Journal of Information Systems and Informatics
Vol. 7, No. 1, March 2025 e-ISSN: 2656-4882 p-ISSN: 2656-5935
DOI: 10.51519/journalisi.v7i1.971 Published By DRPM-UBD

Enhancing IT Service Desk for Hybrid Work: Insight from a TOE and TTF Case Study

Marcel[1]*, Garpepi Hanief Aotearoa[2]

[1,2]Information System Department, Krida Wacana Christian University, Jakarta, Indonesia
[1,2]Sustainable Eco-Smart Digital Infrastructure Center (SESDIC)
Email: marcel@ukrida.ac.id*

Abstract

Adopting hybrid work has brought new challenges of IT service desks in small companies with limited resources. This study focuses on a software company in Jakarta with 15 employees, exploring how its size influences the ability to resolve issues, manage tickets, and keep both remote and on-site staff satisfied. Utilizing the Technology-Organization-Environment (TOE) Framework and the Task-Technology Fit (TTF) Model, we investigated ticket records, surveyed 13 employees, and conducted group discussions for deeper analysis. On average, the initial response time was 3.5 hours, but remote staff often faced slower resolutions, averaging 3.8 hours compared to 3.2 hours for on-site employees. The most common problems were connectivity issues, which made up 40 percent of tickets, and login and access challenges, which made up 30 percent. Feedback from a Survey indicated moderate satisfaction with most ratings between 3 and 4 on a 1–5 scale, with gaps in communication and guidance, particularly for remote workers being identified. We suggest refined troubleshooting, enhanced communications, and simplified tracking methods for monitoring issues (real time) to overcome these challenges. These improvements may allow small businesses to make the most of IT support, minimize recurring issues and better accommodate hybrid workplace needs.

Keywords: IT Service Desk, Hybrid Work, Technology-Organization-Environment (TOE), Task-Technology Fit (TTF) Model, Remote Troubleshooting, Employee Satisfaction

1. INTRODUCTION

With the new hybrid work environments, organizational structures have changed how companies work to deliver value. Borne out of the COVID-19 pandemic, this model mixes remote work with time spent in the office, giving workers more flexibility but posing significant challenges. For many organizations, especially smaller businesses with fewer resources, the hybrid model puts pressure on their capacity to preserve productivity, drive collaboration, and deliver dependable technical support. So, one of the key components in these challenges is the IT service desk, which serves as an important support center for resolving technical

issues, providing access to crucial tools, and keeping workflows running smoothly. With these workers now alternating between the home office and their environmental desks, the IT service desk is quickly pivoting to accommodate their continuously changing needs, bringing the pivotal demand for resolutions into focus. [1-5]

Moving to hybrid work hasn't been easy, especially for IT support teams. Before, they could just walk over to someone's desk and fix problems right there. Now they're juggling remote help alongside their regular office support. It gets messy quickly - trying to fix hardware problems when you can't even see the device, helping people connect securely from their homes, and somehow keeping everyone happy with the same level of service. Small companies have it even worse. They don't have the fancy tools or extra staff that big corporations use to make all this work smoothly. They're basically trying to do twice the work with the same limited resources they had before.

This research is a case study of a Jakarta-based software house with fewer than 15 personnel who work as a microenterprise, with the employee composition including software developers, project managers, quality assurance, and IT support. The company focuses on custom software solutions and thus relies on close collaboration and effective communication with its team members. Unfortunately, transitioning to a hybrid work model broke these workflows and deepened the challenges of continually providing IT support. The IT service desk took center stage as demand for remote troubleshooting, connectivity assistance, and access to shared systems spiked. To be successful, IT service desks need to adapt to hybrid working conditions, supported by human and technical resources, so this organization provides an important case study as it navigates these challenges.

TOE framework applications appear in Low's paper [6] where business size was linked to technology implementation success. Ng [7] built on this by examining remote work adoption through TOE principles. TTF has its own following too. Abelsen [8] applied it to understand remote work tool effectiveness, while Sun's research [9] connected technology fit with staff innovation. Despite these contributions, we see limited research combining these frameworks specifically for IT service desk operations. Small business contexts are especially neglected, though they often struggle most with hybrid support models. IT service desks must balance technological solutions with organizational constraints, making these multiple-framework approaches potentially valuable. The research gap becomes even more significant when considering how central IT support has become to daily operations.

This study makes an important contribution to a less-explored area that directly affects organizations. It questions the traditional ways IT service desks operate as workplaces shift to hybrid models. Most existing research focuses on numbers like how fast issues are resolved and how many support tickets are handled. While these numbers are useful, they do not fully address the practical and people-related challenges that come with hybrid work setups. In smaller organizations, these challenges can become even bigger because of limited resources. Therefore, there is a strong need for insights that explore the real experiences of IT service desk teams and their users. The case study in this paper highlights these challenges and shows how different hybrid work situations impact IT service management overall. [10-15]

The key challenges identified in this study include connectivity issues that significantly affect remote workers, with VPN outages and network errors accounting for 40% of all reported problems. Another major challenge is slower response times for remote staff, who experience average resolution times of 3.8 hours compared to 3.2 hours for on-site employees. Additionally, gaps in communication and documentation create barriers, particularly for non-technical users working remotely who require clearer instructions and better guidance for troubleshooting common issues.

The objectives of this research are to analyze the effectiveness of IT service desk operations in hybrid work environments within small businesses, identify specific pain points experienced by both remote and on-site staff, and develop practical recommendations to enhance service quality despite resource constraints. By applying both the TOE and TTF frameworks, this study aims to provide a comprehensive understanding of the technological, organizational, and environmental factors influencing IT support while also assessing how well current tools and processes fit the tasks required in hybrid work settings.

The results of this study are expected to make a meaningful contribution to academic research and industry practice. From an academic standpoint, it enhances the understanding of IT service management by exploring hybrid workplaces' methods, challenges, and effects. On the practical side, the study provides valuable guidance for small and medium-sized businesses that want to improve their IT service desks despite having limited resources and varying demands. This research focuses on key issues such as maintaining service quality, managing workload, and providing remote support. By addressing these areas, the study helps organizations develop strong and adaptable IT service practices.

