



ITIL V4 Implementation for Improving IT Service Quality: A Case Study at XYZ Company

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Abstract

Background: Information systems are core components impacting the continuity of organizational leadership and management, especially for organizations whose daily operational activities rely heavily on technology. The performance of IT services needs to be measured in a systematic and reliable way so that these services can always meet the expectations of users.

Objectives: This study aims to measure and improve the effectiveness and process improvement of IT Service Desk and IT End User Computing units through the implementation of ITIL 4.

Methods: Qualitative case study using the DMAIC (Define, Measure, Analyze, Improve, Control) framework. The data collection methods employed for this phase consisted of primary sources (structured interviews with 100 respondents at 4 different divisions as well as direct field observations) and secondary sources (operational reports from ServiceNow ticketing system, service delivery, roles and assessment tools spanning January–December 2023). The methodology functions as a never-ending improvement loop. ITIL 4 practices are adopted in parallel to strengthen service management maturity and operational efficiency.

Results: We present three frameworks that together provide a structured approach to designing, identifying gaps in, and improving aspects of service delivery processes. Findings show that ITIL-led initiatives have a positive impact on resolving Incidents faster, moving IT Service Desk maturity from Level 4 to Level 5 at "Fully Comply" for the Purpose/Content.

Conclusion: The study highlights that aligning IT services with business objectives, strengthening governance structures, and developing a sustainable improvement culture within the organization are of strategic value for companies.

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INTRODUCTION

To ensure Information Technology (IT) service providers' sustainability and improve business, an organization should be able to guarantee the stability of IT service quality (Kalogiannidis et al., 2023). IT services might be complicated due to the amount of equipment used, including hardware, operating system software, application software, and communications network equipment (Hochstein et al., 2005). To ensure that organizations align with the newest and updated IT technology trends, further development must be continued (Hertog, 2000). This article provides an overview and example based on existing research on the implementation of IT service management (ITSM) and Information Technology Infrastructure Library (ITIL).

Implementation here refers to the process of adopting IT Service Management. Implementation of ITIL requires principles and/or best practice recommendations (Serrano et al., 2021). The study defines ITSM as an IT approach encompassing IT services, customers, service

level agreements, and how the IT department addresses them through daily activities (Pollard & Cater-Steel, 2009; Winniford et al., 2009).

ITSM manages IT functions as a service function. On this topic, research was conducted on production and tobacco industry companies for the implementation of ITSM and ITIL, which have more than 10,000 employees spread throughout Indonesia; the companies consist of several departments that correlate with each other in supporting business activities. The IT Department is one of the departments that plays an important role in supporting employees' and business activities to run properly (Caldiera & Rombach, 1994; Cusumano et al., 2015). The IT Department itself has a goal to facilitate and streamline employee activities in completing their work across both small and large scales of activity.

There are several divisions within the IT Department that have their respective duties; in this study, the researcher will focus on the IT Digital Workplace Collaboration (DWC) Division, which aims to support IT services. Issues faced by company employees range from simple to complex.

This study narrowed down the framework to the IT Digital Workplace Collaboration (DWC) Division, where three scientific and practical rationales were used: (1) Overall, DWC is a front-line interface for any services from the IT organization to all employees in the company, which makes the quality of service measurable immediately since every person within a company can be a customer; (2) The DWC division is the only division that covers both sub-units responsible for first- and second-level incident management, as described explicitly in ITIL V4 Incident Management practice, including both IT Service Desk and IT End User Computing functionalities; and finally (3) Previous research on the current context of Industry 4.0, where this research was conducted, is scarce or simply nonexistent in Indonesia, as previous ITIL research has not been conducted in this domain either (Setyowibowo et al., 2025). The Digital Workplace is increasingly recognized as a strategic enabler of organizational performance, as digital workplace environments require robust IT support structures to maintain operational continuity.

In general, the IT DWC Team can be explained as follows: (1) The IT Service Desk receives IT issue inquiries that are reported by company employees or generated automatically by system alerts, to provide basic troubleshooting for resolving IT issues; if the issue persists and is not yet resolved, the issue will be redirected to IT End User Computing, which is recorded in a ticketing portal system using ServiceNow (SNOW). A ticket incident consists of employee information and issue details with a specified Service Level Agreement (SLA) time based on the incident type reported. (2) IT End User Computing receives incident tickets from the IT Service Desk and performs deep troubleshooting steps to find the root cause and resolve the IT issue; if the issue still persists, it will be redirected to Application/System Support. (3) Application/System Support receives issue inquiries that have already been handled by the local and second-level support team, and the issue needs to be checked from the application/system side. For historical logging and recording purposes of IT issues reported by employees, a ticketing system is used for logging and data measurement, such as how much time is needed to resolve IT issues.

