides a solid foundation for efforts to improve efficiency, service quality, and IT resource management in hospitals, which in turn will contribute to overall improvements in public healthcare services. The implementation of these services can be seen as highly beneficial in facilitating and streamlining existing hospital services [24]. For example, the implementation of ITIL service operation in the field of inpatient care at hospitals will assist in managing the availability of medication and beds so that patients do not have to wait for services for a long time. Additionally, in the distribution of medication to patients, it can be done in the correct dosage and timing [25].

#### 3.1. Processes and Aspects of ITSM Using ITIL Service Operation in Hospitals

IT Service Management (ITSM) is known as the preparation, creation, and decision-making regarding goals, processes, human resources, and technology at the tactical and strategic levels of an organization [26]. ITSM also plays a crucial role in various fields, one of which is healthcare, particularly in hospitals. The Information Technology Service Management (ITSM) system has become increasingly important in establishing the service structure of hospitals. The presence of ITSM in hospitals is to ensure that healthcare services provided can run effectively and efficiently [27].

In hospitals, ITSM encompasses several important service aspects, such as patient data management, medical information systems, financial information systems, and hospital data security (information security and disaster recovery). In addition to the aspects above, there are also two aspects found in hospitals. The first aspect is service management aspect, in which hospitals can more easily identify notifications and facilitate supervision to check components both in impending incidents or when no incidents occur. Furthermore, there is the request aspect, in which hospitals can more easily accept patient requests and maintain standardization of patients or users when using hospital services. Incidents can arise in these aspects [28]. Security and service availability quality will decrease if an incident occurs, considering that maintaining or repairing a policy takes time and usually overlaps. Therefore, a tool is needed to ensure that services continue to be available. Based

on ITSM, incidents ideally should not only be responded to but also continuously managed [29]. This triggers the belief that the implementation of ITSM is the best guide for designing, implementing, and managing information technology services [30].

In hospitals, there are several important processes in service management using service operation. Among the important processes mentioned, there are 3 (three), and these three processes are the result of our literature study in the journal titled “Analysis of Information Technology Service Management Using ITIL V3 Domain Service Operation at PKU Muhammadiyah Purbalingga Hospital”. Here is an explanation of the three important processes in the hospital [31].

### 1. Service Operation Event Management

In the event management process, it is necessary to identify causes as circumstances are bound to fluctuate. This process aids the hospital in monitoring its healthcare systems. Analysis results from the hospital indicate that the event management process within service operation underscores the importance of an available internet network supporting more effective performance. Improving the network requires maintenance to prevent detrimental effects on the organization.

### 2. Service Operation Request Fulfillment

This process places more emphasis on customer or patient requests. According to the analysis obtained from the journal, hospitals often require support for requests that enhance services through physical and non-physical aspects. Enhancing requests through physical aspects can be achieved by improving hospital infrastructure such as the hardware used. Meanwhile, for non-physical aspects, it can be done by upgrading the capacity of data storage or other essential documents using the cloud.

### 3. Service Operation Problem Management

This process is crucial to mitigate difficulties in addressing a situation, as the occurrence of a situation typically leads to various incidents caused by users. According to the analysis from the journal, it is stated that hospitals often forget to input data, thus reducing hospital performance. This management service is often overlooked due to frequent issues in its information system. Research findings indicate that this can occur due to insufficient human resources who lack understanding and proficiency in using Information Technology. Therefore, training and improving the quality of human resources in hospitals are necessary.

The overall aspects and processes of a hospital can be effectively implemented through proper organization. Process modeling can be conducted systematically using ITSM with the ITIL service operation method. Because within service operation, explanations and important processes that must be applied in hospitals are also outlined. This is evident from our literature study in the journal, which conducted interviews with PKU Muhammadiyah Purbalingga Hospital.

