Project Management Strategy for Chatbot Implementation Based on ITIL v4: A Logistics Company Case

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Abstract—The rapid development of information technology drives improvements in service quality, including help desk services that act as a central point of customer support. The research aims to enhance the achievement of Service Level Agreement (SLA) response and resolution targets in a digital port and logistics company that has yet to meet its SLA response goal of 95%, with an average fulfillment of only 64%. The research adopts a descriptive qualitative method using a case study approach. Data were collected through SLA reports from December 2023 to April 2024 and interviews with the helpdesk team. The research object is the company's helpdesk system. The analysis is conducted using the Information Technology Infrastructure Library version 4 (ITIL v4) framework through Service Value Chain (SVC) practices and supported by an Agile approach. The results show that implementing an ITIL v4-based chatbot combined with Agile practices can significantly improve SLA response due to the chatbot's availability and instant response capabilities. Additionally, SLA resolution is also improved as the chatbot supports initial triage and accelerates ticket routing to the appropriate teams. The average gap after implementation indicates a 26% improvement in SLA response and a -1% gap in SLA resolution (exceeding the target). The research highlights the strong potential of integrating ITIL v4 into chatbot design and management, even though academic studies exploring the relationship between ITIL v4 and chatbot functions remain limited.

Index Terms—Project Management Strategy, Chatbot, Information Technology Infrastructure Library version 4 (ITIL v4), Logistics Company

I. INTRODUCTION

THE advancement of data innovation has brought critical changes in different aspects of life, especially in data innovation administration. This service continues to innovate to meet users' increasingly complex and diverse needs. One innovation implemented by various organizations is the helpdesk system. A helpdesk is a central point at which problems are reported and organized in an orderly and organized manner. The helpdesk functions as a help center that provides support to customers effectively and efficiently [1]. Helpdesk also focuses on incident management in the Information Technology (IT) division. In IT service management, this system helps organizations to address various problems faced by customers [2].

One benchmark for the success of using a helpdesk is the fulfillment of a Service Level Agreement (SLA). An SLA is an agreement document that identifies expectations and responsibilities and facilitates the communication of service providers and service users in a document. SLA achievement is influenced by incident and problem management [3], which is a performance assessment in incident management. Competitive SLA increases productivity and efficiency and reduces operational risks [4].

Studied company in the research is engaged in digital port and logistics. It is committed to providing the best service to its customers. In an effort to fulfill this commitment, this corporation implements an SLA on its helpdesk application based on Table I. Table I outlines the SLA criteria based on service type and business criticality. It defines resolution and response times for incidents related to both applications and infrastructure. Resolution time varies depending on the criticality level (critical, high, medium, or low) with stricter timeframes for more critical issues. VIP clients receive faster response times (15 minutes) compared to regular clients (30 minutes), ensuring prioritization based on client type and business impact. At this com-

TABLE I
SERVICE LEVEL AGREEMENT (SLA) CRITERIA.

| Service Type	Business Criticality	SLA Resolution	SLA Response
Application Incident	Critical	High: 4 hours Medium: 6 hours Low: 8 hours	VIP client: 15 minutes Regular client: 30 minutes
	High	High: 6 hours Medium: 8 hours Low: 12 hours	VIP client: 15 minutes Regular client: 30 minutes
	Medium	High: 8 hours Medium: 12 hours Low: 16 hours	VIP client: 15 minutes Regular client: 30 minutes
	Low	High: 16 hours Medium: 24 hours Low: 48 hours	VIP client: 15 minutes Regular client: 30 minutes
Infrastructure Incident	Critical	High: 4 hours Medium: 8 hours Low: 24 hours	VIP client: 15 minutes Regular client: 30 minutes
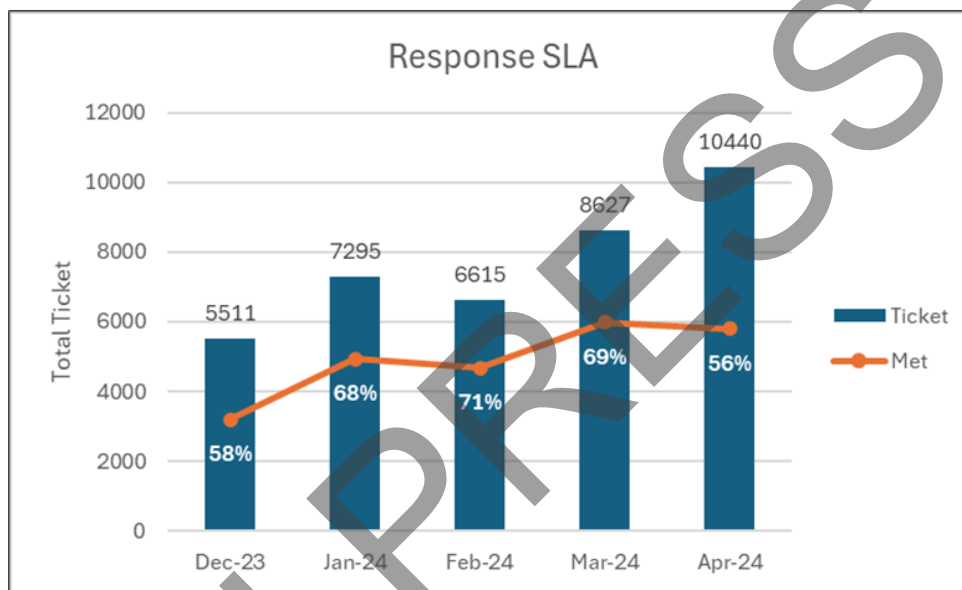
Fig. 1. Service Level Agreement (SLA) response at the logistics company.

pany, SLA provisions include fulfillment of an SLA response of 95% and an SLA resolution of 85% of the total tickets recorded each month. The implementation of this SLA ensures that requests or issues raised by customers can be handled quickly and effectively.

