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Streamlining IT Help Desk and Incident Management: Harnessing the Power of the ITIL Framework for Enhanced Efficiency in IT Services

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Abstract

This study examines the potential of leveraging incident management and IT Helpdesk principles from ITIL V3 to enhance the daily operations of an IT division. The research involved collecting email communication data between users and the IT division, as well as conducting interviews with individuals associated with the IT division and various company employees. The ITIL Maturity Level (ITML) method was utilized to analyze the findings, revealing that IT Helpdesk achieved a score of 3.5 (Quality Control), while incident management received a score of 2 (Process Capability). However, both areas fell short of meeting the requirements for level 3 (Products) according to the ITIL Self-Assessment table, resulting in a classification of "Not Comply." Nevertheless, incident management demonstrated the ability to standardize workflows and sustain service performance, which can be continually monitored and reviewed to ensure stable quality of IT services.

Keywords: IT Governance, ITIL, IT Helpdesk, Incident Management

1. INTRODUCTION

The development of information technology is increasing rapidly and spreading across all sectors, especially the business sector. This advancement has made it easier for humans to complete work. For example, in the past, everything was manual, whereas in this modern era, tasks have started to be done with technology, or you could say they have been computerized. In the business sector, computerization is very helpful in facilitating company activities and promoting rapid development [1]. Surely, every company owner wants their business to grow rapidly. Therefore, all activities faced by the company become increasingly difficult, requiring maintenance in all aspects of the operational field. It is undeniable that systems can make mistakes, which can manifest as errors, bugs, viruses, or human negligence, causing damage to the system and hardware. Hence, minimizing damage to the system can be achieved through information technology governance [2].

Information Technology Governance (IT Governance) is a framework that ensures the management of information technology to support the business strategy of an enterprise, provide valuable benefits to companies that implement it, and prevent system damage [3]. Companies can establish standardization of information technology services by using frameworks such as the Information Technology Infrastructure Library (ITIL). ITIL functions as a guidance framework for providing information technology services that support company success by aligning them with business and customer needs, both presently and in the future [4]. ITIL comprises five domains: Service Strategy, Service Design, Service Transition, Service Operation, and Continual Service Improvement. These processes serve as guidelines for information technology services [5].

This study focuses on a company established in 2006 that operates in the business sector, providing Information Technology service solutions. The company's primary focus is on services and solutions related to Data Centre Infrastructure, Infrastructure Management, Information Security, Business Software, and IT services. Additionally, the company offers services such as Design & Implementation Project, Technology Refreshment, and Software Development. They have collaborated with 24 major companies in the field of ICT (Information and Communication Technology). Currently, the company is expanding its IT services division to enhance information technology solution delivery and meet the needs of its clients, customers, and technology users in the workplace [6]."

The IT Services Division is responsible for ensuring that all IT needs are met and that IT services are always available when they are needed. This includes addressing incidents that occur with the company's information technology, which can be reported to the IT helpdesk [7]. When incidents or problems arise, the IT helpdesk provides initial support. If the initial handling is unable to resolve the incidents, the IT helpdesk will escalate them to the party responsible for the technology used in the company. This party has a deeper understanding of the field and can handle the problems. The IT Helpdesk will then provide feedback to the relevant section in their report. The implementation of IT services may fail if a proper method is not followed [8].

The current problem at this company is the improper functioning of the incident management process. This is characterized by an increasing number of incidents over time, recurring incidents, and unresolved operational IT problems. This situation arises when the focus is solely on making improvements to the incident management process. Recurring problems can significantly disrupt the operations and performance of the company [9]. By using ITIL as a framework for implementing incident management, management can address these issues and provide changes and recommendations to the company [10].

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2. METHODS

The study utilizes ITIL framework in its research activities. This framework serves as an elaboration of the steps that will be employed to address the problems in this study. The initial stage involves evaluating the problem, which encompasses assessing the current conditions and is supported by extensive literature studies of scientific papers and the IT Infrastructure Library (ITIL) handbook. ITIL is regarded as the preeminent collection of guidelines for achieving operational success and is widely accepted and implemented by numerous organizations worldwide. Implementing ITIL within an organization enables better anticipation of technological changes, enhanced performance, reduced operational and maintenance costs, and improved decision-making processes.

