Vol. 7, No. 4, December 2025

Journal of Information Systems and Informatics

Published By Asosiasi Doktor Sistem Informasi Indonesia

A Lightweight ITSM Framework for Balancing Service Value and Cost Efficiency in Digital MSMEs

Marcel[1], Jessica Alexander[2]

[1,2]Information System Department, Krida Wacana Christian University, Jakarta, Indonesia

[1,2]Sustainable Eco-Smart Digital Infrastructure Center (SESDIC), Krida Wacana Christian University, Jakarta, Indonesia

Email: marcel@ukrida.ac.id[1], jessica.422023027@civitas.ukrida.ac.id[2]

Received: October 13, 2025

Revised: Nov 12, 2025

Accepted: Dec 2, 2025

Published: Dec 9, 2025

Corresponding Author:

Author Name*:

Marcel

Email*:

marcel@ukrida.ac.id

DOI:

10.63158/journalisi.v7i4.1301

Abstract. This study explores how Indonesian Micro, Small, and Medium Enterprises (MSMEs) manage IT services with limited staff and budgets, proposing that a simpler, lightweight approach to IT service management (ITSM) is more suitable for this context. A mixed-method case study was conducted with four MSMEs in Greater Jakarta—two technology-based and two non-technology-based. Key performance indicators such as response time, downtime, and customer satisfaction were derived from service logs and customer ratings, while semi-structured interviews with owners and staff were analyzed for recurring themes. Results revealed that non-technology-based MSMEs achieved a median response time of 12.5 minutes and an average satisfaction score of 4.55, while technology-based MSMEs had a median response time of 1.8 hours and an average score of 3.95. Technology firms logged approximately seven hours of downtime per month, compared to 1.5 hours in non-tech firms, indicating a trade-off between faster responses and higher satisfaction at the cost of less systematic documentation and control. All MSMEs utilized freemium SaaS tools, marketplace dashboards, limited-service hours, and no dedicated IT staff to minimize costs. The study proposes a lightweight ITSM framework and checklist, adaptable with free tools, for use in MSME incubators and support programs, advancing ITSM literature for resource-constrained businesses.

Keywords: ITSM, MSMEs, Digital Transformation, Service Value, Cost Efficiency, Lightweight Framework

ISI Journal of Information Systems and Informatics
Published By Asosiasi Doktor Sistem Informasi Indonesia

1. INTRODUCTION

Micro, Small, and Medium Enterprises (MSMEs) are widely recognized as key drivers of economic growth and employment. In Indonesia, more than 99 percent of registered business entities are classified as MSMEs and they play a central role in job creation and regional development [1]. In recent years, many of these firms have started to adopt digital technologies such as online marketplaces, social media, and cloud-based applications to reach wider markets, streamline operations, and refresh the way they offer products and services [2], [3]. For many Indonesian MSMEs, digital transformation has started to look like a key way to move forward, both in manufacturing and in food related and service businesses [4], [5].

Although digital transformation brings many new opportunities, it also makes businesses more dependent on information systems and technology-based services. When daily work runs through chat channels, marketplace dashboards, and software as a service tool, any disruption can quickly turn into lost orders and unhappy customers. Larger organisations usually address these risks with formal IT Service Management and IT governance frameworks, such as ITIL and COBIT, which are intended to align IT with business goals, manage risks, and improve service quality [6], [7]. However, prior studies note that the complexity of these frameworks, the amount of documentation they require, and the resources they demand often make them difficult to implement in MSMEs that have no specialised IT staff and operate with very limited budgets [8], [9].

Studies on IT governance and ITSM in smaller firms suggest that even fairly basic governance routines can help MSMEs keep technology aligned with business goals, make processes more reliable, and support better overall performance [10], [11]. These studies also stress that any approach needs to be tailored to the scale and everyday reality of MSMEs, rather than taken wholesale from frameworks designed for large corporations [12]. In Indonesia, most ITSM work in both research and practice still focuses on large organisations such as universities, banks, and government agencies, while systematic studies of digital MSMEs remain relatively uncommon [13]. As a result, it is still hard to see how service-related decisions are actually made inside small enterprises that are going through digital transformation.

ISI Journal of Information Systems and Informatics
Published By Asosiasi Doktor Sistem Informasi Indonesia

Recent studies point to the need for ITSM practices that are both practical in day-to-day use and flexible enough to adjust as conditions change. Saeedikiya, Salunke, and Kowalkiewicz [14] argue that MSMEs need dynamic capabilities so they can meet immediate operational demands while still building longer term value through digital technologies. In Indonesia, Prihandono et al. [1] note that competitive pressure has led MSMEs to rely more heavily on digital tools, yet the way they manage IT related services, including response routines and incident handling, often remains informal and piecemeal. Together these studies point to a clear gap, since we still know little about how digital MSMEs in developing economies balance service value and cost efficiency in their day-to-day IT service practices.

This study turns to that gap by looking at digital MSMEs in Indonesia that already depend on online platforms and software as a service tool in their daily operations. It asks how owners and key staff describe service value, which signs they pay attention to in practice, and how they make choices when time, money, and staff are limited. Instead of checking compliance with ITIL, COBIT, or other formal standards, the study follows basic IT service routines as they unfold in the field and considers how these routines can be strengthened without adding heavy administrative or technical work.

This work does two things that set it apart. It links the ideas of service value and cost efficiency and uses them to shape a lightweight, context specific ITSM framework for digital MSMEs in a developing economy [6], [9]. In the analysis, simple quantitative measures such as response time, downtime, and basic satisfaction scores are read together with interview accounts from MSME owners and administrators. In research terms, this brings ITSM studies into the still rarely examined setting of Indonesian digital MSMEs and adds to what is known about IT service management in emerging economies. For practice, it turns core ITSM principles into a short list of concrete routines that micro and small enterprises can apply with little extra cost, including modest service level targets, simple downtime records, standard customer communication, and brief regular reviews of service performance.

To make the objective explicit, this study is guided by the following research questions: (1) How do Indonesian digital MSMEs manage the balance between service value and cost efficiency in their IT service management practices? and (2) Based on these empirical

patterns, what form of lightweight ITSM framework can effectively support digital MSMEs in emerging economies without imposing excessive complexity or cost?.

2. METHODS

This study used mixed method case study design with a primary emphasis on qualitative inquiry and limited descriptive quantitative support. Four Indonesian digital MSMEs were selected as cases. The purpose was not to obtain statistical generalization to all MSMEs in Indonesia, but to develop analytical generalization in the sense used in case study research, where concrete cases are used to refine and extend conceptual propositions for similar settings [15]. The four cases were treated as information rich examples that allowed close examination of how service value and cost efficiency are balanced in everyday IT service practices.

The overall research process is summarised in Figure 1. The figure shows the sequence from case selection and context mapping, through quantitative and qualitative data collection, then separate analyses, and finally cross case synthesis and formulation of the lightweight ITSM framework. Quantitative indicators from service logs and a short mini survey provided a structured overview of basic IT service performance. Qualitative interview data were then used to explain and deepen those patterns, and both strands together informed the framework.

2.1. Case selection and context

Case selection and participant recruitment formed the first stage. Initial screening identified MSMEs in Greater Jakarta that met three criteria. First, they fell into the micro or small categories in terms of number of employees. Second, they relied on digital platforms such as websites, market places, and messaging applications as a central part of their operations and customer service. Third, the owners or managers were willing to discuss their internal practices and to participate in interviews and follow up communication.

From this pool four MSMEs agreed to participate. Two were technology based firms that sold digital products or services, and two were non technology firms that relied heavily on digital platforms for sales and customer interaction. In each MSME the main

informants were the owner or a senior manager and at least one staff member who handled daily customer service activities. This combination provided complementary perspectives on strategic choices and on operational routines.