Based on quantitative data collected from December 2023 to April 2024, the fulfillment of the SLA response at this corporation had only reached 64%, with the highest achievement in February 2024 at 71% (Fig. 1). Meanwhile, the fulfillment of SLA resolution had reached 86%, with the highest achievement in March 2024 at 92% (Fig. 2) (source: enterprise helpdesk application). These figures demonstrate that even though the SLA resolution has met the requirements, the SLA response is still far from the expected target. Therefore, a solution is needed to improve the SLA response to comply with the provisions that have been set.

One of the proposed solutions to improve SLA response and resolution at this company is the implementation of a chatbot in the helpdesk application. A chatbot is a software application or advantageous tool that engages with users through textual or auditory communication. Today, the use of chatbots tends to be easy on various websites with different functions. Chatbot on applications and websites usually provides services, such as giving vital data, helping clients to obtain working information, and supporting trade forms [5]. The chatbot can be considered an alternative system that replaces humans. Alternative systems are required to be fully effective and efficient and to automate business processes [6]. Chatbot can provide faster responses through their continuous availability
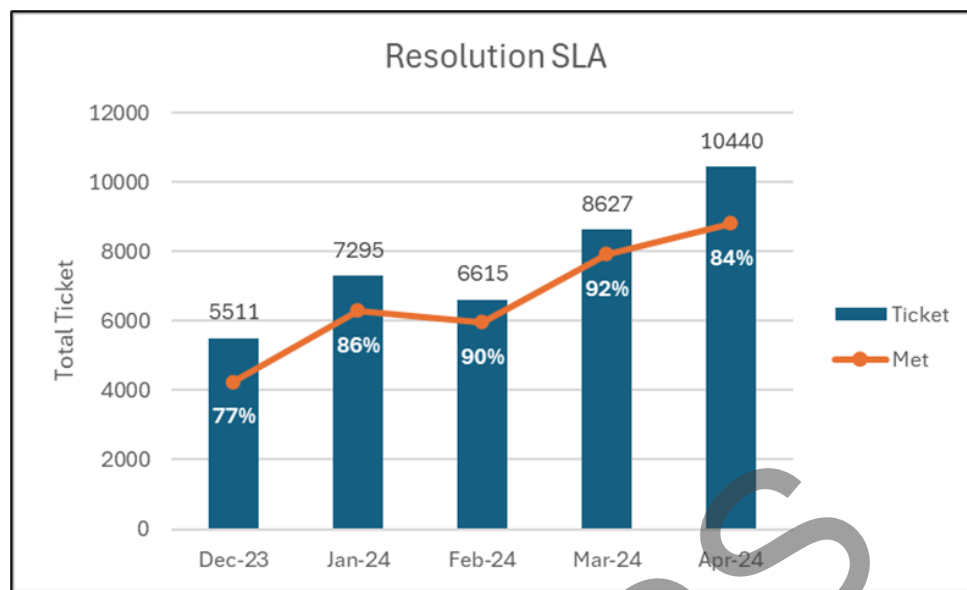
Fig. 2. Service Level Agreement (SLA) resolution at the logistics company.

and ability to respond automatically. In addition, if the chatbot can resolve customer issues, it will reduce the number of tickets that the helpdesk team must handle, which will increase SLA resolution. However, before the implementation of the chatbot is performed, a development system is required to ensure that the execution is consistent with the needs and objectives of the company.

In the previous research about Information Technology Infrastructure Library (ITIL), the implementation of ITIL v3 at PT. X focuses on improving incident management in the helpdesk division by aligning practices with the service operation domain. A gap analysis reveals issues such as lack of structured processes, unclear roles, and incomplete incident tracking. Hence, recommendations are made to introduce a centralized helpdesk system, clear incident categorization and prioritization, escalation procedures, and comprehensive logging. A helpdesk system prototype is developed and tested, showing high user approval. This high-level ITIL v3 adoption improves the efficiency and consistency of incident handling within the organization [7], keen school investigation of end-of-semester exam administrations on the quality application utilizing the ITIL v3 system at SMA Negeri 22 Palembang [8], streamlining IT helpdesk and occurrence administration with saddling the control of the ITIL v3 for improved proficiency in IT administrations [2].

ITIL v4 is a modern IT service management framework that focuses on delivering value through flexible, integrated practices like Agile and DevOps. It helps organizations manage incidents efficiently, improve service quality, and support digital transformation. By using ITIL v4, processes become more structured, responsive, and aligned with user needs [9]. Other previous studies examine self-assessment of service management using ITIL v4 on incident management of Hermina hospital [10], advancement of Information Communication Technology (ICT) framework administration benefit for optimization of organization of instructive institution exercises by utilizing ITIL v4 [11], examination of the development level of the Tangerang LIVE application in overseeing occurrence administration, issue administration, and benefit work area utilizing the ITIL v4 system [12], and measurement of the performance of the UNITOMO e-learning system with ITIL v4 framework [13], risk management of the university information system division using the Control Objectives for Information and Related Technology (COBIT) 5 framework [14].