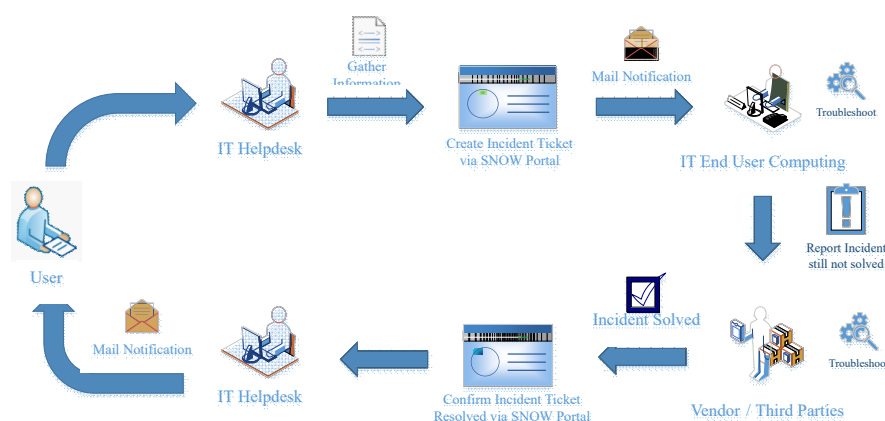


Figure 1. Flow level support IT
Source: company data

Incident tickets serve several purposes besides recording and logging activity. The IT team can analyze incident data and categorize which incident issues recur — for example, why a specific application or software frequently encounters issues requiring problem management. To prevent this, predictive analytics and a daily visual incident dashboard might help anticipate such occurrences.

The Information Technology Infrastructure Library (ITIL) is a framework that describes best practices in IT Service Management. ITIL provides a framework for IT management and focuses on measuring and continuously improving the IT services provided, from both a business and customer perspective. This focus has been a key success factor in ITIL's global implementation.

Some of the advantages of ITIL implementation include: (1) increased customer satisfaction with IT services, (2) an increased level of service availability, which directly increases profits for the organization, and (3) financial savings through reduced redundant work and improved resource utilization and management (Cartlidge et al., 2007). ITIL adoption positively impacts organizational structure and service delivery, especially when integrated with strategic IT goals (Moodley & Ebrahim, 2025).

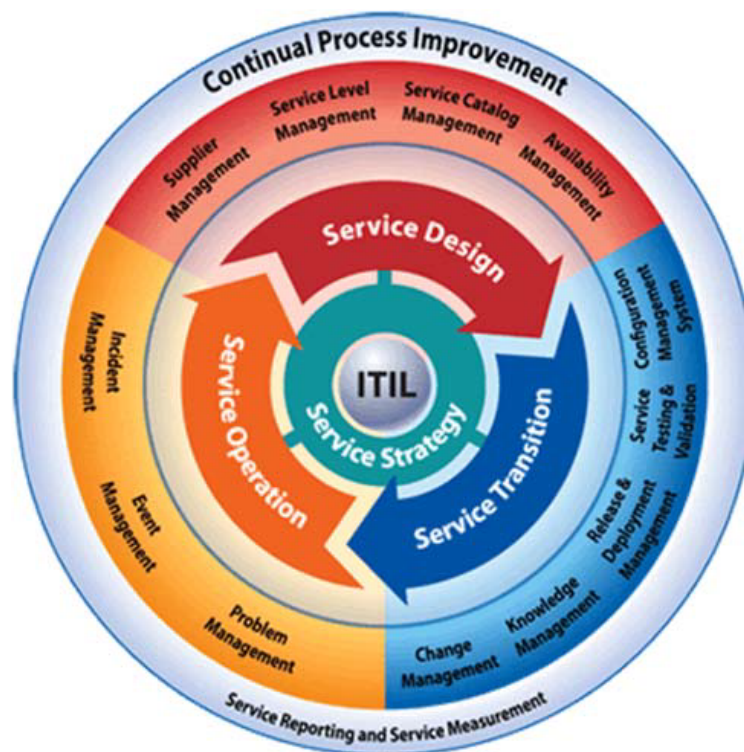


Figure 2. ITIL Service Cycle
Source: (Cartlidge et al., 2007)

The application of ITIL 4 as the latest version of ITIL, renewed in a broader context by paying attention to customer experience, can provide a solution to the problems of the IT Help Desk and IT End User Computing divisions for improving quality and IT maturity level with value streams and digital transformation, and adopting new ways of working, such as Lean, Agile, and DevOps. Although it is more specifically a service management guide, ITIL 4 is generally widely used as an IT governance guide. ITIL 4 provides the guidance that organizations need to address service management challenges and the potential utilization of modern technology. ITIL 4 is designed to ensure a flexible, coordinated, and integrated system for effective governance. ITIL 4 has a main component, namely the Service Value System (SVS) (Cartlidge et al., 2007).