In the next stage the research team mapped the context of each case. Basic information was collected on business history, main products or services, target customers, and the role of digital channels in daily operations. At this stage we had short informal talks with owners and staff, looked at publicly available digital channels such as websites and marketplace pages, and quietly observed how service interactions usually unfolded in those channels. The aim was to build a basic picture of how each MSME presented its services and what kinds of customer expectations it faced before moving on to more systematic data collection.

The decision to work with four MSMEs followed the logic of information rich sampling in qualitative and case study research. When the research question is focused and cases are chosen because they illuminate the phenomenon of interest, a small number of well described cases can provide strong grounds for analytical generalization [15]. In this study the four MSMEs were selected to represent digital intensive businesses that actively use online platforms and software as a service tools, while at the same time facing typical resource constraints of micro and small enterprises. This allowed the study to concentrate on depth of understanding rather than breadth of coverage.

2.2. Quantitative data collection

The next stage focused on collecting descriptive quantitative data on basic IT service indicators. For each MSME, simple service logs were compiled over a defined observation period. These logs recorded median and average response times for digital channels, total downtime hours per month, and downtime frequency. In addition, a short mini survey was administered to obtain simple customer satisfaction scores using a five point scale for three dimensions that participants themselves considered central, namely friendliness of response, speed of response, and perceived usefulness of solutions.

The numerical indicators are summarised in Table 1 and Table 2. They were used to describe how quickly each MSME responded to customers, how often service interruptions occurred, and how customers evaluated their experience. The quantitative

component was deliberately modest in scope. The indicators served as a descriptive backdrop to the qualitative findings and as a way to highlight contrasts between cases rather than as the basis for formal hypothesis testing.

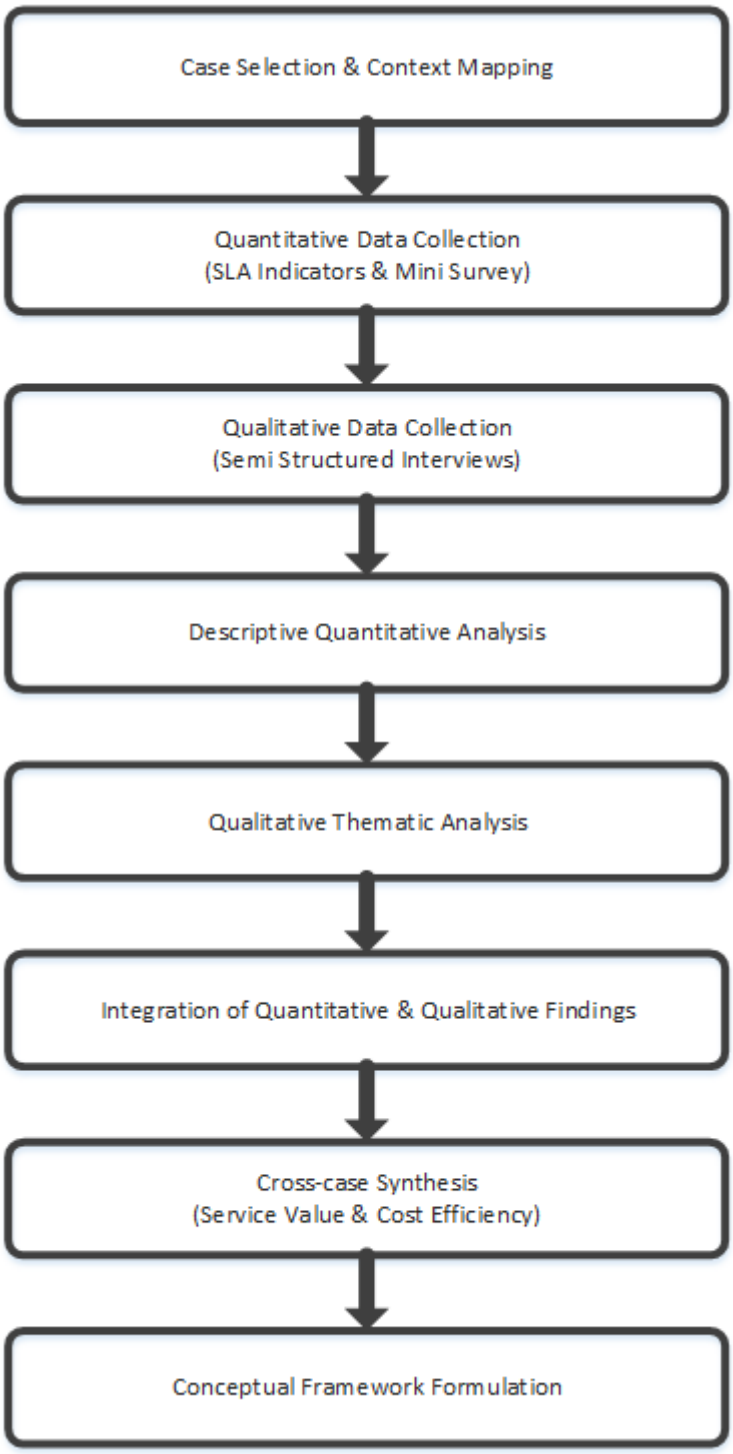

Figure 1. Research steps

2.3. Qualitative data collection

Semi structured interviews formed the qualitative component of the study. Interview guides were designed to explore how owners and staff defined service value, which indicators they paid attention to in daily practice, how they understood cost efficiency, and how they made decisions when service quality and cost efficiency came into tension. The guides also invited participants to recall concrete examples of incidents, complaints, or service disruptions and to describe how these were handled step by step.

Interviews were held either face to face or online, depending on what suited each participant. Before starting, participants were asked for consent to record the session. The conversations were then audio recorded and accompanied by written notes. Later, all recordings were transcribed in full, and any names or details that could point to a particular MSME or individual were removed. The anonymised transcripts and notes formed the qualitative material used in the coding and analysis.

2.4. Data analysis

In the first step, the quantitative data were examined. For each case, response time and downtime were taken from the service logs and summarised using basic descriptive statistics. We calculated the median and mean response time, total downtime hours in a typical month, the number of downtime events, and the average satisfaction score from the mini survey. These figures were then placed side by side for the four MSMEs and for two simple groups, technology based cases and non technology cases. Looking at the results in this way made it easier to see straightforward patterns, such as which cases tended to reply more quickly or experienced downtime more often.

After looking at the quantitative results, the team turned to the interview data. All transcripts were read from beginning to end to build a general picture of each case. Two researchers then took a small number of transcripts and coded them separately, using an initial set of codes linked to service value, cost efficiency, and the balance between the two. They later compared how they had coded the material, discussed any differences, and adjusted the list of codes. This revised set was used for the full set of transcripts, and was expanded whenever recurring ideas did not yet have a suitable label. Finally, related codes were brought together into broader themes that showed how

MSMEs described service value, how they tried to keep costs under control, and how they reacted when these two aims pulled against each other.

2.5. Integration and Triangulation

In the final stage the team conducted cross case synthesis. For this stage simple case summaries were prepared that brought together the quantitative indicators and the main qualitative themes for each MSME. These summaries were then compared to identify similarities and differences across the four cases. Particular attention was paid to situations in which the numerical indicators did not immediately match the narratives from interviews, for example when service appeared relatively slow but the owner still considered customers to be satisfied. In such situations the researchers revisited both the raw data and the interview excerpts to refine their interpretation.

Besides summarising the study, Figure 1 also helped organise the analysis. We used indicators from the service logs and the mini survey to place each case on a simple map with service value on one side and cost efficiency on the other. We then returned to the interview material and drew on the themes to understand why each case sat where it did on that map. The final lightweight ITSM framework grew out of this process, so its parts reflect both what the indicators showed and how MSME owners and staff described their own reasoning in practice.

Throughout the study we tried to look at each finding from more than one angle. For method triangulation, we drew on service logs, mini survey responses, interview material, and notes from observing digital channels. We also varied our data sources by talking with both owners or managers and operational staff in every case. Investigator triangulation was achieved by having several researchers code the transcripts together, meet regularly to talk through new ideas, and review the case summaries as a team. To reduce bias, the team used a shared interview guide, encouraged participants to give concrete examples rather than only broad opinions, and cross checked their interpretations against the quantitative indicators and against data from the other cases.