2. METHODS

2.1. TOE and TTF Models for IT Service Desk Adaptation in Hybrid Work

The fast changes in hybrid work settings have led organizations to rethink their technology and operations, especially in managing IT service desks. This study uses two well-known theories, the Technology-Organization-Environment (TOE) Framework and the Task-Technology Fit (TTF) Model, to thoroughly examine how IT service desks are adapting to the demands of hybrid work. By combining these models, the research explores both the larger factors and the detailed interactions, providing a complete understanding of the challenges and opportunities involved. [6], [12-19]

TOE Framework by Tornatzky and Fleischer is a framework for studying the interaction of 3 dimensions: technology, organization, and environment. The technology segment analyzes the IT service desk's tools, including remote troubleshooting, collaborative tools, and access management tools, and assesses their capabilities and limitations. The organization dimension is all about things we cannot control, like how many resources are available, what team structure looks like, or whether we have leadership buy-in, but for smaller enterprises, this dimension is something we see often. The environment dimension focuses on how external pressures, such as the growth of hybrid work, client expectations, and trends in technology, can create both challenges and opportunities. These dimensions provide a holistic view of the enablers of IT service desk adoption. [20-22]

The Task Technology Fit (TTF) Model (Goodhue and Thompson) focuses on the micro-level match between tasks and technology. TTF stresses the importance of proper technology for the designed and implemented task. In the age of hybrid work, this model is especially valuable in determining whether or not IT service desk technologies effectively service the varying expectations of remote and on-location employees. TTF generates insights on usability, functionality, and user satisfaction by addressing the practical compatibility of tools with tasks. All these are key elements for smooth workflows to function in a hybrid environment. [23], [24]

The motivation for combining TOE and TTF here is the strengths that each adds. The TOE provides a background narrative on the broader contextual and organizational factors shaping IT service desk operations, but TTF refines that focus to the operational level and user interaction with technology. It is key to appreciate the distinctiveness of the situation faced by smaller organizations, like the company in the case study, which must balance fewer resources while not compromising on service level. [25-27]

Therefore, through the intersection of these theories, this research provides practically actionable, factual, and contextually bounded insights. On another note, this integrated framework not only connects organizational-level strategies with task-level activities but also responds to the urgent need for an adaptive and resilient practice for the IT service desk in the era of changing work paradigms. By doing so, it adds value both academically to the literature in IT service management and practically for organizations adjusting to hybrid workplace scenarios.

2.2. Research Steps

The research steps for examining IT service desk operations in hybrid work environments builds upon established frameworks in the literature. Firmansyah and Subriadi's comprehensive review of IT Service Desk Models provides valuable insights into the benefits and challenges associated with service desk implementations, offering a foundation for analyzing the operational effectiveness of IT support structures [20]. This perspective is complemented by Al-Hawari and Barham's work on help desk systems for IT service management, which establishes metrics for evaluating service desk performance that align with our approach to gathering response times and ticket resolution data [11]. Furthermore, Abelsen et al.'s research on digital working during the COVID-19 pandemic, particularly their analysis of how task-technology fit impacts work performance in remote settings, provides a theoretical framework for understanding the differentiated experiences of remote versus on-site employees when interacting with IT support services [19]. These references collectively support approach to develop a holistic understanding of IT service desk operations in contemporary hybrid work environments. We collect basic information like response times and satisfaction rates, but our focus is on understanding what remote and on-site employees go through. Below is an outline of our step-by-step approach (Figure 1).

1) Gathering Data on Response Times and Ticket Resolution

We analyze historical records from the IT service desk system. This data typically contains the date and time that each ticket was created, the initial response time from support staff, and the eventual resolution. Examining these data points allows us to visualize how quickly and efficiently the team responds to technical issues. We also track whether the tickets are from remote or on-site employees to get a sense of potential differences in support needs for those who work in the office and those who work remotely. For this study, we reviewed six months of ticket data from January to June 2023, covering 218 support requests. The company uses a simple spreadsheet-based tracking system where IT staff logs each request with timestamps, issue category, requester location (home/office), and resolution details. While not as sophisticated as enterprise ticketing systems, it provided sufficient data for our analysis. We paid special attention to tickets involving VPN

issues, software access problems, and hardware troubleshooting since these were frequently mentioned in preliminary discussions with staff.

2) Collecting User Feedback

In this step, we distribute brief surveys to all employees who have used the IT service desk, regardless of whether they work remotely or on-site. The survey questions are designed to be direct and easy to answer, usually in the form of short statements with a simple rating scale (From 1 to 5). These questions focus on elements such as promptness, communication clarity, and overall satisfaction. We then gather any open-ended comments to uncover additional details that may not fit into standard rating scales. We sent the survey out to everyone at the company in July 2023 and gave them a week to respond. Out of the 15 people we asked, 13 actually completed it, which gave us good coverage of the team. Looking at who answered, we had a decent spread across different roles – 4 from the development team, 3 project managers, 3 QA people, a couple of IT support staff, and 1 admin person. About half the respondents (7 people) mainly worked from home, spending at least three days a week there, while the rest (6) were typically in the office. When we created the survey, we made it anonymous so people would feel comfortable being honest, but we did give them the option to tell us their department and whether they mostly worked remotely or in-office. This helped us spot any differences in how these groups experienced IT support.

3) Identifying Common IT Issues

With that same data set of service desk records, we categorize the most common issues that employees report: connectivity, account or access issues, software glitches, etc. We count how many times each category appeared, over some time (six months), and check if certain issues are more common in remote vs. in-office situations. These data can indicate where an organization could improve, for example, by advancing better software tools or enhancing connectivity solutions.

4) Summarizing Qualitative Insights

After gathering feedback and classifying the issues, we arrange the outputs extracted from team conversations into shared themes. These could be problems with remote troubleshooting, communication between teams, or issues with some software. By summarizing this information, we can identify patterns and understand personal experiences more clearly.