## 3.2. The Challenges and Benefits of Implementing ITSM using the ITIL Domain Service Operation Methodology in Hospitals

Healthcare services often become the main topic of discussion due to the high complexity of challenges they face [32]. The challenges that arise in hospitals are divided into several categories of complexity. The complexity of a hospital can influence the implementation of technology within it. These complexities include medical complexity, situational complexity, and healthcare service complexity. In medical complexity, some aspects or challenges that need to be considered for implementing suitable technological workflows in hospitals are chronic medical conditions, their distribution, and other aspects like the complexity of medical work, which also need to be designed appropriately to avoid future issues [33]. Situational complexity includes factors like diverse health cultures depending on each person's implementation. Besides health culture, the environment also influences both hospital management procedures and the health culture of the hospital [34]. Healthcare service complexity involves challenges such as referral systems within hospitals [35]. Service fragmentation is also a part of the challenges to be considered, as well-functioning services that provide good outcomes for hospitals and visitors are a success in managing structured services with the use of technology within them [36].

The complexities mentioned above only cover some of the challenges faced by hospitals in implementing ITSM. There are also other common challenges found in hospitals. One such challenge commonly encountered in every hospital is financing limitations. If the costs used in a hospital to operate its operations increase, it will have an impact on the hospital itself [37]. The impact can include the hospital's unpreparedness to follow their SOPs for visitors, and the hospital's limitations in reaching external areas are also hindered. Another challenge that also arises in hospitals is the difference in thinking between healthcare providers and the complexity of healthcare service innovations [38].

The challenges in implementing ITSM with the ITIL domain Service Operation method indeed pose various issues and difficulties. However, there are also advantages in the outcomes of its implementation if carried out structured and effectively. ITIL can improve service availability, thereby impacting business improvement, both in terms of customer satisfaction, saving time, and others [39]. The benefits of using this IT management implementation include enhancing and improving customer satisfaction, which helps to align their IT services with customer needs and expectations [40]. With improved hospital operating systems, user experience with reliable, efficient, effective, responsive, and tailored services will increase [41]. Secondly, it enhances hospital productivity and workflow [42], operational efficiency, and includes efficiency in problem-solving, change management, and other processes that streamline IT operations. Thirdly, IT service management based on service level management processes, including identification, planning, delivery, and management of overall IT services. This is used to assist in assessment and ensure that the operating systems continue to meet expected standards and quality. Fourth, it provides useful skills and experience as a reference standard, meaning that the IT services used have been tested and proven, thus helping hospitals avoid "reinventing the wheel" and using best practices to achieve their business goals [43]. In addition to the above benefits or advantages, there are also general and definite benefits obtained by hospitals as a result of service management implementation. Optimization of employee performance provides comfort for patients, such as patients undergoing hospital procedures without technical hindrances. This happens because of the ease of using hospital systems. The use of a system with proper service management helps operational aspects such as patient appointments, patient room arrangements such as inpatient rooms, CT scan rooms, and others. Arrangement of patient treatment procedures, management of drug inventory, and medical equipment [44]. Automation of all the above operational system processes and procedures can reduce administrative time and costs, as well as improve the accuracy and speed of the hospital's response in providing services to patients. With good IT management collaboration, it can provide, enhance, and facilitate coordinated care between hospital stakeholders such as medical teams and patients. The ease of access to hospitals will be at the forefront and help improve public health quality.

### **3.3. The Relationship between ITSM using the ITIL Domain Service Operation Methodology and the Service Desk, and User Satisfaction in Hospital Services**

Every installation has a service desk in its system operation and workflow process. The service desk reflects the service of the IT department, acting as a single point of contact in its interaction with users and related departments within the scope of service or related to and involved in IT services [45]. Hospitals certainly have a service desk within them. The hospital's service desk refers to the interaction between internal hospital services such as healthcare, nurses, doctors, and others with visitors or patients. One service desk that can be implemented in hospitals is by providing services where patients or visitors can interact directly and know what procedures they need to follow [46]. This service, for example, assists patients so they don't have to wait too long in queues. Long queues usually arise due to a limited number of service facilities while patient arrivals cannot be predicted, affecting service time distribution [47]. Patients who have registered will receive a queue number, and they can see the number being called on a screen. Additionally, increasing the number of counters can help in dealing with long hospital queues.