2.6. Study context and limitations

The research was carried out in Greater Jakarta, an area with reasonably good digital access where many MSMEs compete in the same space. This setting shapes the results

and should be kept in mind when interpreting them. The four cases cannot represent every Indonesian MSME, and the cross sectional design does not show how IT service management practices might change over time. Drawing on the idea of analytical generalization in case study research [15], the hope is that the framework and the observations from these cases can still guide digital MSMEs in other urban areas that work with limited resources and face strong competitive pressure.

3. RESULTS AND DISCUSSION

3.1. Case Study Overview

This study looked at four digital MSMEs in Greater Jakarta, selected purposively to reflect differences in sector and in how far technology is used. Two cases represent technology sectors: a website development provider labeled T1 and a small start-up that offers a point-of-sale cashier application labeled T2. The other two are non-technology businesses that rely heavily on digital channels: a food delivery service labeled NT1 and an online fashion seller labeled NT2. This composition was chosen to illustrate how different priority patterns emerge between MSMEs that sell technology products and MSMEs that use technology primarily as a means of operations and customer service (Table 1).

Table 1. Profile of the MSMEs Studied

MSME Code	Business Sector	Business Scale	Number of Employees	Main Digital Platforms	IT Resources	Customer Service Characteristics
T1	Website development services	Small	12 employees	Company website, WhatsApp Business, Trello	Internal technical team (2 people)	Simple SLA with 1–2 hour response via chat or email
T2	POS application startup	Small	14 employees	SaaS application, Email Support, Telegram	Internal technical team (3 people)	Support limited to working hours, downtime recorded manually

ISI Journal of Information Systems and Informatics
Published By Asosiasi Doktor Sistem Informasi Indonesia

MSME Code	Business Sector	Business Scale	Number of Employees	Main Digital Platforms	IT Resources	Customer Service Characteristics
NT1	Culinary (online restaurant)	Micro	8 employees	ShopeeFood, GoFood, WhatsApp Business	Admin doubling as cashier	Fast response through WhatsApp with pre-set templates
NT2	Online fashion retail	Micro	6 employees	Shopee, Instagram Shop, Tokopedia	No dedicated IT staff	Instant response via marketplace chat, active about 80% of working hours

Initial mapping shows that all MSMEs face limitations in information technology resources. None of them have a formal IT department. Service management is usually carried out by business owners or administrators who also perform other functions. As a result, ITSM practices tend to be simple, improvised, and reactive. These findings are consistent with the study by Iden and Eikebrokk [8], which shows that limited human resources and costs are the main obstacles to the implementation of ITSM in small organizations. At the same time, the cases are not all the same. The technology based MSMEs pay more attention to logging downtime and have begun to introduce simple SLAs. The non technology MSMEs, in contrast, tend to focus on how quickly they respond to chat messages and treat this as their main sign of good service quality.

These differences build on the work of Marrone and Kolbe [9] , who show that many established ITSM frameworks remain too complicated for SMEs. Purnomo, Nurmalitasari, and Nurchim [5] also note that studies on MSME digitalisation in Indonesia have mostly centred on digital marketing rather than IT service management. Taken together, this study adds a different angle. It shows that the balance between service value and cost efficiency is not just a technical problem but a strategic choice made consciously by SME owners. Decisions to rely on free SaaS tools, to limit service hours, or to depend on marketplace features are concrete trade offs that occur in everyday practice.

3.2. Descriptive Statistics of SLA Indicators

To get a basic picture of IT service performance in the four MSMEs, we ran a small quantitative check. We focused on three main indicators: response time, downtime and customer satisfaction. The figures came from records of customer interactions in marketplace chats, WhatsApp Business and the SaaS tools used by each firm. Across the four firms, the figures point in different directions. The two technology-based MSMEs (T1 and T2) replied more slowly than the non-technology cases, but they were more disciplined in logging downtime and carrying out internal escalations. The non-technology MSMEs (NT1 and NT2) put more weight on how fast they could answer chat messages and used this as their main yardstick, even though they had no formal routine for recording system disruptions. Customer satisfaction shows a similar split. The non-technology MSMEs receive higher marketplace ratings, largely because of their very quick replies, even though their downtime records are quite patchy. The technology-based MSMEs have more stable satisfaction scores, but these are not as high, as limited staff make it hard for them to respond to requests outside normal working hours (Table 2).

Table 2. SLA Indicators of the MSMEs Studied

MSME Code	Response Time (Median)	Response Time (Average)	Downtime (Hours per Month)	Downtime Frequency	Customer Satisfaction (1–5 scale)
T1	1.5 hours	2.1 hours	6	3	3.9
T2	2 hours	2.4 hours	8	4	4.0
NT1	15 minutes	22 minutes	2	1	4.5
NT2	10 minutes	18 minutes	1	1	4.6

To make these contrasts clearer, the figures were then regrouped at the level of the two MSME types, as shown in Table 3. The non technology firms replied much faster overall, with a median response time of about 12.5 minutes and an average satisfaction score of 4.55. The technology cases, in comparison, had a median response time of around 1.8 hours and an average satisfaction score of 3.95. The pattern for downtime goes in the opposite direction. The technology firms reported roughly 7 hours of downtime per month, compared with about 1.5 hours in the non-technology group, although their incidents were logged more systematically. Taken together, these numbers point to a

clear trade off: quicker replies are closely linked to higher satisfaction, but they are achieved at the expense of more formal documentation and tighter technical control.

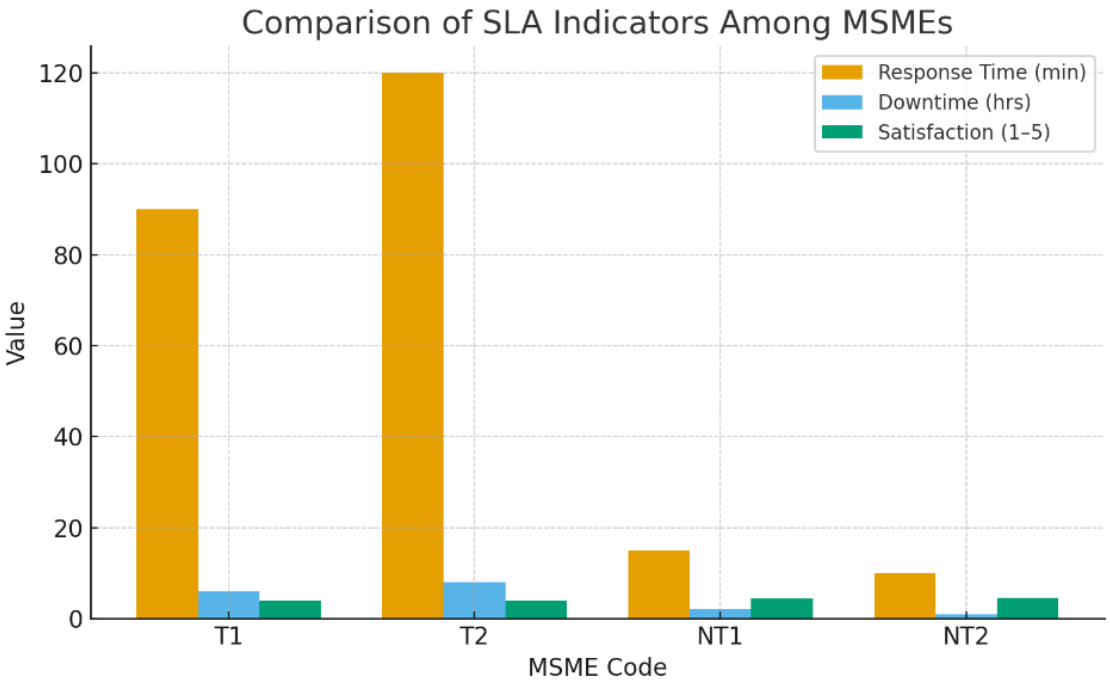

Figure 2. SLA Indicators of the MSMEs studied (Bar chart)