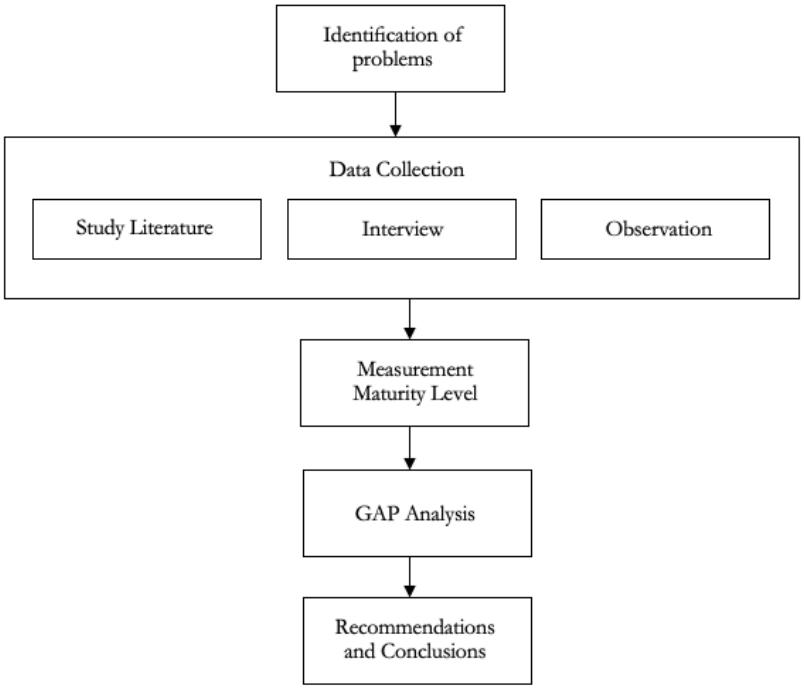

Figure 1. Research Workflow

The stages of research in Figure 1 help us know in detail about the research process so that it is more structured; the following is the elaboration of this framework:

1) Identification of problems

   In identifying problems, discussions were held with the IT Division Manager to find out the background and any constraints experienced by the IT team related to handling incidents, problems, and change requests [11].

2) Data Collection
Methods in data collection, including literature and literature studies, were carried out to obtain and understand theories related to IT governance, ITIL, tools, and flowcharts used to describe workflow in incident management, problem management, and change management [12]. Interviews were conducted directly with employees and leaders in the IT Division. The interview method used needed to be more structured and systematically arranged [13]. Questionnaires There will be two questionnaires; the first is conducted to determine the ITIL Maturity Level in the IT division. The questionnaire will use the ITIL Self-Assessment. The IT Division Manager only fills out the questionnaire. Whereas questionnaire 2 will use the ITIL Service Operation Assessment Sheet published by UCISA [14]. Field Observations are used to get an overview of the existing processes in the company related to the IT Helpdesk function, which focuses on incident management in the IT Division.
3) Measurement Maturity Level
At this stage, the Maturity Level measurement of the IT Helpdesk function will be carried out, which focuses on the current incident management [15]. At this stage, the measurement will be filled out in Questionnaire 1 using the ITIL Self-Assessment Study. This stage shows the level of ITIL maturity in the IT division compared to existing benchmarks. Knowing these levels, it will make the following process easier.
4) GAP Analysis
At this stage, the results obtained in the previous stage, namely the ITIL maturity level measurements, will be analyzed using the Fit Gap Analysis Report [16]. This analysis process will assess current performance and whether it meets predetermined criteria.
5) Recommendations and Conclusions
The conclusion was obtained after the evaluation results of implementing the IT Helpdesk function, which focused on incident management, was compared before and after implementation; ITIL guided the implementation [17].

3. RESULTS AND DISCUSSION

The company is in the process of implementing ISO 9001 standardization for its customers, as it serves as an information technology service provider with a

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specific focus on incident management and helpdesk services. Moreover, the company has developed a Standard Operating Procedure (SOP) for incident management and utilizes a helpdesk system to effectively address any issues that arise internally. This comprehensive IT Helpdesk management application encompasses problem management and incident management, while also recording the replacement of spare parts whenever necessary for problematic hardware. Additionally, the application automatically updates tickets once a confirmed problem has been successfully resolved. Figure 2 is SOP of IT Helpdesk process.