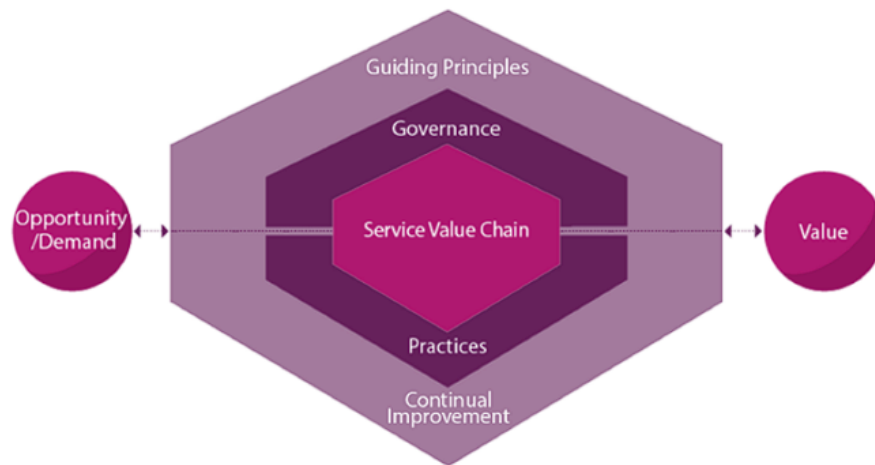


Figure 3. Service Value System

Source: (Limited, 2019)

Recent studies highlight the practical benefits of ITIL V4 adoption in diverse industries. For example, Setyowibowo (2025) demonstrated how ITIL V4 improved chatbot service delivery in a logistics company, while Panasonic's strategic adoption of ITIL V4 shows its role in supporting digital transformation and customer-centric service management.

Moreover, although prior studies Rahmasari (2025); Rakhmadi (2025); Kristiani (2024) have examined ITSM frameworks broadly, they have not addressed the specific operational gap of simultaneously applying ITIL V4 maturity assessment and DMAIC cycle-based improvement within IT Helpdesk and End User Computing divisions in a large industrial company in Indonesia. Existing research mainly assesses ITIL implementations on either a strategic or theoretical level, lacking empirical data that is granular enough to examine the DMAIC process stage by stage as it pertains to incident management workflows and SLA compliance. This constitutes a clear research gap that is directly addressed by the present study.

The IT Service Desk is one of the most important parts of an IT organization, and the main goal of the IT Service Desk is to be a single point of contact between IT services and the users of those services. The IT Service Desk is an ever-evolving space as organizations change and adopt ITIL V4 practices. According to Pogarcic (2017), the Service Desk is the single point of contact, so that efficiency and user satisfaction are guaranteed at all times. Similarly, Mándi (2024) note that ITIL V4 enables more agile IT Service Management, aligning service desk operations with digital transformation goals. It is responsible for managing incidents, service requests, and communication with users. An effective and high-performing service desk can detect inefficiencies in other parts of the IT organization, whereas poor IT Service Desk performance could leave a negative impression of the IT organization as a whole.

As noted by Chan (2011), the DMAIC (Define, Measure, Analyze, Improve, Control) method offered by Six Sigma is used when a product or process existing within an organization or company does not meet customer specifications or fails to perform as required. The DMAIC framework remains a valuable tool for ITSM improvement; most recently, however, Pongboonchai (2026) introduced DMAIC 4.0, which they describe as the integration of Industry 4.0 technologies into the Six Sigma methodology, further evidencing that traditional methods and approaches like DMAIC can easily be adapted to fit modern IT service environments. Pyzdek and Keller (2014) also present DMAIC in a manner consistent with IT service environments.

The need for this outlined research is apparent from three core operational issues in XYZ Company's IT Department: (1) critical incident recurrence rates because there was no well-defined Knowledge Base to mitigate repetitive troubleshooting; (2) SLA breaches were clearly common due to unclear incident priority and weak inter-team communication; and finally, (3) a low initial IT Service Desk maturity score of 4, indicating that service processes had not yet reached a "Fully Comply" level defined as the highest standard required for optimized service governance. Collectively, these problems represent a systemic operational risk that necessitates structured intervention through an integrated ITIL V4–DMAIC approach. In addition, this research

specifically focuses on measures to make the IT Service Desk and IT End User Computing departments more effective and functional through the implementation of ITIL V4.

METHOD

The research was conducted at PT XYZ, a company engaged in large-scale production in the tobacco industry across Indonesia. This work was based on the IT Digital Workplace Collaboration (DWC) Division, which consisted of two main sub-units: the IT Service Desk and IT End User Computing. These divisions handled all employee IT incidents and service requests that were logged in the ServiceNow (SNOW) ticketing system. The research was conducted in 2025, and the improvement phase was executed throughout 2026.

In this case study, the researcher followed the DMAIC stages (Define, Measure, Analyze, Improve, and Control), which are typically used for product-, process-, or service-redesign applications (Pongboonchai-Empl et al., 2026). The goals of this research were: (1) to implement ITIL V4 so that the quality of IT services within the IT Service Desk and IT End User Computing (EUC) divisions could be improved; (2) to measure how effective the implementation of ITIL V4 was in increasing service quality within the IT Service Desk and End User Computing divisions; and (3) to provide practical recommendations to strengthen and optimize service management processes within the IT Service Desk and EUC divisions.

The adoption of DMAIC enabled evidence-based implementation of improvement initiatives aligned with international best practices for improved IT service quality within the IT Service Desk and IT End User Computing divisions. At each stage of the cycle, data were gathered to assess service performance and provide actionable strategies to ultimately build a better approach to incident management and IT service delivery.