Table 3. Summary of SLA Indicators by Group

Group	Response Time (Median)	Response Time (Average)	Avg Downtime (Hours/Month)	Avg Customer Satisfaction (1–5)	Notable Variation
Tech-based MSMEs (T1, T2)	1.8 hours	2.25 hours	7 hours	3.95	Higher downtime but more systematic records
Non-tech MSMEs (NT1, NT2)	12.5 minutes	20 minutes	1.5 hours	4.55	Very fast response, limited documentation

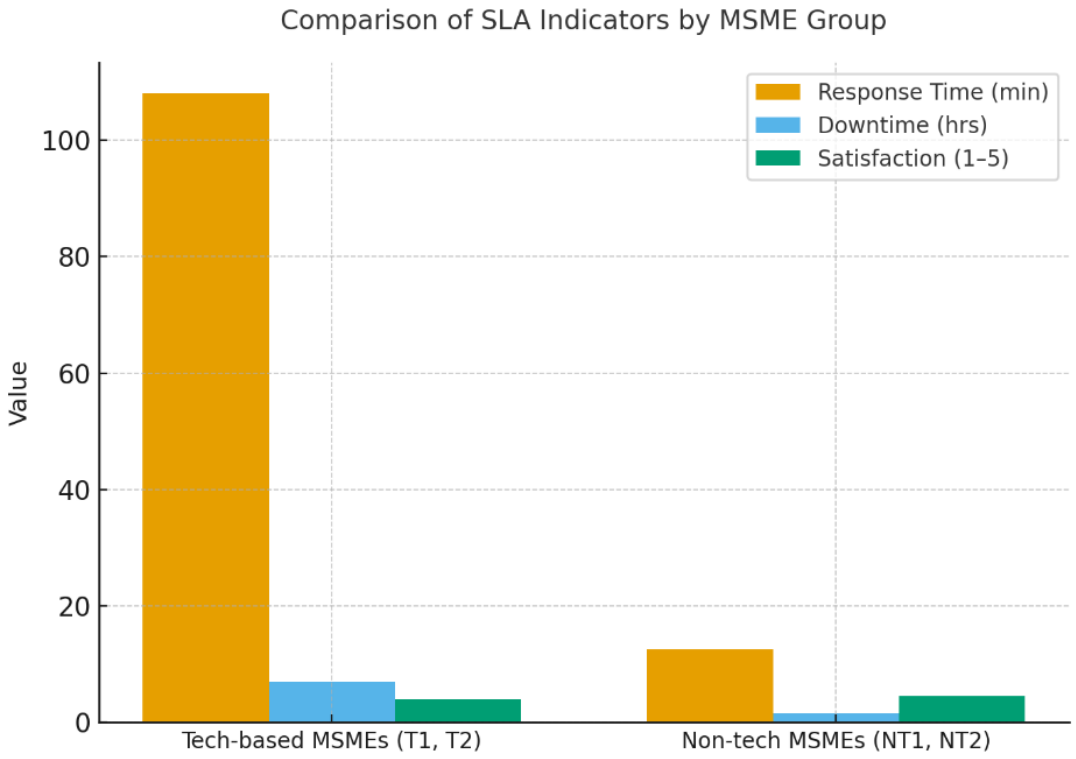

Figure 3. Summary of SLA indicators by group (Bar chart)

Read together, these findings suggest that SLA indicators are not just technical yardsticks but also reflect the strategic stance of each MSME. Earlier work shows that ITSM initiatives can reshape the IT function in different kinds of organizations, especially when managers are trying to hold efficiency and service quality in balance [16]. Other studies note that SLA achievement depends strongly on how incidents are handled in practice, with speed and access to resources playing a central role [17]. In digital marketplaces, after sales features such as quick replies and clear communication weigh heavily on customer satisfaction and loyalty [18], which fits with the higher ratings received by the non-technology MSMEs in this study. Customer satisfaction is also shaped by how users experience an organization's relationship management system, not only by its technical performance [19]. For the non-technology MSMEs, almost instant replies have become a visible sign of good service, even without formal documentation. The technology based MSMEs, by contrast, put more effort into logging downtime and keeping solutions stable, even if this slows their responses. Taken together, these patterns suggest that, in MSME settings, customers often judge service value by how quickly they can get a reply rather than by tight technical control over IT services. This

reading helps shape a straightforward ITSM approach that tries to align customer expectations with very limited operational budgets.

3.3. Perceptions of Service Value

The interviews with owners and managers show that service value does not mean the same thing for every firm; it depends on the type of business and the conditions they work in. Across the cases, three points came up again and again: how fast they respond, how personal the service feels, and how consistent the information is. Even with limited resources, these firms rely on a few straightforward routines to keep customers satisfied. The main practices they use are listed in Table 4.

Table 4. Perceptions of Service Value among MSMEs

Theme	Supporting Quotes	Number of Participants	MSMEs Involved
Speed of response	"Customers care more about quick replies, even if the answer is short."	4 participants	NT1, NT2
	"Instant response in Shopee chat keeps buyers loyal."		
Personalization and friendliness	"A warm tone and personal approach in WhatsApp replies make customers feel valued."	3 participants	NT2
	"Even with short answers, friendliness builds trust."		
Consistency of information	"Clients expect stable updates and clear documentation rather than just fast replies."	2 participants	T1
Accuracy of solutions	"We focus on providing the right solution, even if it takes more time to respond."	3 participants	T2
	"What matters is not speed alone, but whether the solution works."		

ISI Journal of Information Systems and Informatics
Published By Asosiasi Doktor Sistem Informasi Indonesia

Non technology MSMEs such as online food sellers and fashion shops treat reply speed as their main concern. Food business owners say that customers care more about getting a quick answer than a long explanation, and fashion admins note that replying at once in Shopee chat helps stop buyers from leaving. For these firms, a fast, even very short reply is already experienced by customers as real service value.

By contrast, technology based MSMEs describe service value in a more layered way. Website development firms stress the need for consistent technical information, for example clear project status updates and documentation that stays up to date. Startups that offer cashier applications see accuracy of the solution as the centre of their service, often saying that they "prioritize providing the right solution, even if the response time is slightly longer."

Seen more broadly, these results are consistent with ITSM studies that treat service quality as a central driver of customer satisfaction [6], [9]. Saeedikiya, Salunke, and Kowalkiewicz [14] show that the ability to adjust to customer needs is an important dynamic capability during digital transformation. Feversani, De Castro, Marcos, Piattini, and Martín-Peña [20], make a related point, arguing for lightweight service management frameworks that are shaped around the realities of SMEs rather than rigid formal standards. Yuwono, Suroso, and Novandari [21] add that ICT adoption in SMEs in developing countries often grows from pragmatic choices that respond to sector specific demands and tight resource conditions.

At the same time, the cases in this study point to a slightly different picture. In Indonesian digital MSMEs, customers seem to judge service value mainly from their immediate, direct interactions with staff, such as how quickly someone replies, rather than from any formal ITSM standard. Put simply, for these firms service value is something the customer feels right away, not a set of technical procedures written on paper.

As Table 4 shows, ideas about service value are shaped by context. Non-technology MSMEs tend to treat quick exchanges with customers as the main sign of good service, while technology-oriented MSMEs place more weight on accurate answers and consistent information. In practice, this means there is no single fixed meaning of service value; it shifts with the sector and with what customers expect. The practical implication is that

ITSM for MSMEs should be designed around their specific situation, rather than treated as a cut-down version of formal standards.

3.4. Strategies for Cost Efficiency

The interview results show that cost efficiency strategies are a major concern for all MSMEs studied. Budget constraints have led them to develop various cost-saving practices in information technology management. Three main patterns emerged: the use of free or freemium digital services, the minimization of dedicated IT human resources, and the adjustment of customer service hours to avoid additional costs (Table 5).