Based on the background, the researchers consider giving proposals for the execution arrangement of chatbots in this company using the ITIL v4 system. ITIL v4 offers Service Value Chain (SVC) practices that can be used to design and manage information technology services effectively. The suggested proposal is expected to give direction to logistics company management in implementing chatbots in their helpdesk applications so that they can improve service performance and meet the SLA provisions that have been set.

The research on chatbot application as project management strategies highlights significant contributions and notable limitations. Chatbots have emerged as transformative tools in various domains, including
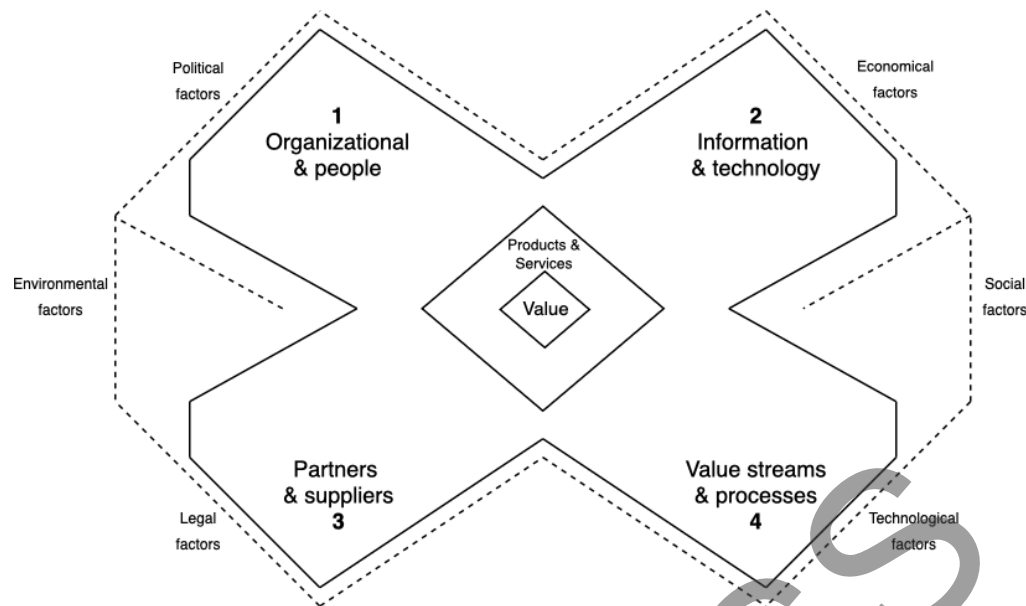
Fig. 3. Four-dimensional model.

business decision-making, risk management, stakeholder engagement, and process automation. However, challenges such as practical implementation, accuracy, and user engagement remain. This response synthesizes the insights from multiple studies to provide a comprehensive understanding of the contributions and limitations of chatbot application as project management strategies.

II. RESEARCH METHOD

A. Data Analysis

The information is taken from the ticket reports entered on the helpdesk application at this company. The data are in the form of an SLA response and resolution fulfillment from December 2023 to April 2024 at this company. Research data analysis is conducted based on these data. Research data analysis is the methodological process of applying different statistical or qualitative analysis tools to transform raw data into relevant information [15]. Ticket report data from the logistics company is analyzed to generate information regarding the fulfillment of the SLA response and resolution that is currently ongoing. From the examination, proposals are given for logistics companies to improve their SLA response and resolution in accordance with the provisions set by the logistics company.

The research commences with compiling helpdesk ticket data to evaluate the attainment of SLA response and resolution metrics. These data are subjected to analysis through descriptive statistical techniques to discern the discrepancies between actual performance and established targets, informed by the analytical outcomes. The ITIL v4 framework is employed to formulate the solution for the implementation of the chatbot.

B. Information Technology Infrastructure Library version 4 (ITIL v4)

The ITIL v4 framework is an update of the ITIL v3 framework but does not eliminate existing processes in ITIL v3. ITIL v3 focuses more on best practices and the integration of adaptability and flexibility in information technology service management [16]. Meanwhile, ITIL v4 is used appropriately as a guide in developing an implementation technique, a best practice for developing procedural steps [17].

The primary components of the ITIL v4 system are the four measurements and the ITIL Service Value System (SVS). The four-dimensional model (Fig. 3) consists of organizations and people, information and technology, partners and suppliers, and value stream and process [17]. These four dimensions ensure a balanced consideration of all factors influencing service management, including environmental, technological, legal, and social factors. Each dimension plays a critical role in ensuring that services are designed and delivered effectively, aligning with overall business goals.