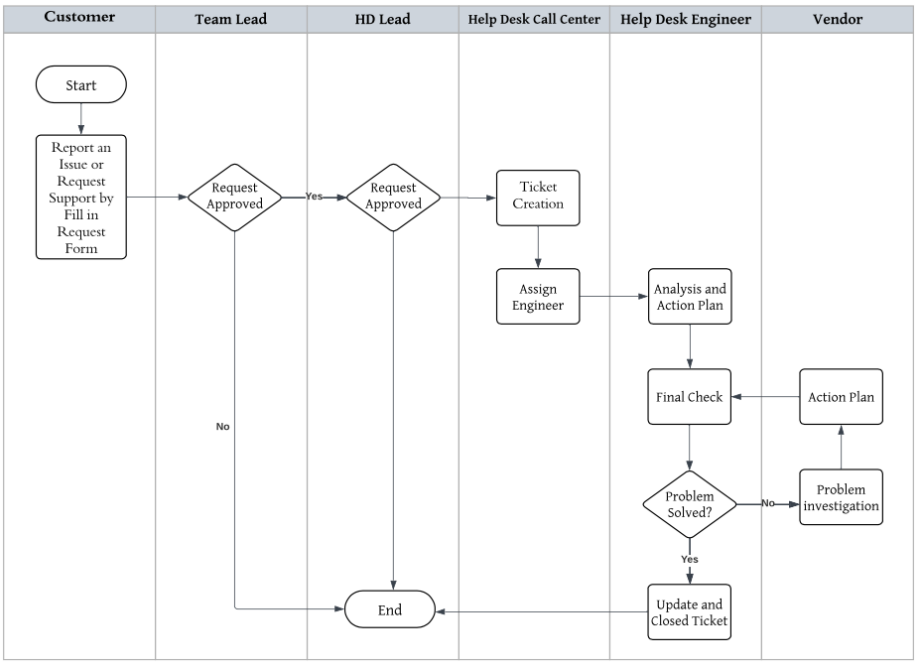

Figure 2. Flowchart IT Helpdesk process

Based on Figure 2, the company's IT helpdesk service activities follow the flow outlined below. The initial stage involves users reporting issues and completing a request form to document the problems encountered. Subsequently, the team lead and Helpdesk lead review and approve the user's request. The call centre helpdesk then generates a ticket, assigning a helpdesk engineer to conduct an analysis of the reported problems. Following the analysis, a final check is performed to determine if the issue has been resolved. If not, the vendor investigates the problem, and based on their findings, the helpdesk engineer takes appropriate action. Once the problem is resolved, the helpdesk engineer updates and closes the ticket. This update is then reported to the Helpdesk lead, who notifies the user that the

problem has been successfully resolved. Access to the IT helpdesk system is currently limited to the IT helpdesk team, as incident reporting is predominantly done via email. On average, the company experiences 15-20 incidents within a given period.

3.1. ITIL Maturity Level

The results of the questionnaire are divided into two parts, namely the results of the helpdesk questionnaire and the incident management questionnaire based on the ITIL Maturity level Self-Assessment.

1) IT Helpdesk

Based on the results of the questionnaire from level 1 to level 5, it can be concluded in Table 1.

Table 1. ITIL Maturity Level Self-Assessment (IT HelpDesk) Questionnaire Achievement Results

Level	Minimum Pass	Achievement	Status
Level 1 (Pre-Requisites)	M+1	M+1	PASS
Level 1.5 (Management Intent)	2M+1	2M+1	PASS
Level 2 (Process Capability)	2M+1	2M+1	PASS
Level 2.5 (Internal Integration)	M	M	PASS
Level 3 (Products)	2M+1	2M+1	PASS
Level 3.5 (Quality Control)	3M+1	3M+1	PASS
Level 4 (Management Information)	2M+1	2M+1	PASS
Level 4.5 (External Integration)	M+1	1	Failed
Level 5 (Customer Interface)	3M	3M	Failed

Based on Table 1, the results of the ITIL maturity level self-assessment questionnaire for the IT helpdesk indicate that the company's helpdesk function has successfully progressed from Level 1 (Pre-Requisites) to Level 4 (Management Information). However, at Level 4.5 (External Integration), it fell short of meeting the minimum requirements, as indicated by at least one mandatory question and one other question receiving negative responses. Consequently, this outcome is considered a failure, with 28 respondents answering "No" to the mandatory questions. Nonetheless, the majority of respondents (30) answered "Yes" to the other questions.

The IT helpdesk has achieved a maturity level of up to Level 4 (Management Information) since it meets the minimum requirements for this level. However, in terms of Level 4.5 (External Integration), the IT helpdesk function has yet to fulfill

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the necessary criteria. Therefore, the maturity level attained by the IT helpdesk function is classified as Standard Comply, as the evaluation results based on the ITIL Self-Assessment table align with Level 3.5 (Quality Control).

2) Incident Management

Based on the results of the questionnaire from level 1 to level 5 above, it can be concluded in Table 2.