Table 5. Cost Efficiency Strategies among MSMEs

Strategy	Supporting Quotes	Number of Participants	MSMEs Involved
Use of freemium SaaS and marketplace tools	"We only use the free features of SaaS, paying is not yet worth it for our scale."	5 participants	T1, T2, NT1, NT2
	"Marketplace dashboards are enough for basic reporting."		
Minimization of IT staff	"We do not have dedicated IT staff, the owner handles technical problems."	4 participants	T1, T2, NT2
	"Admins take care of IT tasks when they have spare time."		
Limitation of service hours	"We focus on replying during peak hours, outside that we wait until the next day."	3 participants	NT1, NT2
	"It is impossible to be online 24 hours without extra costs."		

Most MSMEs use free versions of SaaS software, such as Trello for project management, cloud-based cashier applications with trial packages, or standard marketplace features such as transaction reports. SME owners believe that investing in paid licenses is not yet a priority because the transaction volume does not justify the subscription costs. In

ISI Journal of Information Systems and Informatics
Published By Asosiasi Doktor Sistem Informasi Indonesia

addition, no SME has full-time IT staff. Technical functions are usually handled by operational administrators or even the business owners themselves. This strategy does reduce costs, but it has an impact on the quality of service, which tends to be reactive, as technical problems are often only addressed when they disrupt operations.

Cost savings are also achieved by limiting customer service hours. Non-tech SMEs such as online food and fashion businesses, for example, only provide intensive chat support during peak sales hours, while outside of those hours they leave messages waiting until the next day. Although this decision has the potential to reduce customer satisfaction for some, SME owners consider this strategy more realistic than hiring additional staff.

The pattern in these results is similar to earlier studies that point to limited resources as a main obstacle for ITSM in smaller firms [8], [12]. Feversani, De Castro, Marcos, Piattini, and Martín Peña [21] also argue that SMEs need lighter service management approaches, because strict and detailed frameworks are rarely workable when people, time, and budgets are tight. In the same vein, Yuwono, Suroso, and Novandari [22] show that ICT adoption in SMEs in developing countries is often driven by pragmatic and cost saving choices rather than neat formal processes.

What we see here adds a more specific nuance. Cost efficiency is not only about cutting spending, but about finding a workable middle ground between cost and the level of service that can still be offered. For Indonesian digital SMEs, keeping expenses low is part of a deliberate survival strategy, even when it creates some risk for service consistency. In this sense, the push for cost efficiency also shapes how ITSM priorities are arranged in practice, narrowing attention to a few simple choices that keep daily operations going and support the continuity of the business.

From these MSMEs, two points stand out. Cost saving measures are essential for staying in a crowded digital market, which is in line with Prihandono et al. [1] and Bourhlal & Alhaderi [4] who stress the need for adaptive strategies under pressure. At the same time, cost efficiency is not only about reducing expenses but also about finding practical and flexible ways to organise IT services. In this sense, a contextual lightweight ITSM approach needs to grow from daily work routines, where cost and service value are managed together within tight resource limits.

3.5. Trade-offs between Service Value and Cost Efficiency

The findings show that digital MSMEs really do face a trade off between improving service and keeping costs under control. The quantitative data indicate that the non-technology firms (NT1 and NT2) reply to chat much more quickly than the technology-based cases. The interviews, however, suggest that this speed comes at a price: owners and admins feel they must stay online for most of the day, often beyond normal working hours, which increases their workload without extra pay. The technology based MSMEs (T1 and T2) manage costs in a different way by limiting service hours. They are more consistent in logging downtime and maintaining a simple recording system, but their average response time is longer and customer satisfaction does not reach the levels seen in the non-technology group.

This dilemma underlines that each option comes with a price. Longer service hours can raise perceived service value, but they also push up operating costs, for example through overtime, higher data use, or extra staff. Efforts to save costs by shortening working hours or keeping staff numbers low do reduce spending, but they can also pull customer satisfaction down. In practice, this trade off cannot be avoided, and each MSME has to set priorities that fit its own capacity (Table 6).

Table 6. Trade-offs between Service Value and Cost Efficiency in MSMEs

Trade-off Pattern	Illustrative Evidence from Interviews	Consequence on Service Value	Consequence on Cost Efficiency	MSMEs Involved
Fast response vs higher workload	"We try to reply instantly on Shopee chat, but it means we stay online almost all day."	High customer satisfaction (ratings 4.5–4.6)	Increased hidden costs (time, fatigue)	NT1, NT2
Limiting service	"We only respond during office hours; outside of	Moderate satisfaction (ratings 3.9–4.0)	Controlled expenses, no overtime	T1, T2

Trade-off Pattern	Illustrative Evidence from Interviews	Consequence on Service Value	Consequence on Cost Efficiency	MSMEs Involved
hours to cut costs	that, customers must wait."			
No dedicated IT staff to save budget	"We don't have IT staff; technical issues are handled only when they appear."	Delays in handling technical issues	Lower fixed costs, but reactive approach	All cases
Using free SaaS instead of paid solutions	"We rely only on free features; upgrading is not necessary at this stage."	Limited features, less professional image	Zero license cost, but higher risk of error	All cases

These results are in line with earlier work showing that formal ITSM frameworks such as ITIL often feel too complex and demanding for SMEs to use in practice [8], [9]. Feversani, De Castro, Marcos, Piattini, and Martín-Peña [21] argue that smaller firms therefore need lighter frameworks that can be adjusted to their limited resources and everyday routines. In the same vein, Yuwono, Suroso, and Novandari [22] find that ICT adoption in SMEs in developing countries tends to follow pragmatic choices shaped by scarce resources and sector specific pressures. This study adds that the trade offs faced by digital SMEs are not only about whether they can adopt formal frameworks, but also about how they shape simple, contextual service strategies that match their means. Taken together, these points support the case for a lightweight ITSM approach that can keep service value and cost constraints in reasonable balance.

3.6. Cross-case Analysis

When we compare the cases, some patterns repeat, but there are also clear differences between technology based MSMEs and non-technology MSMEs that make heavy use of digital channels. On the similarity side, all of them work under the same kinds of pressure: limited resources and tight budgets. Their choices are also quite alike. They rely on free

or freemium tools, avoid hiring dedicated IT staff, and instead make do with the built in features of marketplace platforms or SaaS applications. This suggests that cost efficiency is a strong driver of how MSMEs organise their IT service management, whatever their business sector (Table 7).

Table 7. Cross-case Comparison of MSMEs

Dimension	**Tech-based MSMEs (T1, T2)**	**Non-tech Digital-intensive MSMEs (NT1, NT2)**	**Common Patterns Across All Cases**
Cost management	Use of freemium SaaS, no dedicated IT staff, cost control through limited-service hours	Use of free marketplace tools, no dedicated IT staff, cost control through limited-service hours	Strong emphasis on minimizing IT-related expenses
Understanding of SLA	More aware of SLA concepts, record downtime, value accuracy and documentation	Less formal, focus on quick response, no downtime records	Both rely on simple, informal practices
Customer service approach	Structured but slower responses, prioritize consistency and accuracy	Instant responses, prioritize customer satisfaction perception	Customer-facing interactions handled personally
Definition of service value	Reliability, accuracy, and consistency of technical support	Speed, friendliness, and immediacy of responses	Service value linked to customer experience

Even so, the four MSMEs do not look at service quality in the same way. The technology-based firms pay closer attention to formal markers such as SLAs, downtime records, and whether the solutions they give are technically correct. For them, a service counts as valuable when it is consistent and properly documented, even if this means customers wait longer for a reply. The non-technology MSMEs, by contrast, focus more on what

customers feel in the moment. Getting a reply within a few minutes is treated as a key factor for success, even when it is not backed up by detailed documentation or formal procedures.

