
Resource Management Implementation Analysis Based on the ITIL v4 Framework at PT Digital Inovasi Bisnis

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Keywords

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Abstract

This study analyzes the implementation of resource management based on the ITIL v4 framework at small and medium-scale software houses, with PT Digital Inovasi Bisnis as the case study. Small-scale software developers often face constraints in three main pillars of resource management, namely human resources, IT assets, and information and data. This study aims to analyze the condition of these three pillars and formulate strategic improvement recommendations to strengthen the company's resource management governance. The study uses a descriptive qualitative approach with a case study methodology; data were collected through a directed questionnaire administered to the company and analyzed using gap analysis. The results show that, in the human resources pillar, the company has a proportional allocation of team capacity and business-impact-based work prioritization, but does not yet have a formal SLA for incidents and has not monitored third-party vendor performance. In the IT assets pillar, some core processes are already automated, but disruption detection still relies on manual checking. In the information and data pillar, a structured checklist already guides cross-system impact analysis, but daily record-keeping still relies on an unstructured shared spreadsheet, and progress communication to stakeholders does not yet have a dedicated channel. This condition places the company at Maturity Level 2 (Explored). The study's conclusions affirm that the operational agility of a software house must be balanced with the simultaneous formalization of resource management so that service quality is maintained as project complexity increases. In practical terms, the development of SLAs and vendor KPIs, the development of automated alerting, and the migration to a digital record-keeping system are urgent steps to improve the company's resource management readiness. This study contributes to filling the literature gap regarding the integrated evaluation of the three pillars of ITIL v4 resource management in a dynamic local software house environment.

1. Background

The ITIL 4 framework positions resource management as an inseparable part of the four dimensions of service management, namely organizations and people, information and technology, partners and suppliers, and value streams and processes [1]. The first three dimensions directly intersect with the three main resource categories of an IT organization: staff and workforce, technology and infrastructure assets, and information and data repositories. Prior ITSM research indicates that the extent of ITIL process adoption correlates with organizational maturity, yet organizations with limited resources, such as small-to-medium-sized enterprises, still require a lightweight and selectively implemented approach to service management [2], [6]. This need underlies the present study: evaluating how a medium-scale software house manages its three resource pillars human resources, IT assets, and information and data through the lens of ITIL v4.

In practice, the management of these three pillars in small-to-medium-sized enterprises still leaves a number of gaps, spanning the human resources pillar (e.g., selective incident-management practices and inter-divisional coordination), the IT assets pillar (e.g., unstructured asset-management workflows and suboptimal facility maturity), and the information and data pillar (e.g., the absence of automated monitoring and limited transparency toward end users) [3], [4], [8], [9], [10], [11]. These patterns, detailed further in the Literature Review section, indicate that resource management barriers in small-to-medium-scale IT organizations are spread evenly across all three pillars, not concentrated in a single aspect alone.

This condition is reflected at PT Digital Inovasi Bisnis, a software development company focused on website and mobile platforms. With around ten developers, the company handles several projects simultaneously, one of which is the Management System for PT Sekar Laut Tbk. The limited team scale exposes the company to three resource challenges at once: scheduling and workload distribution among IT staff, managing the device and license lifecycle that supports project operations, and recording incident and service request data that forms the basis for operational decision-making. These three challenges are interrelated; a shortfall in one resource pillar has the potential to hinder the performance of the other pillars, ultimately having a direct impact on end-user satisfaction.

Previous studies have evaluated these three resource management pillars separately across various types of organizations, ranging from multinational corporations to Indonesian public-sector and higher-education institutions [5], [7], [12]. However, studies that specifically integrate the three pillars of ITIL v4 resource management human resources, IT assets, and information and data into a single unit of analysis within the context of a medium-scale software house remain relatively limited. This gap forms the basis for the literature review and further analysis in this study, with the aim of formulating strategic recommendations to strengthen staff scheduling and skill development, technology asset lifecycle governance, and operational data management structure at PT Digital Inovasi Bisnis.

2. Literature Review

IT Service Management (ITSM) is a set of organizational capabilities aimed at creating value for customers in the form of services [1]. ITIL 4 positions value co-creation as its central philosophy: value is no longer delivered unilaterally from provider to customer, but is instead generated through interdependent service relationships among all stakeholders. The Service Value System (SVS) serves as the main analytical framework in this study, with five core components: guiding principles, governance, the service value chain, management practices, and continual improvement [1].