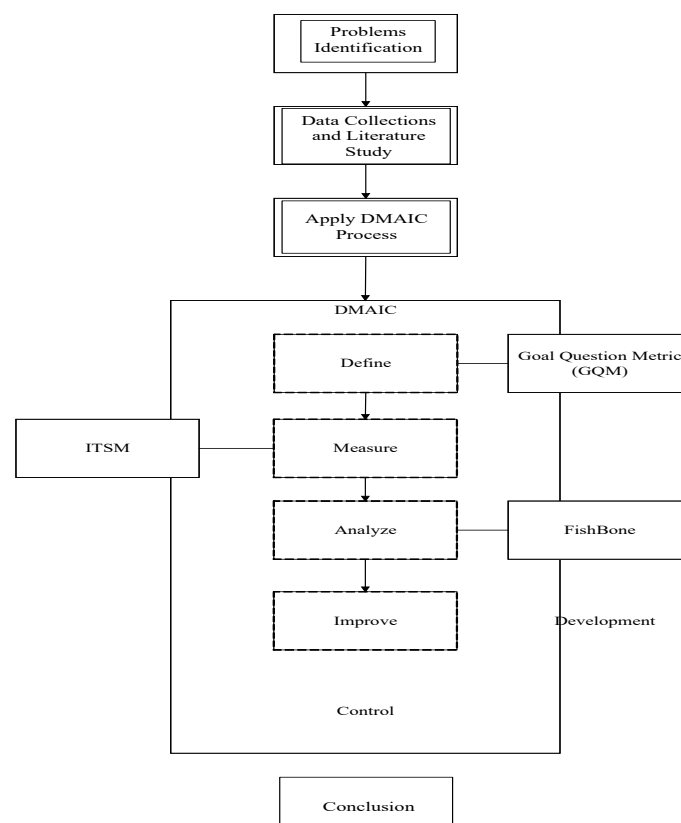


Figure 4. Research Methodology

The five basic steps are (1) define, (2) measure, (3) analyze, (4) improve, and (5) control. Initially, a pilot study was conducted using interviews and direct observation with the ITSM-based GQM (Goal Question Metric) method. The objective was to identify the indicators associated with operational activity that would allow us to understand how the process or service was performing and detect potential problems.

This research started with problem identification; this phase creates the basis for diagnosing operational challenges within the IT Service Desk and IT End User Computing subdivisions. The research is able to set a clear aim and define a methodology that suits the reality of the organization by systematically identifying the problems at hand. The analysis intends to produce implementable insights specifically in the areas of (1) Incident Handling Deficiencies and (2) ITIL V4 Implementation Shortcomings.

This phase is where the primary and secondary data necessary to perform a comparative analysis are gathered. Primary data was collected directly from the field. To improve representation, the sampling strategy divided the sample into four divisions with 25 users in each (Operations; Marketing & Consumer Experience; Technology & Platform Engineering; and Digital Workplace Collaboration). The segmentation was designed so that the views being captured were reflective of current roles across business functions in the company, thus avoiding bias toward just one operating area or another. Interviews provided an opportunity for investigating user experiences in depth, while observations added contextual information about service delivery processes. Collectively, these methods provided an integrated perspective of the difficulties encountered by the IT Service Desk and End User Computing departments.

Secondary data is defined as already available or publicly documented information, comprising organizational records, company reports, and ServiceNow (SNOW) ticketing system data. Lastly, scholarly sources (e.g., textbooks, peer-reviewed journals, and reliable online articles) were used to establish a theoretical basis. These materials provided an overview of ITIL, IT Service Management (ITSM), and Six Sigma methodologies, which placed the empirical findings into a wider academic context.

This approach was applied for the literature review to find relevant theoretical backgrounds related to ITIL, IT Service Management (ITSM), and other theories or concepts that address the research problem. Sources accessed included textbooks, peer-reviewed journals, scholarly articles, and reliable online documentation, among other sources as needed. This process laid the theoretical foundations and enabled both data processing and analytical work in this study.

RESULTS AND DISCUSSION

Results

This section presents empirical findings from the DMAIC implementation (Results) and critically interprets these findings in relation to ITIL V4 theoretical frameworks and prior literature (Discussion), in accordance with reviewer feedback to clearly separate data presentation from analytical interpretation. The research involves measuring the maturity of ITIL practices and the performance of the IT Helpdesk and IT End User Computing currently in operation, analyzing the data, proposing improvements in the incident management practice, implementing the proposed improvements, reviewing ITIL practices in the performance of the IT Helpdesk and IT End User Computing, and providing the results of the case study analysis. The researcher will explain the developments made in each of the five DMAIC stages in which the researcher was actively involved, and these can be summarized in Table 1.

Table 1. Research Process and Technology Improvement Summary

Category	Title	Action
Availability Management	Process Development of Features and Technology for the SNOW Ticketing Portal -Planning Information	Developing the additional comment and worknotes feature template on the SNOW ticketing portal.
Monitoring and Event Management	Process Development of Features and Technology for the SNOW Ticketing Portal - Change Information	Scheduling regular meetings with IT management to discuss potential developments or additions of new services using the change management feature of the SNOW ticketing portal.
Configuration Management	Process Development of Features and Technology for the SNOW Ticketing Portal - Knowledge Base	Developing the report view/run feature on the SNOW ticketing portal application to support the problem

Category	Title	Action
		management process and integrated Knowledge Base.
Service Level Management	Determining the priority scale for IT incidents and SLA between the IT support team in resolving incident tickets.	Clarifying the method for determining the priority of an incident report and setting SLAs between technical support teams for each IT service.
	Process Development of Features and Technology for the SNOW Ticketing Portal – Customer Feedback Information	Developing the view/run feature on the SNOW ticketing portal application related to customer feedback.