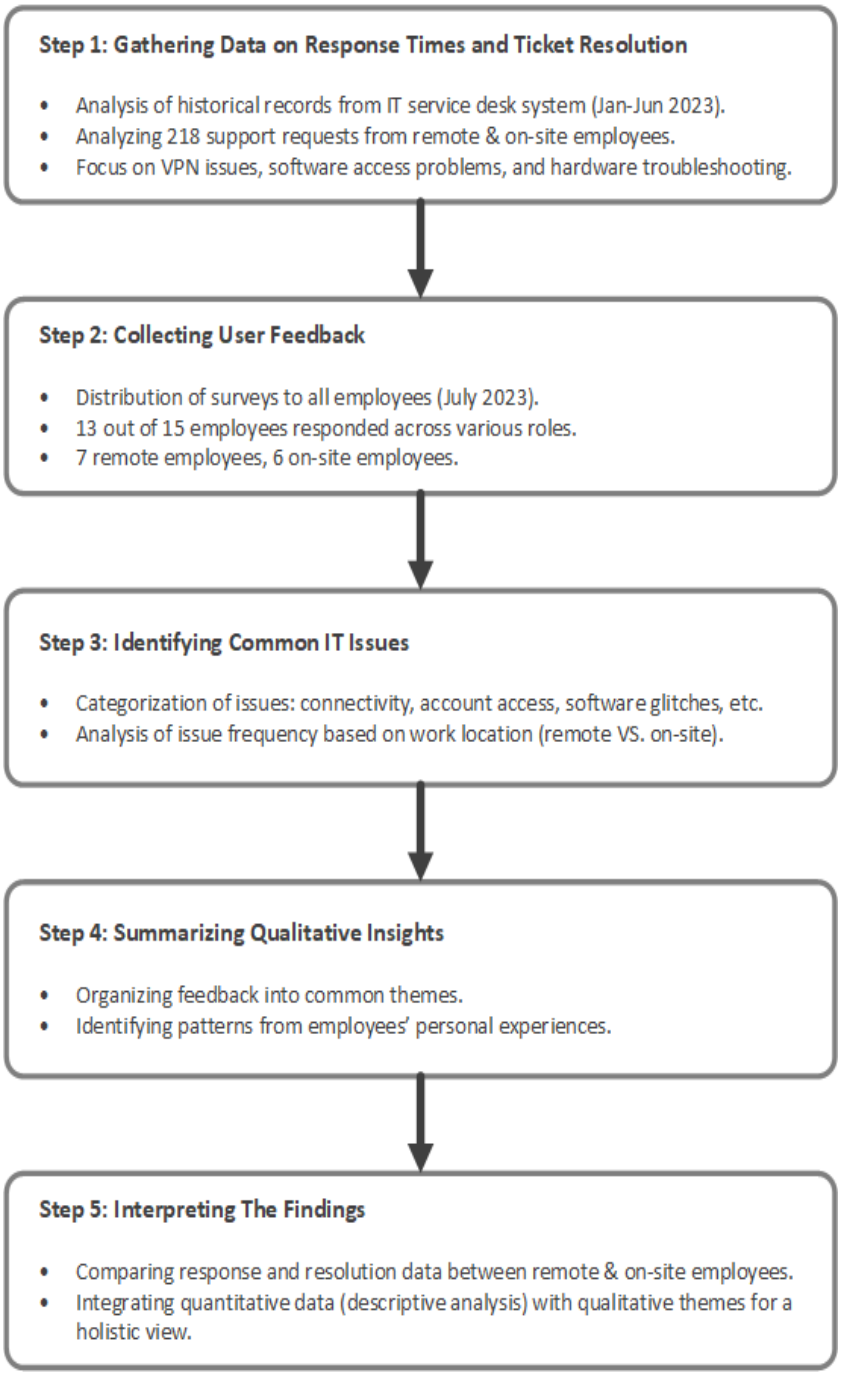

Figure 1. Five-Steps Methodology for IT Service Desk Hybrid Work Analysis

5) Interpreting the Findings

Finally, we interpret the collected data considering our overall research objectives. We look at how response times and resolution rates might differ between remote and on-site employees, identify recurring hurdles that the IT service desk faces, and assess whether the current support strategies align with user expectations. By blending the numerical data with the qualitative themes, we form a more holistic view of the IT service desk's strengths and areas needing improvement. This approach helps ensure that our conclusions remain grounded in both measurable evidence and real-world user experiences.

We invited all 15 professionals from the overall team (software developers, project managers, quality assurance, IT support staff, etc.) to fill out a survey that would serve as a quick check on their experiences with the IT service desk. In total, 13 people replied, providing comments on the remote and on-site options. Along with the survey, we also engaged in informal discussions with some of these participants to delve deeper into the common pain points and seek to learn more about the user satisfaction drivers. Such inclusive strategy helped us capture multiple perspectives and thus enrich, and validate, our results.

2.3. Survey and Group Discussion

A short set of survey statements designed for a 1–5 rating scale, where 1 means "Very Unsatisfied/Disagree" and 5 means "Very Satisfied/Agree." The questions are meant to be clear and easy to answer, giving a quick snapshot of each user's experience with the IT service desk. The statements as follow.

1) I find that my IT service desk tickets receive an initial response in a timely manner.
2) The information and solutions provided by the IT service desk are clear and easy to understand.
3) My issues are resolved in a reasonable amount of time once I report them.
4) I am kept informed about the status of my ticket until it is fully resolved.
5) "f I work remotely, I have no difficulty getting the same level of support as on-site staff.
6) If I work on-site, I feel my support requests are handled just as smoothly as those made remotely.
7) Overall, I am satisfied with how the IT service desk handles my requests and questions.

The others statements is a set of open-ended questions, used during a group discussion to explore experiences with the IT service desk. They are designed to

be clear, easy to understand, and suitable for both remote and on-site participants. The statements as follow.

1) How would you describe your overall experience with the IT service desk, especially in terms of how quickly your issues get addressed?
2) If you have worked remotely, can you share any specific challenges or differences in the support you received compared to when you worked on-site?
3) Which types of IT problems do you notice happening most often in our team, and why do you think these issues keep recurring?
4) In your opinion, how well does the IT service desk communicate updates about your tickets, and how could this communication be improved?
5) When thinking about the guidance or solutions provided by the IT support staff, what helps you the most and where do you still feel stuck?
6) Are there any improvements or additional features you believe the IT service desk should offer to better support both remote and on-site employees?
7) From your perspective, are there any challenges we haven't talked about yet that significantly affect how the IT service desk handles issues?