The ITIL 4 four-dimensional service management model serves as the starting point for examining resource management in more specific detail. As a reference for interpreting the findings from the literature and field data in the following sections, this study uses the five-level maturity level scale as employed in the study by Herlinudinkhaji and Ramadhani on IT service governance at Universitas Ivet Semarang [3]. Table 1 summarizes these five levels and their characteristics.

Table 1. Maturity Level Scale

Level	Level Name	Characteristics
1	Initial	Service activities and processes have just begun and are not yet structured.
2	Explored	Service processes are beginning to be implemented, covering project planning and basic requirements management (<i>requirements management</i>), but remain reactive in nature.
3	Defined	Service processes are beginning to be defined, covering customer relationship management (<i>customer relationship management</i>) and periodic delivery of products/services.
4	Improved	Service processes are managed in a structured manner through project management and self-organizing teams (<i>self-organizing team</i>).
5	Sustained	Service processes are measurable and sustainable through project performance management (<i>project performance management</i>).

This scale serves as a reference when this study assesses the position of PT Digital Inovasi Bisnis on each resource management pillar in the Results and Discussion section.

Three of the four dimensions organizations and people, information and technology, and partners and suppliers correspond directly to the three resource pillars that are the focus of this study, namely human resources, IT assets, and information and data [1]. The seven ITIL 4 guiding principles, particularly start where you are, optimize and automate, and collaborate and promote visibility, serve as the lens for assessing the extent to which these three pillars are managed systematically within the organization studied.

Kumari synthesized case studies from IBM, Procter S Gamble, and the UK National Health Service, and found that the success of ITIL implementation depends on senior management support, staff training and certification, and the establishment of clear KPIs to measure service effectiveness [5]. At a smaller company scale, Lema et al., through a systematic literature review, a Delphi study, and a survey of certified ITIL experts, found that SME software companies adopt ITIL selectively due to limited resources and daily operational pressure, with incident management chosen as the first step because it delivers quick wins and high visibility of value to the business [4]. Wahyuni et al. found a similar pattern at an internet service provider in Purwokerto, where inter-divisional coordination remained a major obstacle, preventing the team from optimally utilizing its staff capacity to handle incidents and service requests [11].

Harjanto and Aji evaluated the implementation of IT Asset Management at the Horangi startup through interviews, observation, and document analysis, producing recommendations for a more structured asset management workflow and better documentation, in line with the Service Value Chain and Continual Improvement components of ITIL 4 [8]. Herlinudinkhaji and Ramadhani measured the maturity of information technology facilities at Universitas Ivet Semarang using a combination of the ITIL Maturity Model and the Agile Maturity Model based on a 34-process ITIL V4 questionnaire, and found that the institution was at Level 2

(Explored) for the ITIL Maturity Model, indicating that IT assets and service processes had started running but were not yet fully integrated [3].

Diyandi et al. evaluated IT service management at PT Puskomedia Indonesia Kreatif through observation, semi-structured interviews, and documentation review, and found that incident detection still relies on customer reports because there is no automated monitoring system yet, while digital documentation and change records remain unstructured [10]. Ambar Fisty et al. evaluated ITIL v4 at DPMPSTSP Kabupaten Banyumas through a questionnaire and gap analysis on the SIPANJIMAS and SIGAIB public service applications, using CMMI-based capability level measurement to identify gaps in service data management [12]. From the end-user perspective, Suratman and Kawet evaluated service quality on the Lazada application using a Likert questionnaire analyzed with a weighted-average approach, and found that information transparency during service disruptions is one of the weak points felt by users, although service reliability and response speed were rated fairly good [9]. Suryanto, at Universitas Islam Negeri Raden Fatah Palembang, found an IT service maturity level of Level 4 (Managed), with service processes that are defined and monitored through clear performance indicators, indicating that the management of service performance information is already running systematically at that institution [7].

At a more macro level, Bednarčíková compared ITIL with other ITSM frameworks such as COBIT, ISO/IEC 20000, and TOGAF, and concluded that ITIL remains the most dominant framework used in practice, noting that small-to-medium-sized enterprises require a lightweight yet effective resource management mechanism [2]. Marrone and Kolbe, through a survey of 491 ITIL practitioners, found a positive correlation between the number of ITIL processes implemented and an organization's maturity level, although the perceived benefits experienced *diminishing returns* at high maturity levels, indicating that organizational resource constraints are one of the limiting factors on the scope of adoption [6].