These results sit comfortably within wider work on IT governance in MSMEs. Huang, Zmud, and Price [10] and Raymond, Bergeron, Croteau, and Uwizeyemungu [11] argue that governance in smaller firms does not simply mirror large enterprises, because it is shaped far more by capacity limits and day to day practicalities. Mora Esquivel and Leiva [23] add that strategies for digital service innovation have a strong influence on SME performance across countries, with service quality and customer experience becoming central sources of advantage. Moreira, Pinto, Costa, and Araújo [24] show that digital transformation in SMEs can be examined with multidimensional tools such as the Alkire Foster method, which helps capture variation across sectors and resource conditions. In line with this work, our study suggests that, in Indonesia, the gap between technology oriented and non technology MSMEs reflects not only how far they have gone in adopting digital tools, but also how each group tries to balance perceived service value with cost efficiency. In other words, the business domain shapes how service value is understood, so any lightweight ITSM guidance needs to take these contextual differences seriously.

3.7. Comparison with SMEs in Developed Economies

In the four Indonesian MSMEs studied, the main trade-offs revolve around how far owners are willing and able to stretch themselves to maintain fast and friendly customer interactions while keeping IT and staffing costs under control. Non technology MSMEs in food delivery and fashion push for almost instant chat responses, often by having owners or admins stay online for long hours, which raises hidden costs such as fatigue and stress. Technology based MSMEs are more disciplined about logging incidents and defining simple internal SLAs, but they limit support hours and keep teams small, which leads to slower responses and only moderate customer satisfaction. Across all cases, there is a strong reliance on free or freemium SaaS tools and marketplace dashboards, no dedicated IT staff, and a tendency to accept reactive handling of technical issues as a practical compromise.

Studies in developed economies show a different balance of priorities. Research on ITIL implementations in the United States and Australia reports that organisations, including

ISI Journal of Information Systems and Informatics
Published By Asosiasi Doktor Sistem Informasi Indonesia

some larger SMEs, justify adoption through expected gains in service quality, process visibility, and alignment with business strategy, supported by investment in training and tools [6]. Marrone and Kolbe [9] and Marrone et al. [25] find that SMEs in Europe and other advanced contexts still struggle with the complexity of ITIL and related frameworks, yet their trade-offs are framed more in terms of the depth of process formalisation and the level of governance maturity they can realistically sustain, rather than in terms of whether they can afford any dedicated IT function at all. In those settings, the presence of at least a small IT team and some budget for tooling is often taken for granted, even when adoption remains partial.

More recent work on SME oriented service management and digital transformation pushes toward lighter and more flexible approaches, but usually still assumes a certain level of formal structure. Feversani et al. [21] propose a lightweight service management evaluation framework that simplifies international standards for SMEs, yet their design presumes that firms can define processes, roles, and indicators in a fairly systematic way and can allocate time to formal assessment cycles. Moreira and co authors show that SMEs in Europe increasingly turn to business process automation and digital transformation roadmaps to streamline operations, with the main barriers lying in skills, change management, and the complexity of selecting appropriate technologies, rather than in the inability to pay for any licenses or IT specialists [24]. In comparison, the Indonesian MSMEs in this study are still at an earlier stage, where the core question is not how to optimise formal processes, but how to keep services running with minimal budget and no IT department. Table 8 shows comparison of service value–cost efficiency trade-offs in this study and in prior SME ITSM literature.

Table 8. Comparison of service value–cost efficiency trade-offs in this study and in prior SME ITSM literature

Dimension	Indonesian digital MSMEs (this study)	SMEs in developed economies (prior studies)
Baseline ITSM structure	No dedicated IT staff, owner or general staff handle support; no formal ITSM framework.	Small IT teams often exist; partial or formal ITIL adoption is common [6], [9].

ISI Journal of Information Systems and Informatics
Published By Asosiasi Doktor Sistem Informasi Indonesia

Dimension	Indonesian digital MSMEs (this study)	SMEs in developed economies (prior studies)
Key trade-off focus	Survival oriented balance between fast response, owner workload, and zero license cost; heavy reliance on freemium tools and marketplace dashboards.	Trade-offs between ITIL formalisation depth, training effort, tool investments, and expected gains in service quality and governance [21], [25].
Service innovation pattern	Incremental, improvisational changes within free or low-cost tools; driven by marketplace pressure and day-to-day issues.	More deliberate digital service innovation and process redesign, sometimes linked to broader digital transformation roadmaps [23], [24], [26].
Measurement and SLAs	Simple or implicit targets, limited logging, tolerance of reactive handling of downtime.	More explicit SLAs and broader sets of performance indicators, even if implementation is incomplete.

There are also differences in how service and innovation are linked to performance. Mora-Esquivel and Leiva [23] show that in an international sample of manufacturing SMEs, digital service innovation strategies and the degree of digitalization contribute positively to innovation and performance, assuming that firms can invest in technology and intentionally design service offerings around digital capabilities. In the Indonesian cases analyzed here, service innovation takes a much more incremental and improvisational form, such as tweaking response templates in marketplace chat or combining free dashboards and simple spreadsheets. These changes are driven by day-to-day survival pressures in competitive online platforms rather than by a formal innovation strategy.

Taken together, these comparisons suggest that the trade-offs observed in Indonesian MSMEs sit closer to the "survival end" of the SME spectrum. The main concern is how to protect immediate customer experience and business continuity through simple routines, while keeping costs and workload at a level that owners can still handle. This pattern strengthens the argument that lightweight ITSM for UMKM cannot be a scaled down copy of ITIL or other formal frameworks. It needs to start from the realities of freemium tools,

owner managed service desks, and marketplace driven customer expectations, and then add only those elements of structure that are feasible in this context and still move service management a step forward.

3.8. Toward a Lightweight ITSM Framework for UMKM

Overall, the findings suggest that digital MSMEs in Indonesia need an IT Service Management approach that is simple, flexible, and matched to the resources they actually have. Formal frameworks such as ITIL tend to work better in large organisations [6], while for MSMEs their complexity and cost quickly turn into obstacles [8], [9]. In everyday practice, many of these firms are already doing parts of ITSM informally, for example by keeping manual notes on downtime, replying quickly through marketplace chat, and relying on free SaaS tools. These habits point toward the need for a realistic, lightweight framework. Mora Esquivel and Leiva [23] underline that service innovation is crucial for staying competitive, so IT practices should clearly support strategic goals. Moreira, Pinto, Costa, and Araújo [24] show that SME digital transformation is best assessed with methods that recognise resource limits and sector differences, which strengthens the case for a simplified and context aware ITSM approach.

Table 9 summarises four practical building blocks in the framework. The first is to agree on realistic minimum service levels, for example aiming to send an initial reply within about one hour during normal opening times. The second is to keep a very simple downtime record, in a spreadsheet or even a notebook, so that repeating problems are easier to spot. The third is to prepare short customer message templates that keep information clear and consistent, both when incidents occur and in routine status updates. The fourth is to set aside a brief weekly discussion of roughly fifteen to thirty minutes to review three to five priority issues and decide on concrete follow up actions.

Table 9. Proposed Lightweight ITSM Framework for UMKM

Element	Practical Description	Expected Benefit
Minimum SLA	Target initial response within 1 hour during working hours	Improves customer trust without overstretching resources

ISI Journal of Information Systems and Informatics
Published By Asosiasi Doktor Sistem Informasi Indonesia

Element	Practical Description	Expected Benefit
Simple downtime logging	Manual log or spreadsheet documenting time, duration, and impact of service disruption	Identifies recurring issues and supports prioritization
Customer communication template	Standardized messages for delays, status updates, or service recovery	Ensures clarity and consistency, reduces miscommunication
Weekly mini-review	15–30-minute discussion to review top 3–5 service issues and agree on quick fixes	Promotes continuous improvement with minimal effort

Practical Guidelines for Using the Framework

1) Set Minimum SLAs

   Agree on a first response goal that you can realistically keep, such as answering messages within an hour during working hours. Make sure everyone knows this target, and use simple reminders, for example WhatsApp notifications or calendar notes, to help you stick to it.