Table 2. ITIL Maturity Level Self-Assessment (IT HelpDesk) Questionnaire Achievement Results

Level	Minimum Pass	Achievement	Status
Level 1 (Pre-Requisites)	M+1	M+1	PASS
Level 1.5 (Management Intent)	M+1	M+1	PASS
Level 2 (Process Capability)	M+1	2M+1	PASS
Level 2.5 (Internal Integration)	3M+1	1	Failed
Level 3 (Products)	M+1	2M+1	Failed
Level 3.5 (Quality Control)	2M+1	2M+1	PASS
Level 4 (Management Information)	2M+1	M+1	PASS
Level 4.5 (External Integration)	M+1	2M+1	PASS
Level 5 (Customer Interface)	3M	3M	PASS

Based on Table 2, the results of the ITIL maturity level self-assessment questionnaire for Incident Management reveal that the function has successfully progressed from Level 1 (Pre-Requisites) to Level 1.5 (Management Information). However, it fell short of meeting the requirements at Level 2 (Process Capability), which mandates obtaining at least three mandatory questions and one other question. Consequently, this outcome is considered a failure. In the questionnaire, the second mandatory question received a "No" response from 27 respondents and a "Yes" response from 3 respondents. The incident management function has achieved a maturity level of up to Level 1.5 (Management Information) as it fulfills the minimum requirements for this level. However, at Level 2 (Process Capability), it has yet to meet the necessary criteria. Therefore, the maturity level obtained by the incident management function is classified as Not Comply, as the evaluation results based on the ITIL Self-Assessment table have not reached Level 3 (Products).

3.2. GAP Analysis

Based on the findings presented in Table 1 and Table 2, the ITIL Self-Assessment has been conducted for both the IT helpdesk and incident management subdomains. The subsequent step involves performing a gap analysis, which serves

as a comparison between the actual performance results and the expected performance of the company. The gap analysis results are illustrated in Table 3.

Table 3. Gap Analysis

Sub Domain	Level	Question	Actual	Expected	Gap
IT Helpdesk	Level 4.5 (External integration)	1	6.67%	100%	93,33%
		2	100%	100%	0%
Incident Management	Level 2 (Process Capability)	1	10%	100%	90%
		2	100%	100%	0%
		3	100%	100%	0%
		4	100%	100%	0%
	Level 2.5 (Internal Integration)	1	10%	100%	90%
		2	100%	100%	0%

Based on the information provided in Table 3, the following conclusions can be drawn:

a) The Helpdesk Sub Domain achieved a value of 6.67% in relation to the target level of 4.5 (External Integration), which is set at 100%. Therefore, there is a significant gap of 93.33% between the actual performance and the expected target.
b) The Incident Management Sub Domain attained a value of 10% compared to the target level of 2 (Process Capability), set at 100%. Consequently, there is a substantial gap of 90% between the actual performance and the desired target.
c) The Incident Management Sub Domain achieved a value of 6.67% in relation to the target level of 2.5 (External Integration), which is set at 100%. Therefore, there exists a considerable gap of 93.33% between the actual performance and the expected target.

3.3. Recommendations

The analysis of findings from the previous stage has led to the identification of recommendations for improvement in each assessed process. These recommendations are presented in Table 4.

Table 4. IT Helpdesk recommendations

ITIL Service Support Self-Assessment (IT Helpdesk)		
Level	**Status**	**Recommendations**
Level 4.5 (External Integration)	Failed	Steps that must be taken by the company, namely holding meetings or discussions related to matters such as discussing users, quality productivity, discussing issues

ITIL Service Support Self-Assessment (IT Helpdesk)		
Level	**Status**	**Recommendations**
		related to operations, etc., to meet Level 4.5 (External Integration).

Table 4 displays the outcomes of the ITIL Maturity Level Self-Assessment questionnaire for the helpdesk section. The assessment reveals that the helpdesk has not attained the minimum pass (M+1) for level 4.5 (External Integration). This deficiency is attributed to 28 respondents reporting infrequent meetings or discussions regarding helpdesk-related matters, which hinders the achievement of level 2 (Process Capability). To address this, the company should prioritize conducting regular meetings and discussions on helpdesk matters to fulfill the requirements of level 4.5 (External Integration).

The assessment results of the ITIL Maturity Level Self-Assessment questionnaire for the Incident Management section are presented. At level 2 (Process Capability), the company has not met the minimum pass requirement of (3M+1). This discrepancy stems from the realization by 27 respondents that incidents managed according to procedures are not adequately documented in the Service Level Agreement (SLA). As a result, the level 2 (Process Capability) falls short of meeting the minimum pass criteria. To rectify this, the company must ensure proper documentation of the SLA for each incident managed, thus fulfilling the requirements of level 2 (Process Capability). The assessment results as shown In Table 5.