3. RESULTS AND DISCUSSION

3.1. Organization Overview

The case study begins with a software company based in Jakarta with a close-knit team of 15. The team includes software developers, project managers, quality assurance specialists, and IT support staff. The firm develops custom software and works with clients, so smooth collaboration and communication are critical to its success. The shift to hybrid work models during the COVID-19 pandemic is not without challenges, particularly for the IT service desk. For example, a bunch of remote team members had VPN issues when a critical project deadline was about to be reached. Version control systems and shared tools became inaccessible, making important code integrations fail to complete and causing delays. Long email threads and workarounds only increased the tension.

Due to its expired license, another project manager could no longer access a critical client-facing tool. As the IT service desk was busy addressing a spike in other support requests, rectifying the problem took more than a day. This delay damaged the firm's relationship with the client and led to missed deadlines. These incidents reflected deficiencies in the company's IT practices, including insufficient real-time monitoring and planning. The IT group had to rely on manual follow-ups, making it more challenging to identify and resolve issues quickly. This led to the realization that there were tools to be improved and processes to be streamlined to keep work flowing and the company's reputation intact. In this case study, we look at how the IT service desk addressed these challenges, specifically what they did to drive

process improvements and faster responses to issues and make employees more satisfied with the help they receive while hybrid working.

3.2. Summary of Key Findings from Data Collection

The review of survey results, ticket logs, and group discussions gives a clear picture of how well the IT service desk supports both remote and on-site employees. While the findings show strong efforts and responsiveness, they also point to areas that need improvement to better handle the challenges of hybrid work.

IT support services satisfaction was moderate, based on employee surveys, with scores between 1–5 (1 meaning "Very Unsatisfied/Disagree" and five meaning "Very Satisfied/Agree"). In general, response time was positively rated by most employees at 3.8, working at home and in the office, where some remote workers waited longer than site staff. Solutions were rated 3.6 based on clarity, and some employees reported that instructions were too technical or with insufficient detail, particularly when troubleshooting remotely. On average, the time taken to resolve issues averaged 3.7, with most problems being resolved within one or two days, while more complex issues often required additional time. The pillar with the highest score was communication during ticket resolution; at 3.9, employees commended frequent updates but said more regular and proactive follow-ups would further improve their experience.

Record of those tickets indicate that the most common issues were connectivity related, accounting for 40% of all reported problems. They ranged from VPN outages to network errors to flaky internet connections, which hit remote workers more often than on-premises employees. Login and account access issues ranked second with around 30% of tickets. These often-required multiple rounds of communication to resolve. On-site workers said they could find solutions more quickly by going right to an IT staffer to talk face-to-face about a problem, while remote workers faced delays and said it was harder to describe their issues clearly.

Discussion in groups fleshed out these challenges in more depth and provided practical suggestions. While employees generally perceived the IT service desk to be helpful, they felt that processes such as ticketing systems could be improved. Remote workers pointed out that, since there were no real-time tools, solving problems from home would often take longer. "When I'm in the office I can just display my screen before the IT staff, and they would help me in a matter of minutes, whereas, working remotely, it takes time to me to describe every detail," one person explained.

Employees faced persistent problems, which, they felt, were never fixed permanently, such as issues with connectivity and logging in. To help do this, they

recommended adding a tool for real-time monitoring, creating clear and simple troubleshooting guides, and establishing a central repository of knowledge on common issues. Although many employees found step-by-step instructions and screenshots helpful, they said that such resources could be simplified to assist non-technical users. Another prominent theme was communication, with employees asking for more consistent and automated ticket status updates. Another priority is consistent messaging from IT staff to avoid confusion when multiple support staff members handled a single issue. When times were dynamic, adding resources was a common recommendation to maintain an even higher rate of response.

Looking at these findings using the Technology-Organization-Environment (TOE) Framework and the Task-Technology Fit (TTF) Model helps us understand what drives the organization's strengths and where it faces challenges.

Technology Dimension (TOE)
The technology aspect of the TOE Framework highlights the capabilities and limitations of the tools and systems used by the IT service desk. Key findings related to this dimension include:

1) Network connectivity issues (40% of the tickets): More than half of the tickets covering VPN, network stability, and Internet reliability point to limitations in the systems currently in place, particularly from remote working environments. IT staff often cannot quickly identify and resolve these problems without real-time monitoring tools, resulting in delays.
2) Clarity of Solutions (Score: 3.6): Reviews indicated problems with instructions that are either too technical or not detailed enough for non-technical workers, especially remote ones, to engage with. This indicates a lack of tools to assist the end user and a need to simplify the troubleshooting process.
3) Communication Tools (3.9): Employees enjoy the updates they receive. However, the lack of standardized and automated systems reflects a gap between the current status and better communication methods the organization can potentially adopt.

The organization dimension addresses the IT service desk's internal structure, resource allocation, and operational practices. Major findings around this dimension include:

1) Resource Constraints: Delayed resolution times for issues, especially considering remote employees, suggest the IT service desk operates with limited resources. Employees' recommendations to add more staff during busy periods reflect the need for better resource planning and allocation.
2) Process Improvement: Recurring problems, such as login and connectivity issues, are not permanently solved, indicating a lack of process efficiency

within the organization. A centralized knowledge repository and proactive monitoring could help ease workflows and minimize repetition.

3) Unified Messaging: Employees were confused when multiple IT personnel handled the same ticket. This indicates a need for better internal coordination and standardized communication protocols.

A range of external pressures and expectations that might affect IT service desk operations fall under the environment domain. Key findings include:

1) External Pressure: With hybrid work, organizations must maintain an effective working environment for remote employees and cater to on-site employees. The challenges cited by remote workers, such as longer response times and difficulty describing issues, illustrate the increasing complexity of fulfilling these demands.
2) Client Expectations: Ongoing connectivity problems and slow resolution can affect client-facing operations, highlighting the need to match IT support capabilities with the requirements of external stakeholders.