Overall, previous studies show that the three resource management pillars human resources, IT assets, and information and data have each been examined separately across various types of organizations [3][4][5][8][9][10][11][12]. However, studies that integrate all three into a single unit of analysis within the context of a medium-scale software development company (software house) remain limited. Most previous studies have focused on a single resource pillar, such as IT assets in Harjanto and Aji [8] or information and data in Diyandi et al. [10], without placing all three within an interconnected evaluation framework. This gap forms the basis for the literature review and further analysis conducted in this study.

3. Research Method

This study uses a descriptive qualitative approach consistent with the underlying philosophy of ITIL v4, namely understanding the real condition of an organization thoroughly before providing improvement recommendations. All stages in this flowchart reflect the ITIL v4 guiding principles that emphasize the importance of starting from the current state (start where you are) and focusing on value (focus on value).

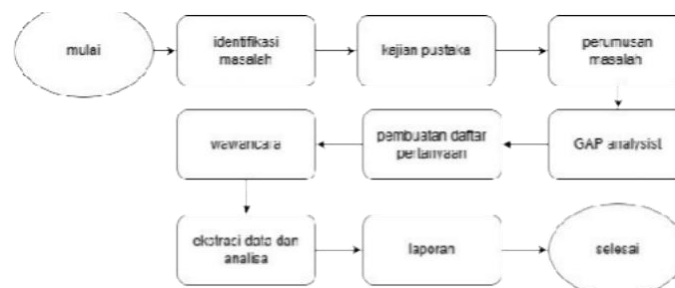


Fig. 1 Research Method Flowchart

This study begins with problem identification and a literature review to understand the condition of IT service management within the organization studied. This stage is consistent with the ITIL v4 principle of start where you are, in which the researcher first maps existing problems such as delays in incident handling, weak documentation, and mismatches between services and user needs. The results of the literature review are then used to formulate a focused problem statement, particularly to explore the extent to which the seven ITIL v4 guiding principles have been applied in the organization's daily operations.

The next stage is GAP analysis, comparing the organization's actual condition with ITIL v4 best-practice standards. The gaps identified (such as the absence of a formal SLA, minimal real-time monitoring, and a lack of process automation) then form the basis for developing the interview question list. The interview process is conducted in depth with stakeholders directly involved in IT service management, reflecting the collaborate and promote visibility principle in ITIL v4.

All interview data then enters the data extraction and analysis stage, in which the researcher identifies patterns, assesses the maturity level of ITIL v4 implementation, and relates the findings to relevant service management practices. The results of this analysis are presented in a report containing findings and strategic recommendations, with the ultimate goal of helping the organization strengthen IT governance and foster a sustainable culture of continual improvement in line with the core values of the ITIL v4 framework.

4. Research Results and Discussion

4.1 Results

The actual condition of information technology service management at PT Digital Inovasi Bisnis was analyzed based on questionnaire responses from the company's Project Manager, who has three years of work experience. This data collection captures a managerial snapshot of human resources, IT assets, and information and data; as a single-respondent, managerial-level perspective, it does not capture variation in experience across individual team members, which is acknowledged as a scope limitation of this study. The following table summarizes the empirical findings for each pillar within the company.

Table 2. Actual IT Service Operational Profile of PT Digital Inovasi Bisnis

Pillar	Evaluation Dimension	Actual Condition	Score
Human Resources	Incident Handling	Workflow and responsibilities are clear; no formal time target (SLA) yet.	2
	Work Prioritization	Prioritization (bugs, features, incidents) is based on explicit business and user impact criteria.	3
	Capacity Adequacy	Team allocation and role distribution are proportional to the simultaneous project workload.	3
	Third-Party Governance	Basic contracts or subscriptions are in place; vendor performance is not yet monitored.	2
	Target Achievement	Completion targets are generally met, with occasional delays.	3
IT Assets	Disruption Detection	Relies on scheduled periodic checks by the internal team; no automated alerting yet.	2
	Change Management	New system implementation proceeds gradually, with periodic response testing before full release.	3
	Process Automation	Some core operational processes are already automated.	3
Information and Data	Activity Documentation	Record-keeping is centralized on a shared spreadsheet; data structure is not yet standardized.	2

Pillar	Evaluation Dimension	Actual Condition	Score
	Stakeholder Visibility	Progress updates are communicated periodically without a dedicated communication channel.	2
	Impact Analysis	Cross-system and cross-team impact checks are guided by a structured checklist.	3
	Quality Commitment	An agreement document with the client is available but does not yet set specific quantitative targets.	2
General	Standardization Readiness	Initiatives to adopt standardized management practices have partially begun.	2

Based on Table 2, in terms of the Human Resources management pillar, PT Digital Inovasi Bisnis's team structure shows relatively good maturity in capacity allocation and work prioritization. Proportional role distribution relative to the simultaneous project workload means task completion targets are generally met, with only occasional delays. Business- and user-impact criteria are already explicit as the basis for the team's work prioritization. Gaps appear at two points: incident handling proceeds without a formal time target, and third-party vendor performance is not yet monitored despite an existing contractual relationship. Some core operational processes are also already automated, and system changes are implemented gradually with response testing before full release. System disruption detection still relies on periodic checks by the internal team and company management, rather than an automated alerting mechanism.