During the development of features and functionality for the SNOW Ticketing Portal – Planning Information section, which provides users with information regarding IT incident reports submitted to the IT Helpdesk, if there are any changes or plans that affect the resolution time of the IT incident, it is essential within a well-managed ITIL V4 service management practice to inform users of these changes or plans. This communication is crucial to managing user expectations of IT services provided by the IT Helpdesk and IT End User Computing.

Based on incident ticket data retrieved from the SNOW Ticketing Portal for the period from January 1, 2023, to December 31, 2023, users who reported IT incidents to the IT Helpdesk via phone ranked first, with a total of 6,585 incident tickets. Since the majority of users prefer to report their IT incidents through phone channels, the researcher has created a template for the IT Helpdesk Team to use when informing users of any changes or plans related to their reported IT incidents, as presented in Table 2.

Table 2. Phone script for informed user regarding any additional or changed from IT Incident

Event	Conversation
Opening	Good morning, Mr./Ms. [Name], this is [Staff Name] from the IT Call Center. Am I speaking with Mr./Ms. [Name]?
Analyze	Regarding the issue you reported earlier with the ticket number (ticket number), we apologize for the inconvenience. We would like to inform you that there has been a change that impacts the resolution time due to (mention the change or planning that occurred).
Communication	For your issue, we will escalate it back to the Support Team to ensure it is resolved on time. Please kindly wait for the support team to conduct further investigation and contact you again. If no support team contacts you within 2-3 business days, please contact us again by providing the ticket number.
Closing	Thank you for your confirmation, Good morning.

By developing a template for the Work Notes and Additional Comments features on the SNOW Ticketing Portal to communicate changes or plans in IT Incident tickets, the IT Help Desk could inform end users of any additional changes required to resolve their IT Incident tickets, with the results shown in Figure 5.

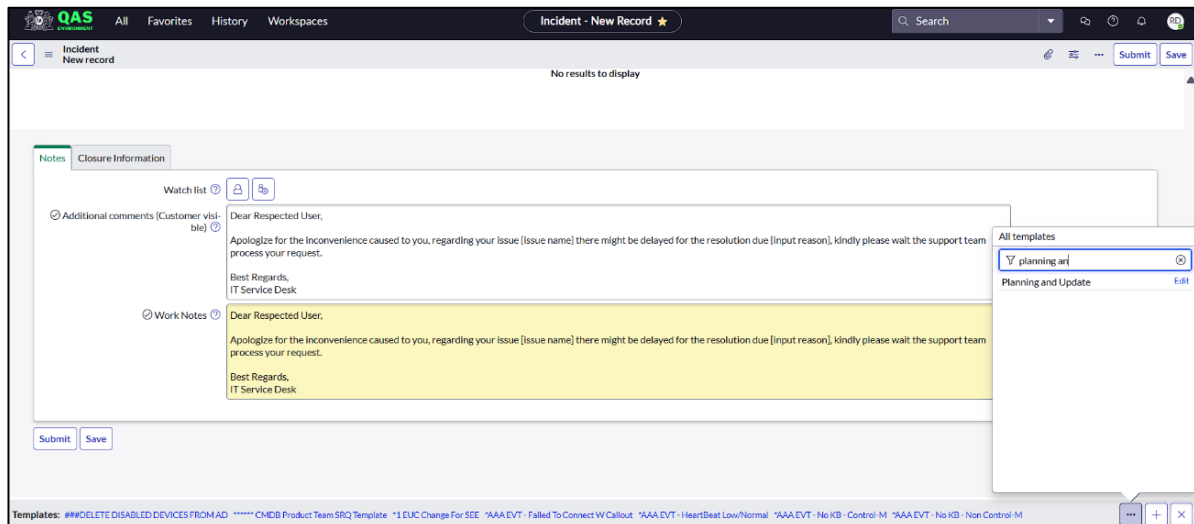


Figure 5. Additional Features on SNOW Ticketing portal - Planning Information
(Source: company data)

A dashboard report was developed for any change or additional service information on the SNOW Ticketing Portal in order to maintain product knowledge from existing services or newly developed services that will soon be deployed as part of the feature and technology development process for the change information section, with the results shown in Figure 6.