2) Record Downtime Simply

   Write down when each incident happens, how long it lasts, and what it affects, using either a free spreadsheet tool or a simple notebook. This basic level of detail is usually enough to spot problems that keep recurring and to give you solid material for the weekly review.

3) Use Communication Templates

   Draft a few ready-to-use messages for situations that come up often, such as delivery delays, system problems, or order status checks. Save these templates in WhatsApp Business "quick reply" or in the marketplace auto-reply features, so the responses customers receive stay clear, consistent, and professional.

4) Conduct a Brief Weekly Review

   Reserve 15 to 30 minutes each week for a short discussion of three to five important service issues. Use the downtime notes and customer feedback as input, then agree on a few small changes that can be put into practice in the following week.

ISI Journal of Information Systems and Informatics
Published By Asosiasi Doktor Sistem Informasi Indonesia

This framework and guide respond to a clear gap in the literature, which notes that many MSMEs do not have the capacity to implement formal ITSM in full [12], [13]. The study offers workable, adaptable steps that reflect how Indonesian digital MSMEs actually run their operations. It also shows that ITSM does not have to revolve around strict adherence to global standards and can be adjusted to fit local conditions. The central message is that service value and cost efficiency are not necessarily in conflict. With a straightforward, measurable, and customer focused approach, MSMEs can work toward both at the same time.

The lightweight ITSM framework proposed here is meant as a context specific simplification of established standards such as ITIL and COBIT, not a substitute for them. ITIL offers detailed process guidance that fits large organizations, but its complexity and resource demands make it hard to use in MSMEs with limited capacity. FitSM and the lightweight framework developed by Feversani et al. [21] move in the direction of simplification, yet they were designed mainly for SMEs in advanced economies with stronger digital infrastructure. In contrast, the present framework is aimed at micro and small enterprises in emerging settings and focuses on a few essential elements of service management: a minimum SLA, a simple way to log downtime, standardized customer communication, and a short weekly mini review. Together, these elements are intended to help MSMEs balance service value and cost efficiency under very tight resource conditions.

In practical terms, the framework breaks core ITSM ideas into four straightforward parts that MSMEs can plug into their day-to-day routines (Figure 4, Table 10). These parts are setting a modest service level target, keeping a simple record of downtime, using standard messages for customers, and holding a short weekly review meeting. Each one mirrors an important ITSM process such as incident handling, service monitoring, or continual improvement, but in a lighter version that does not depend on special tools or a dedicated IT team. In this way, the framework stays close to ITSM principles while remaining realistic for digital MSMEs that need to balance service value and cost efficiency with very limited resources.

ISI Journal of Information Systems and Informatics
Published By Asosiasi Doktor Sistem Informasi Indonesia

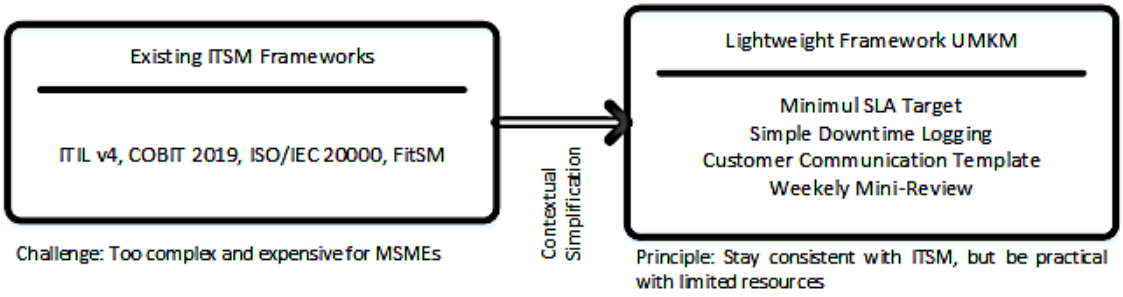

Figure 4. Contextual simplification: Mapping lightweight ITSM framework to existing formal standards

Table 10. Mapping of Lightweight Framework Components to Formal ITSM Processes and Practical Implementation

Lightweight Component	Formal ITSM Process	Practical Implementation for MSMEs
1. Minimum SLA Target	ITIL: Service Level Management COBIT: Managed Service Agreements	**Target:** Initial response within 1 hour (during working hours); Use WhatsApp or calendar reminders; No special software required; Adjust to business capacity
2. Simple Downtime Logging	ITIL: Incident Management ITIL: Monitoring & Event Management COBIT: Managed Continuity	**Note:** Record time, duration, and impact of disruption; Use free spreadsheets or notebooks; Focus on disruptions affecting customers; Identify patterns of recurring issues
3. Customer Communication Template	ITIL: Service Desk ISO 20000: Communication Management	**Template for:** Delay, disruption, status updates; Store in WhatsApp Business quick reply; Use auto-reply features in marketplaces; Maintain consistency and transparency
4. Weekly Mini-Review	ITIL: Continual Improvement COBIT: Managed Performance & Conformance ISO 20000: Review & Improvement	**Duration:** 15–30 minutes per week; Discuss 3–5 priority issues; Use downtime log data; Decide on small, immediate corrective actions

4. CONCLUSION

Digital MSMEs in this study show a very concrete, day to day balancing act between service value and cost efficiency. Non technology firms that depend on food delivery and fashion marketplaces push response times as low as possible, often at the cost of long working hours and the absence of formal records, while technology-based firms are more willing to accept moderate response times in order to keep at least some simple logging and solution checks in place. Across the four cases, owners rely heavily on free or freemium tools, have no dedicated IT staff, and treat incidents largely in a reactive way, yet still manage to maintain functioning digital services in a highly competitive environment. Based on these patterns, the paper proposes a lightweight ITSM framework and checklist that focuses on four essentials: setting minimum response targets, keeping simple downtime notes, using clear customer communication templates, and scheduling short periodic reviews. For managers, this framework offers a practical starting point that can be implemented without extra staff or costly software. For policy makers and support organisations, including MSME incubators, local business development centres, and digital marketing clinics, the checklist can be built into mentoring, training, and grant support schemes so that service management routines become part of everyday digitalisation support rather than an optional add on.

At the same time, the study has clear limitations. It is based on four digital MSMEs in Greater Jakarta, covers a limited range of sectors, and uses cross sectional qualitative data supported by descriptive SLA indicators and small satisfaction snapshots. The findings therefore cannot be generalised statistically and the effectiveness of the proposed framework has not yet been tested over time. Future research could follow MSMEs longitudinally as they adopt the checklist, examine whether the framework leads to measurable improvements in response times, downtime, or customer satisfaction, and explore how it needs to be adapted for other regions, sectors, or countries. Comparative studies that contrast Indonesian cases with MSMEs in different emerging and developed economies would also help refine which elements of lightweight ITSM are context specific and which are more widely transferable. Despite these boundaries, the study adds a grounded view of how digital MSMEs in Indonesia actually manage IT related services and offers a contextual framework that can support national efforts to

strengthen the digital economy while enriching ITSM research with evidence from underrepresented, resource constrained settings.

REFERENCES

[1] D. Prihandono, A. Pandu Wijaya, B. Wiratama, W. Prananta, and S. Widia, "Digital transformation to enhance Indonesian SME performance: Exploring the impact of market competition and digital strategy," *Probl. Perspect. Manag.*, vol. 22, no. 2, pp. 103–113, Apr. 2024, doi: 10.21511/ppm.22(2).2024.09.

[2] R. Ilyas, "Analysis of the Influence of Digitalization on UMKM Growth (Case Study of Bangka Belitung and Yogyakarta UMKM)," *Int. J. Environ. Sustain. Soc. Sci.*, vol. 4, no. 2, pp. 477–481, Mar. 2023, doi: 10.38142/ijesss.v4i2.462.