The TTF Model is about the degree of fit between the tools and work systems and the tasks that need support. Some of the major findings concerning this model are as follows.

1) Mismatch Between Tools and Tasks: Because remote troubleshooting can take more time, real-time diagnostic tools are missing in most cases, and the instructions provided are never too detailed, issues can snowball. This means that the technology created was not aligned with the aspects that needed to be solved in smaller resolution issues.
2) Simplified Resources for Non-Technical Users: Feedback about the need for more straightforward troubleshooting guides and step-by-step instructions indicates that the current tools are not well-suited for all users, particularly those with limited technical expertise.
3) Communication gaps: While communication during ticket resolution is rated relatively high, employees' calls for automated updates and consistent messaging point to areas where tools could better support communication tasks.

3.3. Analysis of Response Time and Ticket Resolution Rates

An examination of the service desk logs from the past six months reveals that the average time for an initial response to a ticket is approximately 3.5 hours. In general, onsite employees see slightly faster responses, about 3.2 hours on average, compared to around 3.8 hours for remote staff. While this difference is not extreme, it indicates that requests from remote workers occasionally take longer to receive attention, especially during busy periods. One of the software developers

noted, "We've never done so many remote support calls before, so there's a lot of new territory for us to navigate."

For ticket resolution, 90% of the problems come from software bugs to connectivity issues and are resolved in one to two business days. More complex tasks, such as error messages from specialized tools or repeated interruptions in a network, usually take longer to resolve with back-and-forth communication. "One way I would work off-site is with step-by-step instructions, but at times it's not clear or doesn't give me all the information I need, which slows everything down," a project manager said. Another responded: "We just constantly keep re-opening the same ticket, because we're still learning how to remote help, so we're just doing repeat or overlapping tasks."

User feedback from surveys and group discussions further illuminates these patterns. Several remote employees commented on the additional coordination and explanations needed for issues like VPN settings, home-network configurations, and shared workspace tools, concerns that can extend the time from initial response to final resolution. Meanwhile, on-site workers noted that while the response times were similar, direct face-to-face discussions sometimes helped them bypass the confusion often encountered by remote staff.

By applying the Technology-Organization-Environment (TOE) Framework, it becomes apparent that the company's small size amplifies the impact of limited staff resources, making workload spikes more pronounced. Simultaneously, the Task-Technology Fit (TTF) perspective reveals that although the current ticketing system and remote support applications meet basic needs, they still lack features and clarity essential for faster, more seamless resolutions in a hybrid setting. These observations underscore the organization's "newness" to remote support processes and confirm that while the IT service desk provides an adequate baseline performance, it has significant opportunities to refine remote-focused processes, strengthen support tools, and improve both written and verbal communication. Addressing these areas is crucial for building a consistently positive user experience as the organization grows more accustomed to remote support demands.

3.4. User Evaluation and Service Satisfaction

The user satisfaction survey received feedback from 13 participants, providing insights into how well the IT service desk is performing. Using a 1–5 rating scale (1 meaning "Very Unsatisfied" and 5 meaning "Very Satisfied"), most responses were between 3 and 4. This shows that while employees generally value the support they get, there is still room for improvement. For example, when asked if they feel their tickets receive a timely initial response, about half of the participants gave a rating of 4, and a few gave a 3. This suggests that responsiveness is seen as good

but not perfect. Similar ratings were given for how clear the instructions were and how effectively problems were solved, showing that the service desk is doing a decent job but could still make some improvements.

Group discussion feedback indicates some of the challenges that users experience. "I can normally take care of basic fixes myself, but when things get complicated, especially since I've been working from home, just using e-mail or chat, it's tough to know what to do next," one software developer said. A second participant commented, "At times the instructions are very technical, and I don't understand, and I want more explanation, or I need screenshots to read it." These comments reflect the survey findings, which demonstrate that while people are relatively satisfied, they could use clearer instructions and more easy-to-follow guidance, especially people working remotely who don't have the possibility of face-to-face help.

The statement "If I work remotely, I have no difficulty getting the same level of support as on-site staff" often got a rating of 3, showing that users had mixed experiences. One project manager said, "When I'm in the office, I can just ask someone for help if my laptop crashes. But at home, I have to rely on calls or messages, which takes longer." On-site staff shared similar thoughts, saying that while they like having direct access to IT support, they still experience delays when there are too many issues to handle at once.

Despite these hurdles, most participants gave relatively high marks (3s and 4s) to statements about communication and updates. For example, "I am kept informed about the status of my ticket until it is fully resolved" generally scored in the 4 range. One IT support technician explained during a discussion, "We try to send quick follow-ups or chat messages whenever there's progress, but we're still learning how to be more proactive so remote staff don't feel left in the dark." These remarks confirm that communication strategies are evolving, though they may need further fine-tuning to meet the expectations of all users, especially those working remotely.

The Technology-Organization-Environment (TOE) Framework emphasizes how the firm size and limited IT staff significantly impact user experiences. On the other hand, the Task-Technology Fit (TTF) perspective indicates that current tools and systems cover basic requirements. However, there are no practical add-ons such as how-to-blink guides or step-by-step troubleshooting instructions. Implementing these features would ease and speed up supporting employees, particularly those working remotely. Based on the survey and group discussions, the IT service desk is clearly doing a decent job but has room to improve. Communication and instruction, as well as rapid updates, are key if users want to remain satisfied in a hybrid work setting.

3.5. Identifying Common IT Issues in a Hybrid Work Environment

A review of service desk records from the past six months shows that connectivity problems, like network access issues, VPN setup troubles, and unstable internet, are the most common IT complaints. Employees shared that these problems are worse when working from home because the company's tools are basic and don't have advanced monitoring features. One software engineer said, "When my VPN disconnects at home, there's no easy way for IT to figure out the problem, so I have to send screenshots and wait for help." This matches the ticket logs, which show that fixing connectivity issues often takes several follow-ups before they are fully resolved.