Meanwhile, ITIL SVS depicts how all components and exercises of the organization work together as a framework to empower esteem creation. ITIL SVS in Fig. 4 consists of guiding principles, governance, SVC,
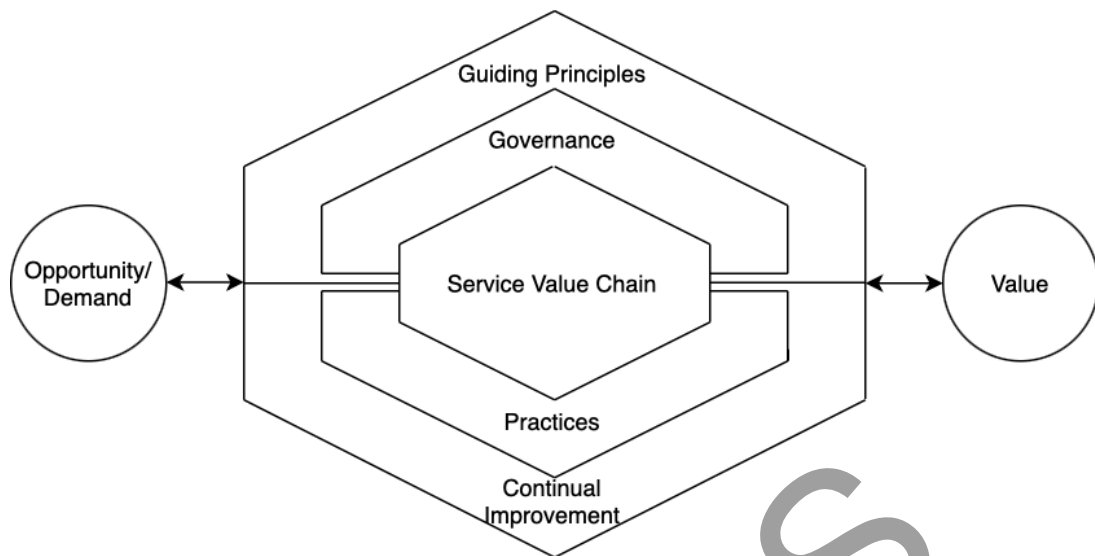
Fig. 4. Information Technology Infrastructure Library (ITIL) Service Value System (SVS).
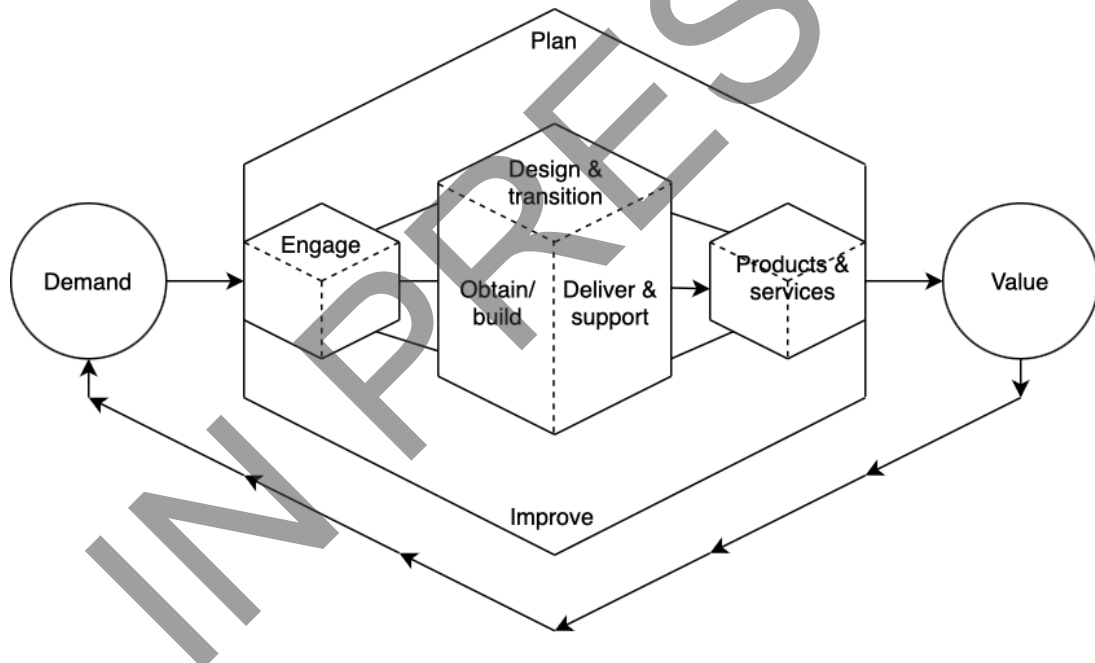

Fig. 5. Information Technology Infrastructure Library (ITIL) Service Value Chain (SVC).

ITIL v4 practices, and continual improvement [18]. The model shows how opportunity and demand are transformed into value through a cohesive system of interrelated elements. It emphasizes adaptability, collaboration, and ongoing enhancement of services to meet stakeholder needs effectively.

ITIL v4 tracks benefit measurements, where each SVS component must consider the four-dimensional model, to guarantee an all-encompassing approach to benefit administration. The central component of SVS is the SVC. Figure 5 is an example model that traces the primary exercise cash needs to react to requests and encourage realization by creating and managing products and services. The stages of ITIL SVC include planning, improving, engaging, designing and transitioning, obtaining/building, and delivering and supporting [19, 20]. These interconnected activities represent a flexible and iterative workflow that transforms demand into value. Each stage ensures that services are aligned with business strategy, user expectations, and

TABLE II
SERVICE LEVEL AGREEMENT (SLA) RESPONSE IN HELPDESK
BY PRIORITY.

Priority	Dec-23	Jan-24	Feb-24	Mar-24	Apr-24
Emergency	69%	58%	60%	75%	72%
High	74%	74%	71%	71%	68%
Usual	56%	67%	70%	68%	54%
Low	71%	70%	74%	77%	68%
Total	58%	68%	71%	69%	56%

TABLE III
SERVICE LEVEL AGREEMENT (SLA) RESPONSE ACHIEVEMENT
AND GAP ANALYSIS (DECEMBER 2023 TO APRIL 2024).

Priority	Target	Actual	Achievement	Gap
Emergency	95%	67%	71%	28%
High	95%	72%	76%	23%
Usual	95%	62%	66%	33%
Low	95%	72%	76%	23%
Total	95%	69%	72%	26%

TABLE IV
SERVICE LEVEL AGREEMENT (SLA) RESOLUTION IN HELPDESK
BY PRIORITY.