Moreover, the assessment results for level 2.5 (Internal Integration) in the Incident Management section also fall below the minimum pass requirement of (M+1). This is due to 27 respondents acknowledging the absence of a match between incidents and problem or known error databases within the company. Despite this, the incident management function still informs the helpdesk about their work. Consequently, level 2.5 (Internal Integration) fails to reach the minimum pass maturity level as assessed. To address this issue, the company should take steps to align incidents with problems or known error databases within the helpdesk division, thereby fulfilling the requirements of level 2.5 (Internal Integration).

Table 5. ITIL Maturity Level Self-Assessment and Helpdesk recommendations

ITIL Service Support Self-Assessment (Incident Management)		
Level	**Status**	**Recommendations**
Level 2 (Process Capability)	Failed	Documentation into the SLA for every incident managed in the company is done to meet level 2 (Process Capability).
Level 2.5 (Internal Integration)	Failed	Grouping incidents against problems or known error databases in the company to the helpdesk division fulfils level 2.5 (Internal Integration).

Th fast-paced business landscape, organizations strive to optimize their IT operations to meet the growing demands of the digital age. The IT Infrastructure Library (ITIL) framework offers a valuable approach to achieve IT service excellence. The analysis conducted on the company's IT operations, highlighting areas that require improvement to align with the desired ITIL maturity levels. Specifically, the Helpdesk Sub Domain and Incident Management Sub Domain exhibit significant gaps that need to be addressed for enhanced operational efficiency and customer satisfaction.

The assessment reveals a substantial gap in achieving level 4.5 (External Integration) within the Helpdesk Sub Domain. This gap primarily stems from the lack of regular meetings or discussions focused on helpdesk matters. To bridge this gap, the company must prioritize and facilitate regular interactions among team members. By doing so, collaboration can be fostered, ensuring alignment with the desired level of external integration. Regular meetings will provide an opportunity to address challenges, share knowledge, and streamline processes, ultimately enhancing the overall effectiveness of the helpdesk function.

Within the Incident Management Sub Domain, notable gaps have been identified at level 2 (Process Capability) and level 2.5 (Internal Integration). At level 2, the absence of proper documentation of incidents in the Service Level Agreement (SLA) has hindered the achievement of the minimum pass requirement. To rectify this, the company should establish robust procedures for documenting incidents within the SLA. This improvement will enhance process capability, ensuring a structured and standardized approach to incident management.

Additionally, at level 2.5, the lack of matching incidents to problems or known error databases indicates a gap in internal integration. To overcome this challenge, the company should implement a structured approach to group incidents and align them with the relevant problem or known error databases within the helpdesk division. This step will enhance internal integration, facilitating more effective incident management processes.

The company's IT operations highlights the need for improvement in various areas, particularly within the Helpdesk and Incident Management Sub Domains. By prioritizing regular meetings and discussions related to helpdesk matters, the company can enhance collaboration and achieve the desired level of external integration. Furthermore, implementing robust documentation procedures for incidents within the SLA will improve process capability, while aligning incidents with relevant databases will enhance internal integration. By addressing these areas, the company can move closer to achieving the desired ITIL maturity levels, resulting in improved operational efficiency, increased customer satisfaction, and overall performance enhancement.

4. CONCLUSION

The analysis of IT service systems within companies adopting the ITIL framework version 3, specifically focusing on the IT Helpdesk function and Incident Management function, proves to be immensely beneficial. This analysis provides valuable insights into the incident handling process, aiding in the maintenance of high-quality IT services and the achievement of predetermined Service Level Agreements (SLAs) post-implementation. The evaluation results based on the ITIL Self-Assessment demonstrate that the IT helpdesk function has attained a maturity level of 3.5 (Quality Control), signifying compliance with the established standards. This achievement greatly aids the company, particularly the IT division, in fulfilling its role as the entity responsible for ensuring information availability within the organization. Continuous improvements to Standard Operating Procedures (SOPs) are essential, as they are among the best practices outlined in ITIL v3. These improvements enable the division to anticipate and adapt to potential changes in operational activities. In contrast, the ITIL Self-Assessment indicates that the incident management function has achieved a maturity level of 2 (Process Capability), falling short of compliance. However, this serves as a motivating factor for the IT division to enhance the quality of its IT services and uphold the SLAs. By implementing the recommended improvements derived from the maturity level questionnaire results in the service operation domain, specifically pertaining to the IT helpdesk and incident management subdomains, it is evident that ITIL v3's service operation has been effectively implemented. The incorporation of the nine focus area activities outlined in the ITIL Service Support Self-Assessment has contributed to the successful functioning of ITIL v3 service operation, thereby fostering improved operational efficiency and service delivery within the organization.

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