Change Information							
Data	Table	Change Task [change_task]	Type	List	Group by	None	
Available	Assignment Group [+]	Assigned to [+]	Active	Activity due	Actual Start Date	Additional assignee list	Additional comments
Selected	Number	Short Description	Type	Status	Planned Start Date	Planned end date	Assignment Group
							Assigned to
Add Filter Condition Add "OR" Clause Add Sort Field All of these conditions must be met Active is true AND OR Status is In-Progress AND OR Assignment Group is TPE DWC Help Desk Ind AND OR Assignment Group is TPE EUS Interact for Ind							
Change Task							
Number	Short Description	Type	Status	Planned Start Date	Planned end date	Assignment Group	Assigned to
CHT00518296	SOFTWARE_VM - Fix multiple vulnerabilities on single device - pmiididnw99632	Planning	In-Progress	2024-06-07 06:13:09	(empty)	TPE EUS Interact for Indonesia	(empty)
CHT00535053	[BAUFactoryPatchingOEM] PMIIDIDNW99666	Planning	In-Progress	2024-07-17 10:00:00	(empty)	TPE EUS Interact for Indonesia	(empty)
CHT00526962	[BAUFactoryPatchingReboot] PMIIDIDNW05141	Planning	In-Progress	2024-06-18 10:32:01	(empty)	TPE EUS Interact for Indonesia	(empty)
CHT00535065	[BAUFactoryPatchingOEM] PMIIDIDNW03125	Planning	In-Progress	2024-07-17 10:00:00	(empty)	TPE EUS Interact for Indonesia	(empty)
CHT00535054	[BAUFactoryPatchingOEM] PMIIDIDNW99596	Planning	In-Progress	2024-07-17 10:00:00	(empty)	TPE EUS Interact for Indonesia	(empty)
CHT00534991	[BAUFactoryPatchingNoRing] PMIIDIDNW03632	Planning	In-Progress	2024-07-17 10:00:00	(empty)	TPE EUS Interact for Indonesia	(empty)
CHT00534987	[BAUFactoryPatchingNoRing] PMIIDIDNW04166	Planning	In-Progress	2024-07-17 10:00:00	(empty)	TPE EUS Interact for Indonesia	(empty)

Figure 6. Additional Features on SNOW Ticketing portal - Change Information
(Source: company data)

In the process of creating a Knowledge Base Record, there will be two additional processes in the restoration and resolution process of an IT Incident, as follows: (1) Does the resolution stage of an IT Incident result in new solution information or knowledge? If so, the support team can register the new knowledge in the knowledge base. (2) Is the incident resolution stage a workaround? If so, the Service Desk team can create a new problem ticket or register the incident on an existing problem record, as shown in Figure 7.

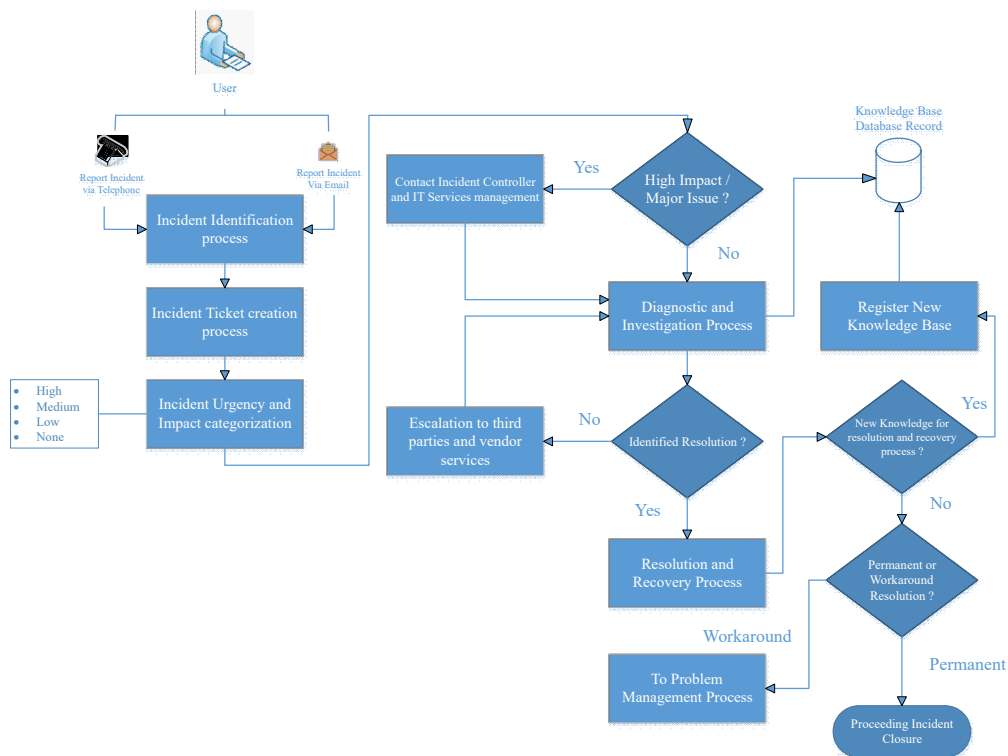


Figure 7. Knowledge Management activity development process

Developing features on SNOW Ticketing Portal to maintain product knowledge and access or add any new information regarding resolution steps of IT Incident, with the results in figure 8.

Number	Short description	Workflow	Knowledge base	Technical Content Owner	Author	Service
KBS00000728	Adobe Acrobat Change file from .pdf to ...	[Icons]	IT	PM CZ Customer Services	(empty)	zz-DO NOT USE- End User Computing for PMCZ
KBS00000831	Adobe Acrobat How to set password for PD...	[Icons]	IT	Knowledge Management Governance Board	(empty)	EUS Software Distribution Management for...