Help desk is one of the service desks that can be implemented in hospitals. A help desk is a central point for reporting issues and then managing or coordinating them [48]. In hospitals, the help desk includes receptionists. Receptionists handle all requests and provide assistance to patients, as they are the backbone of the hospital connected to all departments within the hospital. Besides receptionists who are physically present, help desks can also be designed using technology. A help desk system with technology for hospitals is called help desk ticketing. Help desk ticketing is a management system that records patient complaints regarding hospital healthcare services [49]. This complaint recording management system uses a numbering pattern designed to facilitate complaint resolution in hospitals. Complaints received by the system are well-documented for follow-up. The customer care unit and management can monitor complaint resolution through this help desk system [50]. This help desk system has been implemented at Mutiara Bunda Padang Hospital.

Many hospitals lack a good healthcare service system because patient complaints are not addressed properly, and medical staff and hospital management have not fully and transparently provided patients' rights [51]. Service quality has a significant impact on patient satisfaction and loyalty [52]. Factors such as resolving and addressing patient complaints are useful in increasing patient satisfaction with hospital services. Factors influencing patient satisfaction include service to products, price, quality, emotional factors, and convenience [53]. Patient satisfaction with hospital healthcare services is also assessed based on the hospital's quick response, empathy, and assurance given to patients [54]. According to research by [55], significant factors affecting patient satisfaction with services include friendly attitudes of doctors and nurses who listen to patient complaints, answer questions and complaints, timeliness, easy and good communication, and support in meeting patient needs. Additionally, other significant services that influence patient satisfaction are operational

services such as blood bank services, adequate and good laboratory services, proper and timely scheduling, maintained cleanliness of inpatient rooms, and staff-patient interactions. Medical services have a positive relationship with patient loyalty. With good services and procedures, customers will have an interest in returning to use the hospital's services [56]. By implementing IT service management that aligns with the significant services mentioned above, patient loyalty to the hospital will increase, and the hospital can receive positive feedback for their excellent service management practices.

#### 4. CONCLUSION

Information Technology Service Management (ITSM) in the context of hospitals is clearly crucial. ITSM plays a vital role in ensuring that the healthcare services provided by hospitals operate effectively and efficiently. ITSM encompasses various important aspects of hospital services, such as patient data management, medical information systems, financial information systems, and hospital data security. The implementation of ITSM, particularly in designing, implementing, and managing information technology services in hospitals, is becoming increasingly necessary. ITSM provides a structured framework for managing incidents, ensuring information security, and improving overall service quality. However, hospitals often face various challenges. Although hospitals frequently encounter challenges in providing satisfactory services, particularly in responding to patient complaints transparently, efforts to improve service standards are urgent. Prompt responsiveness, empathetic attitudes, and high-quality medical and operational services are considered key factors in shaping patient satisfaction. Hospitals must also implement a service desk within them. As part of the service desk, the help desk also plays a crucial role in ensuring the smooth operation of the hospital. The help desk serves as the central point for reporting issues and coordinating follow-up actions. In hospitals, receptionists often form part of the help desk, serving as a communication bridge between patients and other hospital departments. In the era of information technology, the use of systems such as help desk ticketing plays a significant role in improving responses to patient complaints. This system helps in recording complaints, facilitating issue resolution, and monitoring the handling process, thereby enhancing patient satisfaction with hospital services overall. Furthermore, effective IT service management provides a foundation for improving healthcare services in hospitals, helping to strengthen patient loyalty and obtain positive feedback. Therefore, investments and attention given to improving the quality of healthcare services, including the use of appropriate technology and management practices, are key to creating an environment that supports, satisfies, and sustains patients in hospitals. Thus, hospitals can continue to evolve in providing the best services to the community.

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