Priority	Dec-23	Jan-24	Feb-24	Mar-24	Apr-24
Emergency	93%	77%	92%	95%	76%
High	74%	76%	87%	96%	74%
Usual	75%	86%	90%	92%	84%
Low	91%	89%	92%	92%	90%
Total	77%	86%	90%	92%	84%

continuous improvement, forming the operational core of ITIL's value-driven service management.

By using the ITIL v4 framework on SVC, logistics companies can ensure that the chatbot implementation plan on the helpdesk application will improve and meet SLA response and resolution, by increasing efficiency and customer satisfaction. This structured approach enables organizations to handle incidents systematically while aligning technical support with user needs. Moreover, the flexibility of the SVC model allows for faster adaptation to changes and service innovation. With continuous feedback loops, service performance can be monitored and optimized in real time. Ultimately, the approach leads to better resource utilization and a more resilient IT service environment.

III. RESULTS AND DISCUSSION

Based on ticket data from December 2023 to April 2024 at this company, data analysis is carried out to determine the fulfillment of the response and resolution SLA so that the gap is known. Furthermore, a framework based on ITIL v4 is created as a recommendation in the plan to implement chatbots in the helpdesk application. This analysis is important to evaluate the current performance of the helpdesk system and identify areas for improvement. The SLA performance reflects the team's responsiveness in handling user issues within the expected timeframe. Identifying the largest gaps allows the organization to prioritize improvements in critical areas. The gained insights serve as the basis for aligning future service strategies with ITIL v4 principles.

A. Results of Data Analysis

Ticket data from December 2023 to April 2024 are managed, resulting in the number of response SLAs that are met in Table II. From the provisions of the SLA response with a target of 95% of the total tickets recorded every month, it is known that none of them have reached this target. The highest SLA response was 71% in February 2024, which was 29% short of the target. Meanwhile, the lowest SLA was 58% in April 2024, which was 37% less than the target.

The logistics company's SLA response achievement from December 2024 to April 2024 is shown in Table III. The achievement of SLA response fulfillment is still far from the target, with an average gap of 26%. The highest gap is in normal priority tickets, at 33%. The result indicates that routine issues are often delayed and not prioritized effectively, which can accumulate and disrupt overall service performance. A persistent gap in SLA fulfillment may also reflect resource limitations, inefficient workflows, or lack of automated support tools such as chatbots. Addressing these gaps through ITIL v4 based improvements can help to standardize processes and increase responsiveness across all ticket priorities.

Table IV shows the SLA resolution that was met between December 2023 and April 2024. From the provisions of the SLA resolution, which has a target of 85% of the total tickets recorded every month, in December 2023 and April 2024, it still had not reached the target. The highest resolution of the SLA was 92% by March 2024, 7% more than the target. The lowest SLA was 77% in December 2023, 8% short of the target.

The achievement of the logistics company in SLA resolution from December 2024 to April 2024 is shown in Table V. It is known that the achievement of the SLA resolution has exceeded the target, with an average gap of -1%. However, high-priority tickets still do not reach the target, with a gap of 5%. The result shows that while overall performance is satisfactory, there are inconsistencies across different priority levels. The underperformance in high-priority tickets can indicate a need for better escalation procedures or resource allocation. Hence, maintaining high SLA resolution across

TABLE V
SERVICE LEVEL AGREEMENT (SLA) RESOLUTION ACHIEVEMENT AND GAP ANALYSIS (DECEMBER 2023 TO APRIL 2024).

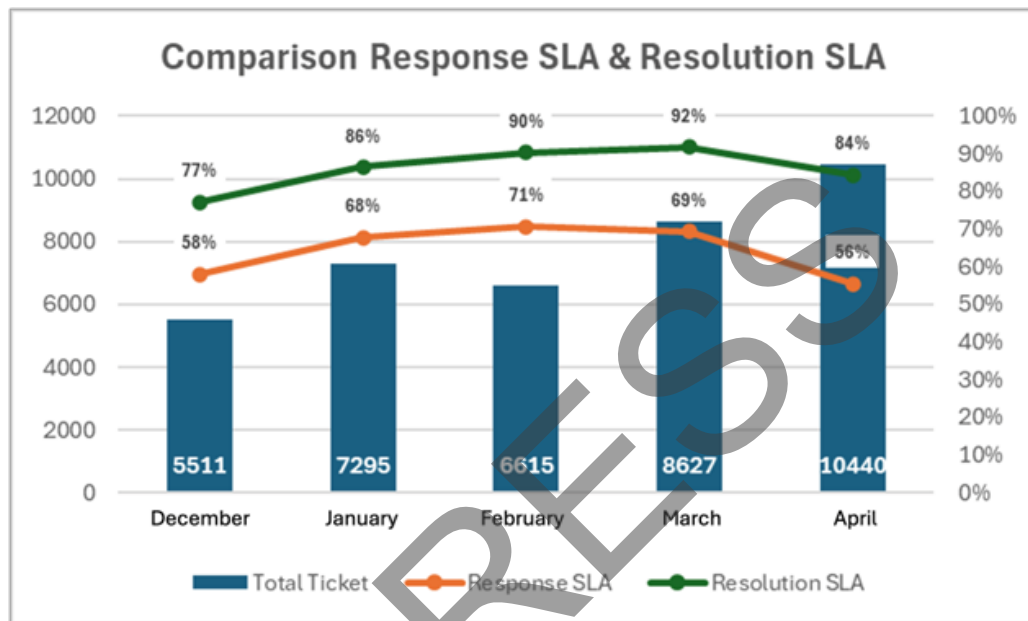| Priority	Target	Actual	Achievement	Gap
Emergency	85%	87%	102%	-2%
High	85%	80%	94%	5%
Usual	85%	86%	101%	-1%
Low	85%	91%	107%	-6%
Total	85%	86%	101%	-1%

Fig. 6. Comparison of Service Level Agreement (SLA) response and resolution.

all categories is essential to ensure reliability and trust in the helpdesk service. Targeted improvements guided by ITIL v4 practices can help to close this remaining gap.