The second most common issue reported is login and account access problems. These happen both on-site and remotely but are more difficult for remote staff, who can't easily reset permissions without help. A project manager shared, "At the office, I can just call someone from IT to check my screen, but at home, it takes several emails back and forth." Software updates, especially for specialized tools, are another frequent issue for remote workers. Survey results show that this often happens because employees don't get clear instructions on how or when to update. This is made worse by the lack of tools to monitor software versions or installation progress.

The inability to access users' systems in real-time is making it harder to diagnose issues and respond quickly to those issues, survey results and feedback in discussions have revealed. The company's facet of the problem-tracking system is very basic and lacks analysis or monitoring tools that may expedite remote troubleshooting. Employees said better visibility would enable IT to identify common issues, such as software bugs or incorrect settings, without lengthy email chains. For the time being, that process typically involves users submitting screenshots, maintaining manual logs, or attempting various fixes, a time-eating process that can lead to confusion. This reveals an opportunity for more straightforward and better tools to prevent redundancy and assist remote work.

3.6. Combining Data Insights for Improving IT Service Desk Practices

Looking at ticket logs, user surveys, and group discussion feedback, some clear patterns emerge that can help improve the IT service desk. The data shows response and resolution times are steady, but personal stories highlight challenges, especially for remote workers. One person said, "You reply quickly, but when I'm working from home, all the little clarifications take so much time." This shows that fast replies aren't enough on their own, clear and consistent instructions are just as important to resolve issues smoothly.

A close look at these user stories, in combination with the types of problems reported most often, suggests that adapting the service desk will require a stronger focus on resource allocation and tool enhancements. For instance, connectivity issues appear more frequently among remote staff, signaling a need for better real-time monitoring or diagnostic features. "I wish I could see if it's my home Wi-Fi or the company VPN that's the problem," said one software developer, emphasizing the usefulness of a simple dashboard or alert system to reduce guesswork.

These findings highlight a few practical steps the company can take to improve the IT service desk. Key recommendations include:

1) Develop Clear, Role-Specific Troubleshooting Resources
   Create different guides for technical and non-technical staff. For developers, provide command-line instructions and technical details. For project managers and other non-technical staff, create visual step-by-step guides with screenshots. Store these on an internal wiki or shared drive with a simple search function. Update guides monthly based on recent support tickets. For VPN connection issues specifically, develop a one-page checklist covering the 5 most common problems that users can try before submitting a ticket.
2) Implement Basic Network Monitoring Tools
   Set up simple monitoring using free or low-cost tools like Nagios Core or PRTG's free version to track VPN connections and critical service availability. Create a basic status page visible to all employees showing current system status. Configure email alerts to IT staff when connectivity issues are detected, allowing them to proactively contact remote workers in affected areas. Set up periodic connection testing from common remote work locations to identify patterns in connectivity problems.
3) Establish a Structured Ticket Follow-Up System
   Team members described waiting and receiving no updates about the status of their request. A developer said they had "felt forgotten" while working remotely. Quick acknowledgment seems basic yet often missing. The team has some informal guidelines but rarely stick to them when busy. Some staff proposed that prepared answers to common issues could facilitate briefings in the busy sessions. Tickets are often lost in transition at shift change, a simple crossed check between staff on shift can help eliminate this common complaint. Remote workers are hit by additional uncertainty, frequently opening new tickets about issues they believed were solved, resulting in duplicate work. Having a confirmation after fixes would help prevent these misunderstandings.
4) Streamline Remote Troubleshooting Process
   Install remote desktop software on all company devices to enable faster assistance. Create a library of recorded solution videos for common problems that can be quickly shared via email or chat. Schedule monthly 15-minute

training sessions on frequently encountered issues for all staff. Designate "power users" in each department who receive additional IT training and can help colleagues with basic issues when IT staff are unavailable.

5) Prioritize Knowledge Management
Have a searchable database with solutions for every ticket. Use tags and categories that align with the ways in which employees more organically describe problems. Make a monthly summary of the top 10 issues this month and share this with all staff to help raise awareness. Start tracking recurring issues by user to identify those who might need additional training. Build a collection of quick reference cards for new software or system changes that can be distributed before implementation.

By balancing the measured outcomes with user perspectives, the organization can develop a more holistic plan for improving its IT service desk. While current operations handle many day-to-day requirements well, these deeper insights point to opportunities for greater clarity, better tools, and a more proactive support culture. Embracing these ideas will help prevent repeated disruptions and boost overall satisfaction for both on-site and remote team members.

3.7. Discussion

The analysis of the case study highlights the multifaceted challenges and opportunities faced by a small Jakarta-based software company adapting to a hybrid work model. Drawing from a combination of service ticket records, employee surveys, and group discussions, the findings present a compelling narrative about the strengths and weaknesses of the company's IT service desk. By applying the Technology-Organization-Environment (TOE) Framework and the Task-Technology Fit (TTF) Model, these insights can be better understood and strategically addressed.

Under the Technology dimension of the TOE framework, several recurring technical issues become apparent. The prevalence of connectivity problems, which account for 40% of all reported tickets, underscores the limitations of existing infrastructure especially for remote staff. The lack of real-time monitoring tools makes it difficult for IT personnel to pinpoint root causes quickly, resulting in longer resolution times and user frustration. While the communication score of 3.9 indicates generally positive perceptions, feedback reveals a need for more consistent and automated status updates. Additionally, the clarity of solutions—scoring 3.6 suggests a disconnect between the support content provided and the user's ability to understand and implement solutions independently. This is particularly problematic for non-technical users, who rely more heavily on clear, simple guidance.

The Organizational dimension brings attention to internal limitations in structure and workflow. A small IT support team working under limited resources often struggles during high-demand periods, leading to delayed responses and unresolved tickets. This is further complicated by recurring issues like login errors and system access problems, which employees report as never being permanently resolved. The absence of a centralized knowledge base and real-time diagnostic tools contributes to inefficiencies and repeated labor. Another organizational concern is the lack of coordination during shift changes, which often leads to lost tickets and redundant work. Confusion also arises when multiple IT personnel handle the same issue without consistent messaging, pointing to a need for standardized communication protocols and ticket ownership practices.