Figure 8. Additional Features on SNOW Ticketing portal – Knowledge Base
Source: company data

The determination of the incident priority scale is based on the ITIL 4 Incident Management practice and discussions in meetings with supervisors and IT managers. The priority of an incident ticket is based on two factors, namely urgency and impact, where the calculation of impact and urgency is explained as follows: (1) Urgency: how long the resolution of an IT incident can be delayed or postponed; and (2) Impact: how much impact is generated if an IT incident cannot be resolved within a predetermined time.

Table 3. Urgency & Impact Category

Category	Urgency	Impact
None	Urgency is by default used for an IT Incident that is categorized as a question or information need and is not an unplanned incident.	Impact is by default used for an IT Incident that is categorized as a question or information need and is not an unplanned incident.
Low	None	Impact is used if the impact caused is on a small scale, namely from one user only and does not occur with other users.
Medium	Urgency which is by default used for an IT Incident which is an incident that occurs unplanned and can be resolved according to the queue and running process.	Impact is used if the impact caused is medium scale and more than one user such as one floor or building.
High	The urgency category that can be selected if an IT Incident disrupts the ability of users or has a broad impact that disrupts business processes, requires a fast response.	Impact is used if the IT Incident has an impact on disrupting the course of operational business processes and is critical, requiring immediate handling for resolution.

In an effort to maintain a good IT service process for the IT Service Desk and IT End User Computing for users, input and feedback from users need to be considered to determine how satisfied users are with the service performance in resolving IT Incidents, as part of the Process Development of Features and Technology–Customer Feedback section, with the results shown in Figure 9.

The screenshot displays the SNOW Ticketing portal's filter interface. At the top, there are dropdowns for 'Data' (set to 'Table'), 'Type' (set to 'List'), and 'Group by' (set to 'Assigned to'). Below these are buttons for 'Add Filter Condition', 'Add "OR" Clause', and 'Add Sort Field'. A section titled 'All of these conditions must be met' contains several filter rules: 'Taken on' is 'on' 'This month' (with a date picker); 'Assignment Group' is 'is' 'TPE EUS Interact for Ind'; 'or Assignment Group' is 'is' 'TPE DWK Help Desk Ind'; 'Response' is 'is not empty'; and 'Assigned to' is 'is not empty'. Each rule has 'AND' or 'OR' buttons and a red 'X' to remove it. On the right, there are two columns: 'Available' (containing 'Assignment Group [+]', 'Assigned to [+]', 'Taken by (tdinst_taken_by) [+]', 'Active', 'Activity due', 'Actual End Date', 'Actual Start Date', and 'Additional assignee list') and 'Selected' (containing 'Taken on', 'Number', 'Short Description', 'Assignment Group', 'Assigned to', 'Taken by (tdinst_taken_by)', and 'Response'). A 'Minimize' button is also present. At the bottom, a table titled '0 total Task survey details' shows columns: 'Taken on', 'Number', 'Short Description', 'Assignment Group', 'Assigned to' (with a dropdown arrow), 'Taken by', and 'Response' (with a dropdown arrow).

Figure 9. Additional Features on SNOW Ticketing portal – Customer Feedback Information
Source: company data

For the IT Maturity Comparison, the researchers met with members of the IT Department to assess the application of ITIL 4 in the IT Service Desk division using the ITSM Self-Assessment approach. The following is an explanation of the results column of the ITIL 4 Maturity Level Self-Assessment, which displays data on the results of IT service achievements based on the data obtained, as well as the limits and conditions for passing (PASS) or failing (FAIL) at each level.

Table 4. IT Maturity for IT Service Desk

Level	Pass Requirement	Min. Score	Max. Score	Actual Score		Status		Cumulative Score	
				Before	After	Before	After	Before	After
Level 1: Pre-requisites	M+1	5	6	6	6	PASS	PASS	6	6
Level 1.5: Management Intent.	M+1	9	11	11	11	PASS	PASS	17	17
Level 2: Process Capability.	M+2	12	15	13	15	PASS	PASS	30	32
Level 2.5: Internal Integration.	M+2	7	9	8	8	PASS	PASS	38	40
Level 3: Products.	M+1	11	14	14	14	PASS	PASS	52	54
Level 3.5 : Quality Control.	M+1	7	8	8	8	PASS	PASS	60	62
Level 4: Management Information.	M+1	11	12	12	12	PASS	PASS	72	74
Level 4.5: External Integration.	M+1	9	10	8	10	FAIL	PASS	80	84
Level 5: Customer Interface.	M	15	15	12	15	FAIL	PASS	92	99
Total Score				92	99				

Discussion

Table 4 reveals that the maturity of IT services in the IT Service Desk unit was effectively at Level 5: Customer Interface, with a desired score for all practices of 100 points (Fully Comply) and an overall achievable score at that level of 99 points.

The evolution of the IT Service Desk maturity level from Level 4 (score 92) to the attainment of Level 5 (score 99 — "Fully Comply") is a theoretically grounded insight that can be justifiably deduced through several analytical lenses. First, according to ITIL V4, Level 5 maturity means complete organizational embedding of service management practices — processes are not only defined and executed but constantly measured, optimized, and externally validated by incorporating customer feedback (Limited, 2019). This was exactly what was accomplished through the Control phase of DMAIC, which institutionalized monitoring dashboards and customer voice modules.