From the SLA response and resolution, a comparative analysis is performed with the graph visualization shown in Fig. 6. Total tickets are shown on a bar graph, and the SLA is shown on a line graph, with an orange line for the SLA response and a green line for the SLA resolution. The number of tickets in December 2023 was 5,511, with an SLA response of 58% and an SLA resolution of 77%. In January 2024, the total number of tickets increased by 1,784 to 7,295, with the achievement of SLA response and resolution also increasing to 68% and 86%, respectively. However, in April 2024, the total number of tickets increased by 1,813 to 10,440, while the achievement of response SLA decreased by 13% to 56%. Similarly, the achievement of resolution decreased by 8% to 84%. Therefore, it can be concluded that the number of tickets that come in does not necessarily affect the achievement of SLA response or resolution.

In Fig. 6, it can be seen that from December 2023 to April 2024, the SLA response and resolution have the same trend. In January 2024, the response SLA increased by 10% to 68%. Likewise, the SLA resolution increased by 9% to 86% in January 2024. In April 2024, the response SLA decreased by 13% to 56%. Then, the SLA resolution decreased by 8% to 84% from April 2024. Therefore, it can be concluded that the achievement of SLA response has a positive impact on the achievement of SLA resolution.

The recommendation of the chatbot implementation plan on the helpdesk application at this company can overcome the fulfillment of the SLA response, which is still far from the target. The chatbot provides automatic answers according to the incidents experienced by customers. Thus, it increases the achievement of SLA response and has a positive effect on SLA resolution. The plan to implement a chatbot on the helpdesk application at this company will create an ITIL SVC framework based on ITIL v4 to guarantee that the whole preparation is carried out in an organized, proficient, and centered way.
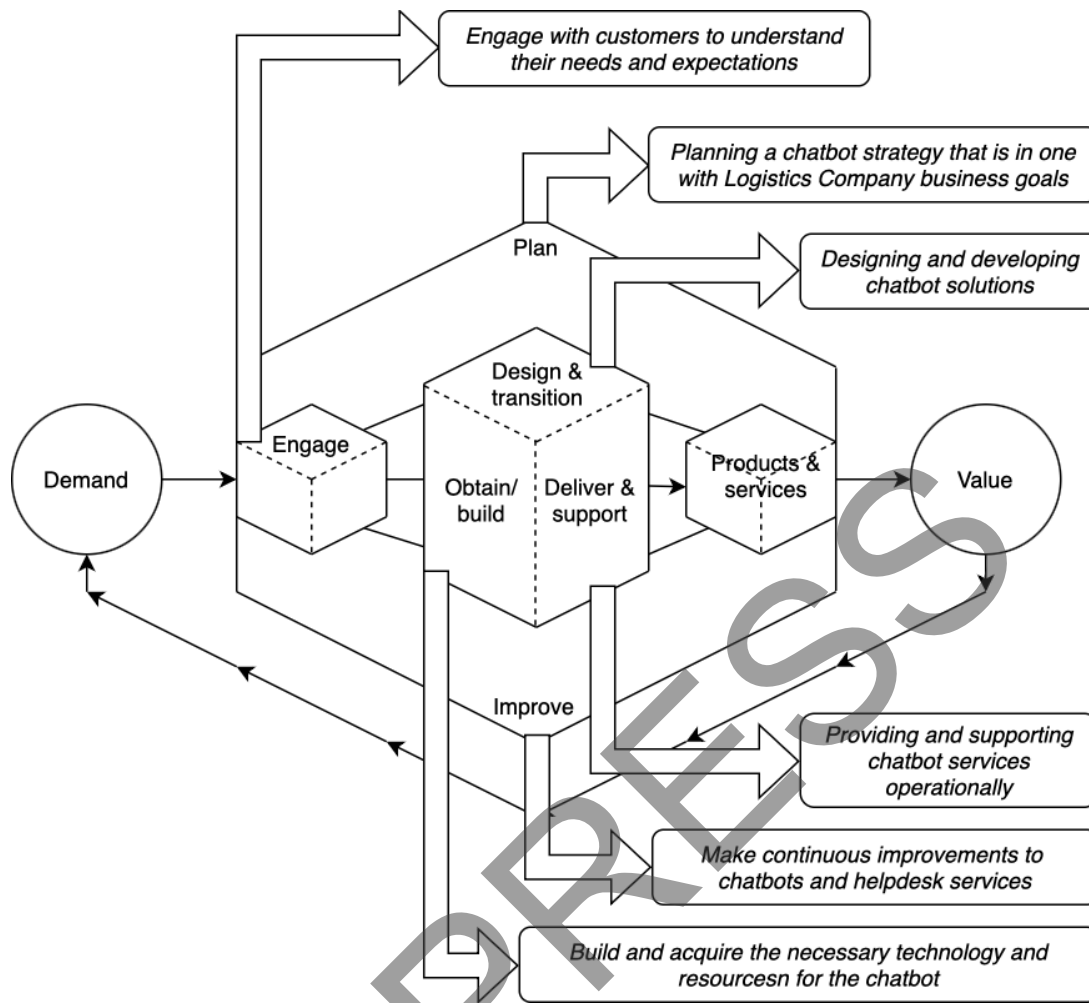
Fig. 7. Information Technology Infrastructure Library (ITIL) Service Value Chain (SVC) framework for chatbot implementation in helpdesk applications.