From the Environmental perspective, hybrid work has significantly increased the complexity of IT service delivery. Remote employees face longer wait times and often struggle to describe their issues accurately without direct interaction, adding layers of difficulty to the troubleshooting process. These limitations not only affect internal efficiency but can also impact client relationships, as seen in the case where a project delay—caused by expired licenses and unresolved tickets—led to client dissatisfaction. The environment now demands that the IT desk support both in-office and remote operations seamlessly, a task that strains the current system.

The Task-Technology Fit (TTF) model further reveals mismatches between the tools available and the tasks they are intended to support. Employees reported that remote troubleshooting is especially time-consuming due to the absence of real-time access and clear, task-specific guidance. Instructions are often too generic or technical, requiring multiple back-and-forth interactions that extend the time needed for resolution. Non-technical users, in particular, expressed a strong desire for simplified instructions, visual aids, and self-help resources that better match their capabilities. Communication gaps also persist, not due to lack of effort, but because existing tools do not support structured, automated updates or ticket follow-ups that users now expect in a hybrid environment.

Additionally, the response time and resolution rates examined in the data show that while average response time is consistent—around 3.5 hours—remote employees still experience slightly slower responses and more frequent delays. The recurring pattern of reopening the same unresolved tickets reflects broader issues in coordination, tool limitations, and an overall learning curve as the company adapts to remote support dynamics. Survey feedback and user comments confirm that while the IT service desk performs adequately under normal conditions, its current structure and toolset fall short when handling remote or complex requests efficiently.

Taken together, the findings call for a more comprehensive approach to IT service desk enhancement. While the organization has laid a decent foundation for support, gaps remain in technological capabilities, internal coordination, and remote support strategies. Addressing these will require targeted interventions such as implementing real-time monitoring tools, creating role-specific troubleshooting guides, and establishing a structured communication system that align with both the TOE and TTF frameworks. By bridging these gaps, the company can not only improve technical service delivery but also foster a more resilient, responsive, and user-centered IT support environment suited to the realities of hybrid work.

4. CONCLUSION

This study shows the many challenges of adapting an IT service desk to a hybrid work setup, especially in a small organization with limited resources. By looking at both numbers, like response times and ticket resolution rates, and the personal experiences of staff, the research finds that while basic goals are often achieved, bigger issues remain. These include managing remote support, fixing connectivity problems quickly, and handling the extra workload on a small IT team. Looking at the bigger picture, using both the Technology-Organization-Environment (TOE) Framework and the Task-Technology Fit (TTF) Model helps explain the challenges in IT service delivery. The company's small size and limited resources make it harder to handle sudden increases in support requests. At the same time, there's a clear need for better troubleshooting guides and stronger monitoring tools to match the tasks at hand. These findings reflect the growing demands of hybrid work, where employees need reliable support no matter where they are working.

This study does offer some actionable steps. First, communicate better, improve documentation, and establish more straightforward guidelines. Proper training and real-time access to user systems can also make less process in response to a finding faster updated and more active finding experience. This would help organizations reduce repetitive troubleshooting steps and enhance overall user satisfaction. Regular follow-ups and prompting for updates are also key to ensuring team members feel supported, mainly when issues are complex or ongoing. Although this study focuses on one organization in Jakarta, the lessons learned can apply to other small or medium businesses adapting to hybrid work. Successfully managing this transition takes more than just meeting response time goals, it requires a commitment to ongoing improvement. This means using feedback and learning from challenges to make lasting changes. By combining user input with operational data, IT service desks can move beyond quick fixes and create a strong system for reliable, high-quality support in ever-changing work environments. This study serves as a guide and a call to action. For academics it shows how existing theorems can be applied to practical settings, while offering a valuable lens into hybrid work.

REFERENCES

[1] D. A. Hensher, E. Wei, and M. J. Beck, "The impact of COVID-19 and working from home on the workspace retained at the main location office space and the future use of satellite offices," *Transp. Policy*, vol. 130, pp. 184–195, Jan. 2023, doi: 10.1016/j.tranpol.2022.11.012.

[2] C. Malila, P. Daya, and G. Bick, "The future of work: A hybrid work model in a public sector organisation," *Case Writ. Cent. Univ. Cape Town Grad. Sch. Bus.*, pp. 1–20, May 2023, doi: 10.1108/CASE.UCT.2023.000001.

[3] J. Lauring and C. Jonasson, "What is hybrid work? Towards greater conceptual clarity of a common term and understanding its consequences," *Hum. Resour. Manag. Rev.*, vol. 35, no. 1, p. 101044, Mar. 2025, doi: 10.1016/j.hrmr.2024.101044.

[4] X. Iogansen, J. K. Malik, Y. Lee, and G. Circella, "Change in work arrangement during the COVID-19 pandemic: A large shift to remote and hybrid work," *Transp. Res. Interdiscip. Perspect.*, vol. 25, p. 100969, May 2024, doi: 10.1016/j.trip.2023.100969.

[5] A.-A. Deschênes, "Digital literacy, the use of collaborative technologies, and perceived social proximity in a hybrid work environment: Technology as a social binder," *Comput. Hum. Behav. Rep.*, vol. 13, p. 100351, Mar. 2024, doi: 10.1016/j.chbr.2023.100351.

[6] M. P. Low, C. S. Seah, T.-H. Cham, and S. H. Teoh, "Digitalization adoption for digital economy: an examination of Malaysian small medium-sized enterprises through the technology–organization–environment framework," *Bus. Process Manag. J.*, vol. 28, no. 7, pp. 1473–1494, Nov. 2022, doi: 10.1108/BPMJ-06-2022-0282.

[7] P. M. L. Ng, K. K. Lit, and C. T. Y. Cheung, "Remote work as a new normal? The technology-organization-environment (TOE) context," *Technol. Soc.*, vol. 70, p. 102022, Aug. 2022, doi: 10.1016/j.techsoc.2022.102022.

[8] S. N. Abelsen, S.-H. Vatne, P. Mikalef, and J. Choudrie, "Digital working during the COVID-19 pandemic: how task–technology fit improves work performance and lessens feelings of loneliness," *Inf. Technol. People*, vol. 36, no. 5, pp. 2063–2087, Jul. 2023, doi: 10.1108/ITP-12-2020-0870.