[3] A. D. Putro, E. R. Cahyadi, and E. Anggraini, "The Influence of Digital Transformation On The Performance of Culinary SMEs in Bogor District Using The Technology Organization Environment (TOE) Model," *Indones. J. Bus. Entrep.*, vol. 11, no. 2, p. 344, May 2025, doi: 10.17358/ijbe.11.2.344.

[4] A. Bourhlal and K. Alhaderi, "Digital Transformation and SME Performance: A Systematic Literature Review," in *Progress in Intelligent Computing and Secure Communication Systems*, vol. 1555, C. El Mokhi, H. Hachimi, N. Hmina, and A. Addaim, Eds., in Lecture Notes in Networks and Systems, vol. 1555. , Cham: Springer Nature Switzerland, 2025, pp. 345–357. doi: 10.1007/978-3-031-99997-0_31.

[5] S. Purnomo, N. Nurmalitasari, and N. Nurchim, "Digital transformation of MSMEs in Indonesia: A systematic literature review," *J. Manag. Digit. Bus.*, vol. 4, no. 2, pp. 301–312, Aug. 2024, doi: 10.53088/jmdb.v4i2.1121.

[6] C. Pollard and A. Cater-Steel, "Justifications, Strategies, and Critical Success Factors in Successful ITIL Implementations in U.S. and Australian Companies: An Exploratory Study," *Inf. Syst. Manag.*, vol. 26, no. 2, pp. 164–175, Apr. 2009, doi: 10.1080/10580530902797540.

[7] Y. Al-Ashmoery, H. Haider, A. Haider, N. Nasser, and M. Al-Sarem, "Impact of IT Service Management and ITIL Framework on the Businesses," in *2021 International Conference of Modern Trends in Information and Communication Technology Industry (MTICTI)*, Sana'a, Yemen: IEEE, Dec. 2021, pp. 1–5. doi: 10.1109/MTICTI53925.2021.9664763.

[8] J. Iden and T. R. Eikebrokk, "Implementing IT Service Management: A systematic literature review," *Int. J. Inf. Manag.*, vol. 33, no. 3, pp. 512–523, Jun. 2013, doi: 10.1016/j.ijinfomgt.2013.01.004.

[9] M. Marrone and L. M. Kolbe, "Impact of IT Service Management Frameworks on the IT Organization: An Empirical Study on Benefits, Challenges, and Processes," *Bus. Inf. Syst. Eng.*, vol. 3, no. 1, pp. 5–18, Feb. 2011, doi: 10.1007/s12599-010-0141-5.

[10] R. Huang, R. W. Zmud, and R. L. Price, "IT Governance Practices in Small and Medium-Sized Enterprises: Recommendations from an Empirical Study," in *Information Systems – Creativity and Innovation in Small and Medium-Sized Enterprises*, vol. 301, G. Dhillon, B. C. Stahl, and R. Baskerville, Eds., in IFIP Advances in Information and Communication Technology, vol. 301. , Berlin, Heidelberg: Springer Berlin Heidelberg, 2009, pp. 158–179. doi: 10.1007/978-3-642-02388-0_12.

[11] L. Raymond, F. Bergeron, A.-M. Croteau, and S. Uwizeyemungu, "Determinants and outcomes of IT governance in manufacturing SMEs: A strategic IT management perspective," *Int. J. Account. Inf. Syst.*, vol. 35, p. 100422, Dec. 2019, doi: 10.1016/j.accinf.2019.07.001.

[12] H. C. C. D. Silva, D. S. D. Silveira, J. S. Dornelas, and H. S. Ferreira, "Information Technology Governance in Small and Medium Enterprises - a Systematic Mapping," *J. Inf. Syst. Technol. Manag.*, vol. 17, Dec. 2019, doi: 10.4301/S1807-1775202017001.

[13] B. H. Hayadi, H. T. Sukmana, E. Shafiera, and J.-M. Kim, "The Development of ITSM Research in Indonesia: A Systematic Literature Review," *Int. J. Artif. Intell. Res.*, vol. 5, no. 2, Jun. 2021, doi: 10.29099/ijair.v5i2.233.

[14] M. Saeedikiya, S. Salunke, and M. Kowalkiewicz, "Toward a dynamic capability perspective of digital transformation in SMEs: A study of the mobility sector," *J. Clean. Prod.*, vol. 439, p. 140718, Feb. 2024, doi: 10.1016/j.jclepro.2024.140718.

[15] R. K. Yin, *Case study research and applications: Design and Methods*. SAGE Publications, 2017.

[16] L. A. Palinkas, S. M. Horwitz, C. A. Green, J. P. Wisdom, N. Duan, and K. Hoagwood, "Purposeful Sampling for Qualitative Data Collection and Analysis in Mixed Method Implementation Research," *Adm. Policy Ment. Health Ment. Health Serv. Res.*, vol. 42, no. 5, pp. 533–544, Sep. 2015, doi: 10.1007/s10488-013-0528-y.

[17] D. MacLean and R. Titah, "Implementation and impacts of IT Service Management in the IT function," *Int. J. Inf. Manag.*, vol. 70, p. 102628, Jun. 2023, doi: 10.1016/j.ijinfomgt.2023.102628.

ISI Journal of Information Systems and Informatics
Published By Asosiasi Doktor Sistem Informasi Indonesia

[18] A. K. Swain and V. R. Garza, "Key Factors in Achieving Service Level Agreements (SLA) for Information Technology (IT) Incident Resolution," *Inf. Syst. Front.*, vol. 25, no. 2, pp. 819–834, Apr. 2023, doi: 10.1007/s10796-022-10266-5.

[19] R. M. Ferraz, C. P. Da Veiga, C. R. P. Da Veiga, T. S. G. Furquim, and W. V. Da Silva, "After-Sales Attributes in E-Commerce: A Systematic Literature Review and Future Research Agenda," *J. Theor. Appl. Electron. Commer. Res.*, vol. 18, no. 1, pp. 475–500, Mar. 2023, doi: 10.3390/jtaer18010025.

[20] M. Nilashi *et al.*, "The nexus between quality of customer relationship management systems and customers' satisfaction: Evidence from online customers' reviews," *Heliyon*, vol. 9, no. 11, p. e21828, Nov. 2023, doi: 10.1016/j.heliyon.2023.e21828.

[21] D. P. Feversani, V. De Castro, E. Marcos, M. G. Piattini, and M. L. Martín-Peña, "Towards a lightweight framework for service management evaluation in SMEs," *Inf. Syst. E-Bus. Manag.*, vol. 21, no. 1, pp. 81–122, Mar. 2023, doi: 10.1007/s10257-022-00576-1.

[22] T. Yuwono, A. Suroso, and W. Novandari, "Information and communication technology in SMEs: a systematic literature review," *J. Innov. Entrep.*, vol. 13, no. 1, p. 31, May 2024, doi: 10.1186/s13731-024-00392-6.

[23] R. Mora-Esquivel and J. C. Leiva, "The role of digital service innovation strategy on SME performance: an international study," *J. Enterp. Inf. Manag.*, Apr. 2025, doi: 10.1108/JEIM-02-2024-0099.

[24] L. L. Moreira, S. S. Pinto, L. Costa, and N. Araújo, "Evaluating digital transformation in small and medium enterprises using the Alkire-Foster method," *Heliyon*, vol. 11, no. 2, p. e41838, Jan. 2025, doi: 10.1016/j.heliyon.2025.e41838.

[25] M. Marrone, F. Gacenga, A. Cater-Steel, and L. Kolbe, "IT Service Management: A Cross-national Study of ITIL Adoption," *Commun. Assoc. Inf. Syst.*, vol. 34, 2014, doi: 10.17705/1CAIS.03449.

[26] S. Moreira, H. S. Mamede, and A. Santos, "Business Process Automation in SMEs: A Systematic Literature Review," *IEEE Access*, vol. 12, pp. 75832–75864, 2024, doi: 10.1109/ACCESS.2024.3406548.