B. Chatbot Implementation Plan Recommendations

The ITIL SVC based on ITIL v4 has six stages: plan, improve, engage, design and transition, obtain/build, and deliver and support [19]. ITIL SVC can be used as an effective guide for the implementation plan of the chatbot on the helpdesk application at this company. ITIL SVC provides an extensive and adaptable framework for the governance of information technology service management, emphasizing the provision of value to clients and ongoing enhancement [20].

ITIL v4 integrates modern practices such as Agile, DevOps, and Lean. These methodologies align with ITIL 4 principles by promoting flexibility, collaboration, continuous delivery, and value-driven service. Agile ensures iterative development and responsiveness to user needs. DevOps supports rapid deployment and operational reliability while Lean focuses on eliminating waste and maximizing efficiency. Together, they

provide a solid foundation for building an adaptive and user-centric helpdesk chatbot system [21]. The activities of the chatbot implementation plan for the helpdesk application using the ITIL SVC are shown in Fig. 7. It visualizes how each stage of the SVC corresponds to specific chatbot development actions, such as understanding customers' needs, planning chatbot strategies aligned with business goals, and designing effective solutions. It also includes the operational delivery of chatbot services and the continuous improvement cycle to maintain service quality. By aligning these activities with the ITIL SVC framework, organizations can ensure the chatbot implementation is systematic, value-focused, and sustainable.

Of the six SVC activities in ITIL v4 for the chatbot implementation plan on the logistics company helpdesk, the tasks of each of these activities are further described in Table VI. In the plan activity,

TABLE VI
SERVICE VALUE CHAIN (SVC) ACTIVITIES WORKING
TOGETHER FOR CHATBOT IMPLEMENTATION.

Activity	Description	Assignment
Plan	Planning a chatbot strategy that aligns with logistics companies' business goals	1. Setting chatbot destination 2. Identifying SLAs that must be met 3. Developing a project plan 4. Identifying and mitigating risks
Improve	Improving chatbot and helpdesk services	1. Evaluating chatbot performance 2. Implementing user feedback 3. Benchmarking 4. Providing advanced training
Engage	Engaging with customers to understand their needs and expectations	1. Collecting and analyzing user feedback 2. Communicating the benefits of the chatbot 3. Managing user expectations 4. Engaging stakeholders
Design and Transition	Designing and developing chatbot solutions	1. Designing chatbot architecture 2. Developing a prototype 3. Testing and validating solutions 4. Managing change 5. Preparing documentation
Obtain/Build	Developing or acquiring the necessary technology and resources for the chatbot	1. Developing chatbot technology 2. Choosing a vendor (if necessary) 3. Integrating with existing systems 4. Conducting field trials 5. Providing staff training
Deliver and Support	Operatically providing and supporting chatbot services	1. Monitoring daily operations 2. Managing incidents 3. Maintaining and updating 4. Providing support services 5. Performing performance reports

the strategic planning of chatbots is carried out in line with the logistics company's business goals. The researchers identify the underlying business needs of chatbot implementation in increasing the SLA speed. The specific goals and objectives of the chatbot are to reduce ticket resolution times to realize SLA response. The project plan includes the timeline, budget, and resources required to implement the chatbot on the helpdesk application. It also identifies potential risks associated with chatbot implementation.

In the improving activity, continuous improvements are made to the chatbot and helpdesk services. The company can evaluate the performance of the chatbot by periodically monitoring its performance using the provisions of meeting the SLA response and resolution at this company. Then, the company can collect and analyze feedback from users to identify areas that require improvement and implement changes

and improvements to the chatbot process based on data analysis and feedback. Benchmarking the chatbot performance against industry standards ensures high service quality. Next, the company can follow up on training by providing additional training to the team to improve the chatbot features and functionality.

In the engagement activity, interaction with customers is carried out to understand their needs and expectations. Conducting surveys is done to gather direct feedback from users regarding their experience with the chatbot. Then, holding discussion sessions or interviews can gain in-depth insights into their needs and concerns. The benefits and features of the chatbot are communicated to users to increase their acceptance and usage. Engaging essential stakeholders throughout the formulation and execution phases also guarantees that their requirements are addressed and effectively regulates user anticipation via transparent dialog concerning the capabilities and limitations of the chatbot.

In the design and transition activities, chatbot solutions are designed and developed. Designing the chatbot's technical architecture includes integrating existing systems and selecting the technology and platform for developing the chatbot. Then, the company creates a chatbot prototype for testing before the full implementation. Functionality, security, and performance testing are performed to ensure the chatbot works according to specifications. Next, the company can manage the transition from manual systems to chatbots, including staff training and user communication. Complete documentation of the design, development, and use of chatbot is needed too.

In the obtain/build activity, the company moves or acquires the technology and resources required for the chatbot. It can develop chatbots internally using the development team. If the company chooses to use a solution from a vendor, it should select the right vendor through the request for proposal process. Configuring and customizing the chatbot to suit the specific needs of the logistics company are also needed. Then, field trials are conducted to ensure the chatbot functions properly in a production environment. The company should also provide training to helpdesk staff to use and manage chatbot.