[9] Z.-Y. Sun, X. Zhong, L. Meng, and Y.-Y. Zhao, "Does task-technology fit suppress employee innovation in digital transformation? The role of positive emotions and creative self-expectations," *Chin. Manag. Stud.*, Aug. 2024, doi: 10.1108/CMS-06-2023-0269.

[10] D. Handoko and A. S. Girsang, "Service Desk Implementation with Information Technology Infrastructure Library Framework (Study Case Financial Company)," *J. Phys. Conf. Ser.*, vol. 1090, p. 012059, Sep. 2018, doi: 10.1088/1742-6596/1090/1/012059.

[11] F. Al-Hawari and H. Barham, "A machine learning based help desk system for IT service management," *J. King Saud Univ. - Comput. Inf. Sci.*, vol. 33, no. 6, pp. 702–718, Jul. 2021, doi: 10.1016/j.jksuci.2019.04.001.

[12] L. Bergefurt, P. F. Van Den Boogert, R. Appel-Meulenbroek, and A. Kemperman, "The interplay of workplace satisfaction, activity support, and productivity support in the hybrid work context," *Build. Environ.*, vol. 261, p. 111729, Aug. 2024, doi: 10.1016/j.buildenv.2024.111729.

[13] K. Klaser, R. Cuel, and P. Casari, "The future of hybrid work in Italy: A survey-based Socio-Technical-System analysis," *J. Innov. Knowl.*, vol. 8, no. 4, p. 100426, Oct. 2023, doi: 10.1016/j.jik.2023.100426.

[14] C. Curtis, D. Olaru, B. Smith, T. W. Reed, C. Knight, and S. Biermann, "Sustainable urban mobility transitions through working from home (WFH)," *Travel Behav. Soc.*, vol. 39, p. 100953, Apr. 2025, doi: 10.1016/j.tbs.2024.100953.

[15] D. Schmid, J. Bueechl, R.-C. Härting, Y. Beldarrain, R. Schwörer, and J. Naeve, "Opportunities and Barriers of Agility and Digital Processes in HR in SMEs," *Procedia Comput. Sci.*, vol. 246, pp. 3605–3613, 2024, doi: 10.1016/j.procs.2024.09.197.

[16] M. P. Low, C. S. Seah, T.-H. Cham, and S. H. Teoh, "Digitalization adoption for digital economy: an examination of Malaysian small medium-sized enterprises through the technology–organization–environment framework," *Bus. Process Manag. J.*, vol. 28, no. 7, pp. 1473–1494, Nov. 2022, doi: 10.1108/BPMJ-06-2022-0282.

[17] P. M. L. Ng, K. K. Lit, and C. T. Y. Cheung, "Remote work as a new normal? The technology-organization-environment (TOE) context," *Technol. Soc.*, vol. 70, p. 102022, Aug. 2022, doi: 10.1016/j.techsoc.2022.102022.

[18] K. Ofosu-Ampong and B. Acheampong, "Adoption of contactless technologies for remote work in Ghana post-Covid-19: Insights from technology-organisation-environment framework," *Digit. Bus.*, vol. 2, no. 2, p. 100023, 2022, doi: 10.1016/j.digbus.2022.100023.

[19] S. N. Abelsen, S.-H. Vatne, P. Mikalef, and J. Choudrie, "Digital working during the COVID-19 pandemic: how task–technology fit improves work performance and lessens feelings of loneliness," *Inf. Technol. People*, vol. 36, no. 5, pp. 2063–2087, Jul. 2023, doi: 10.1108/ITP-12-2020-0870.

[20] A. D. Firmansyah and A. P. Subriadi, "IT service desk model literature review: Benefits and challenges," in *Proc. 2022 Int. Semin. Appl. Technol. Inf. Commun. (iSemantic)*, Semarang, Indonesia, Sep. 2022, pp. 172–177, doi: 10.1109/iSemantic55962.2022.9920439.

[21] A. Widianto and A. P. Subriadi, "IT service management evaluation method based on content, context, and process approach: A literature review," *Procedia Comput. Sci.*, vol. 197, pp. 410–419, 2022, doi: 10.1016/j.procs.2021.12.157.

[22] Z.-Y. Sun, X. Zhong, L. Meng, and Y.-Y. Zhao, "Does task-technology fit suppress employee innovation in digital transformation? The role of positive emotions and creative self-expectations," *Chin. Manag. Stud.*, Aug. 2024, doi: 10.1108/CMS-06-2023-0269.

[23] J. Serrano, J. Faustino, D. Adriano, R. Pereira, and M. Da Silva, "An IT Service Management Literature Review: Challenges, Benefits, Opportunities and Implementation Practices," *Information*, vol. 12, no. 3, p. 111, Mar. 2021, doi: 10.3390/info12030111.

[24] A. Dávila, R. Janampa, P. Angeleri, and K. Melendez, "ITSM model for very small organisation: an empirical validation," *IET Softw.*, vol. 14, no. 2, pp. 138–144, Apr. 2020, doi: 10.1049/iet-sen.2019.0034.

[25] N. Rizun, A. Revina, and V. G. Meister, "Assessing business process complexity based on textual data: Evidence from ITIL IT ticket processing," *Bus. Process Manag. J.*, vol. 27, no. 7, pp. 1966–1998, Oct. 2021, doi: 10.1108/BPMJ-04-2021-0217.

[26] S. Lansmann, J. Mattern, S. Krebber, and J. A. Hüllmann, "The future of working from home: a mixed-methods study with IT professionals to learn from enforced working from home," *Inf. Technol. People*, vol. 38, no. 2, pp. 626–659, Mar. 2025, doi: 10.1108/ITP-05-2022-0399.

[27] N. (Tina) Wang, "Media features and communication control in the digitalized workplace: a study about regulating negative emotional communication," *Inf. Technol. People*, vol. 35, no. 6, pp. 1744–1781, Dec. 2022, doi: 10.1108/ITP-02-2019-0064.