Second, the maturity improvement validated a full cycle of the DMAIC theoretical framework: before-and-after metrics show PASS instead of FAIL status at two measures (Levels 4.5 and 5). PASS status demonstrates that the root causes identified in the Define and Analyze phases were accurate, while the targeted and measurable solutions implemented during the Improve phase helped achieve these results, improving management behavior (Pyzdek & Keller, 2014). Third, previous literature found that better IT organizational performance — encompassing cost efficiency, user satisfaction, and service availability — is almost exclusively attributable to higher levels of ITIL maturity compared to lower maturity stages, an empirically validated finding.

The findings thus far empirically support this correlation: the maturity increase came with a 97.9% improvement in IT Service Desk resolution time (from 2h 24m to 3 min) and a 90.1% improvement in IT End User Computing resolution time (from 12h 39min to 1 hour), demonstrating that process maturity translated into equivalent operational performance

improvements not achievable through less mature processes. In addition, the failure in a critical area before the intervention — Level 4.5: External Integration FAIL (actual: 8 min 9) — indicated a systemic organizational weakness in that feedback from external stakeholders was not sufficiently integrated into the service improvement process. This gap has been rectified by introducing a Customer Feedback Information module on the SNOW portal, directly addressing this need.

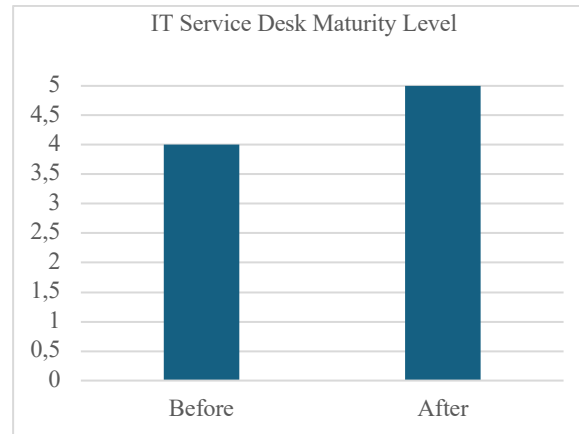


Figure 10. IT Service Desk Maturity Comparison

The current study builds upon and adds to the ITIL V4 implementation literature by generating a stage-by-stage DMAIC integration framework validated empirically for progressing IT Service Desk maturity from initial implementation up to full compliance, utilizing an AMO perspective to implement evidence-based service improvement in larger organizations within developing economies. Practical Implication: IT managers and leaders in service delivery can mitigate unnecessary losses by utilizing the DMAIC–ITIL V4 integration model as a structured governance roadmap, starting with ITSM Self-Assessment to establish a baseline, and continuing with focused improvement initiatives involving communication standardization, Knowledge Base development, and SLA matrix redesign.

Limitation of the research: The study is based on a single case study of one industrial company, which limits generalizability to other sectors and organizational sizes. In addition, without a control group, it is impossible to attribute the performance improvements directly to the ITIL V4–DMAIC intervention. Future Work: Future studies should: (1) validate this combined model in diverse industries for its generalizability; (2) quantitatively evaluate the model through larger samples and control groups; (3) investigate the use of AI-driven predictive analytics integrated with ITIL V4 incident management to enhance proactive compliance with SLAs; and (4) evaluate the sustainability of improvement in maturity levels after a 12-month deployment period.

CONCLUSION

As this research has reached its final stage, the conclusions are drawn as follows: the researchers conducted an assessment of the IT Maturity level in the IT Service Desk work unit, where the maturity level at the initial stage had a value of 4, and through the gradual DMAIC process, the maturity level of the IT Service Desk rose to 5, indicating an improvement in the IT Service Desk unit's maturity level. In measuring the performance of the IT Service Desk Unit and IT End User Computing, an analysis was carried out on the IT Incident resolution duration, revealing a change in completion time: the IT Service Desk's resolution time decreased from 2 hours 24 minutes to 3 minutes, and IT End User Computing's from 12 hours 39 minutes to 1 hour 15 minutes.

In analyzing this research, the researchers designed and proposed the development of feature templates and reporting features on the ServiceNow (SNOW) Ticketing Portal—encompassing notifications on changes or updates pertaining to ongoing IT Incidents for users, an integrated Knowledge Base to maintain IT Service Desk and IT End User Computing product knowledge in the process of resolving IT Incidents, and feedback information submitted by users

on the performance of the IT Service Desk and IT End User Computing in resolving IT Incidents. This study provides tangible evidence from a specific case in Indonesia with quantified results for the reduction in incident resolution time as well as increased maturity levels of service desks. Furthermore, aligning ITIL V4 practices with governance frameworks emphasizes the strategic importance of ITIL V4 in an operational context and enables organizational accountability and compliance.

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AUTHOR CONTRIBUTION STATEMENT

The study was conceptualized and designed by Dani Putra Rachman Akbar, who also developed the methodology, conducted the investigation, and wrote the original draft of the manuscript. Nilo Legowo provided guidance during the study process, contributed to the interpretation of the findings and helped in reviewing and editing drafts of the manuscript for clarity and rigor.

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