In the delivery and support activities, the company provides and supports chatbot services operationally. It monitors chatbot operations on a daily basis to ensure optimal performance and uses monitoring tools to track chatbot performance and detect issues early. It should handle incidents reported by users related to chatbots, ensuring quick and effective resolution. Regular maintenance and updates of chatbot features can ensure good security and performance. Moreover,

the company should provide technical support to users experiencing problems with the chatbot. Similarly, it can generate periodic reports on chatbot performance and trend analysis to realize continuous improvement.

A comprehensive project management strategy that aligns with the ITIL v4 framework is essential to ensure the successful implementation of the chatbot on the helpdesk application at this company. This strategy should include detailed planning, effective stakeholder engagement, resource allocation, risk management, and continuous monitoring and improvement. These elements ensure that every phase of chatbot implementation from design to deployment is executed in a structured and controlled manner. By applying this strategy, the company can minimize project risks, maintain alignment with business objectives, and ensure the chatbot system is scalable and sustainable. Furthermore, the integration of ITIL v4 principles enables the organization to respond quickly to changes while maintaining service quality and user satisfaction.

The initial phase involves meticulous planning to define the project's scope, objectives, and deliverables. This step includes identifying the key functionalities and capabilities of the chatbot, such as automated ticket generation, response handling, and issue resolution. Allocating resources effectively is crucial. It involves assembling a skilled project team with expertise in ITIL v4, chatbot development, and helpdesk operations. Budgeting for the project should also consider costs related to technology acquisition, training, and potential integration with existing systems.

Engaging stakeholders, including management, helpdesk staff, and end-users, is vital for gathering requirements, gaining support, and ensuring the chatbot meets user needs. Regular communication and feedback loops should be established to address concerns and incorporate suggestions. Moreover, a comprehensive risk management strategy aimed at identifying, evaluating, and alleviating prospective risks is imperative. It encompasses technical and operational risks, including integration challenges and resistance to transformation. Consistent evaluations of potential risks and revisions to the risk management strategy should be performed during the entire project.

The application of ITIL v4 as a metric in chatbot implementations facilitates iterative strategies across the six SVC activities: planning, improving, engaging, designing and transitioning, obtaining/building, and delivering and supporting. While user research and metrics like user satisfaction are pertinent for evaluating chatbot interactions, ITIL v4 provides a comprehensive framework to ensure technical and operational efficacy, fostering continuous development. By embedding ITIL v4 into the chatbot implementation

framework, organizations can devise strategies that are outcome-focused, efficient, and responsive to evolving business and customer requirements [22].

By adhering to these project management strategies, logistics companies can effectively implement the chatbot in their helpdesk application, aligning with ITIL v4 practices and enhancing their ability to meet SLA response and resolution targets. Continuous monitoring and iterative improvements ensure that the chatbot evolves to meet changing user needs and organizational goals. An Agile approach is highly recommended in this process because it allows for flexible and adaptive development, which is crucial when addressing complex challenges such as hate speech detection [23]. Agile practices facilitate better collaboration across teams, encourage open communication, and ensure that each development phase can be adjusted and optimized in real time. As a result, chatbot integration can significantly reduce the average SLA response and resolution time, allowing support teams to handle routine inquiries instantly and focus on more complex issues. This efficiency ensures that SLA targets are met more consistently, and customer satisfaction is increased.

By following this ITIL SVC framework, a logistics company can ensure that chatbot implementation is systematically and structured, covering all critical aspects of the process and preventing important steps from being overlooked. Moreover, applying Agile within this framework accelerates the development process, improves the quality of the final product, and ensures that the services provided meet or exceed user expectations, including the achievement of set SLA response and resolution targets. This iterative Agile approach ensures that every element of the chatbot system is regularly evaluated and enhanced in accordance with the changing consumer requirements and strategic goals of the logistics firm. In practice, it can lead to a measurable decrease in first-response time and faster ticket closure rates, especially for low to medium-priority tickets, which are commonly handled by automated chatbot interactions.

IV. CONCLUSION

The implementation of chatbots using ITIL v4 in project management faces challenges such as complex integration with existing systems, a lack of standardized terminology and frameworks, and the need for robust lifecycle management for chatbot projects. Research on a logistics company shows that the number of incoming tickets does not directly impact SLA response or resolution, but achieving an SLA response positively affects SLA resolution. A chatbot implementation plan using ITIL v4 is developed, resulting

in an SVC framework with six activities: planning, improving, engaging, designing and transitioning, obtaining/building, and delivering and supporting. This framework provides a structured approach to improving SLA performance and serves as a recommendation for similar implementations.

Incorporating Agile methodologies into the implementation plan enhances adaptability and efficiency. Agile practices, such as iterative development and continuous feedback, allow for dynamic adjustments that align with the principles of ITIL v4, thereby improving flexibility and stakeholder engagement. Although chatbots offer significant benefits like automation, decision-making enhancement, and improved engagement, challenges such as advancing Natural Language Processing (NLP), practical application, and maintaining user engagement, remain. Future research should focus on developing standardized frameworks and addressing these limitations to maximize the potential of using chatbots in project management strategies.

AUTHOR CONTRIBUTION

Conceived and designed the analysis, D. S., T. R., and A. N. F.; Collected the data, D. S.; Contributed data or analysis tools, D. S.; Performed the analysis, D. S., T. R., and A. N. F.; Wrote the paper, D. S.

DATA AVAILABILITY

The data that support the findings of the research are openly available in Zenodo at https://doi.org/10.5281/zenodo.15142797, reference number 15142797.

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