Recording of incident, request, and system change activities relies on a shared spreadsheet or informal announcements through *WhatsApp Group* without a standardized data structure, making the tracing of historical data slow and less responsive. A structured checklist already guides cross-system impact analysis, but the agreement document with the client does not yet set specific quantitative targets, and progress updates to stakeholders still run reasonably well despite the absence of a dedicated communication channel.

To complement the picture presented in Table 2, the condition of each resource management pillar was converted into a 1–5 score following the maturity level scale in the Maturity Level Scale table in the Literature Review section, then averaged per domain. Table 3 shows the results of this measurement.

Table 3. Maturity Level Measurement per Domain

Domain	Average Score	Level
Human Resources	2.60	Level 2 (Explored)
IT Assets	2.67	Level 2 (Explored)
Information and Data	2.25	Level 2 (Explored)
Overall Average	2.46	Level 2 (Explored)

The largest gap is found in the information and data pillar, followed by human resources and IT assets. This order shows that limitations in data structure and communication are the most urgent barriers to close compared to the other two pillars.

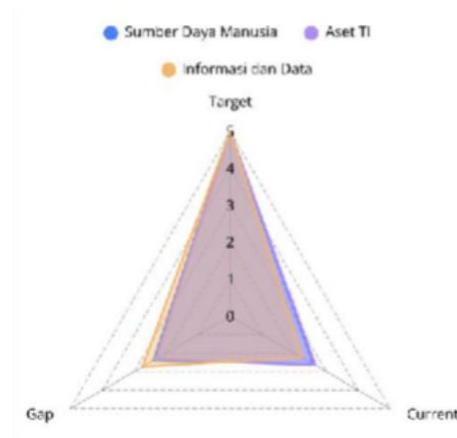


Fig. 2 Gap Analysis Chart

The radar chart in Figure 2 shows a relatively even pattern of gaps across the three pillars, with the actual score line lying well below the ideal score line on all axes. IT assets have the smallest distance from the ideal condition with a score of 2.67, supported by the automation of some core processes and the gradual implementation of system changes. Human resources rank just below it with a score of 2.60, held back by the absence of a formal SLA and third-party vendor performance monitoring. Information and data record the lowest score, 2.25, due to operational record-keeping that still relies on an unstructured shared spreadsheet and the absence of a dedicated communication channel for stakeholders. The narrowing of the radar shape on the information and data axis confirms that this pillar is the top priority for improvement, consistent with the largest gap recorded in Table 3. Overall, the company's readiness is at a transitional stage. Standardization initiatives are already underway across all three pillars, but have not yet been integrated into a single, cohesive service management system.

4.2 Discussion

In the human resources pillar, the findings at PT Digital Inovasi Bisnis are consistent with the pattern identified by Lema et al. in SME software companies, namely that ITIL adoption proceeds selectively due to resource constraints, with incident management as the most logical entry point because it delivers quick wins and high visibility to the business [4]. PT Digital Inovasi Bisnis's incident-handling structure already has a clear workflow and clear responsibilities, requiring only the addition of a measurable SLA to complete it. The absence of third-party vendor performance monitoring is also consistent with the findings of Wahyuni et al., which identified cross-party coordination as one of the weak points in human resource governance at small-to-medium-scale IT service providers [11]. Kumari emphasizes staff training and clear KPIs as determining factors for the success of ITIL implementation [5]. PT Digital Inovasi Bisnis already has explicit work prioritization criteria but has not yet translated them into formal KPIs to measure the performance of either individuals or vendors.

In the IT assets pillar, the condition of partial automation and gradual change management at PT Digital Inovasi Bisnis reflects an early stage of what Harjanto and Aji recommended in the Horangi case study, namely a structured asset management workflow as a prerequisite for Service Value Chain effectiveness [8]. Reliance on manual periodic checks for disruption detection places the company in a position comparable to Universitas

Ivet Semarang in the findings of Herlinudinkhaji and Ramadhani, namely Level 2 (Explored), which indicates that processes are running but not yet fully integrated into an interconnected system [3].

In the information and data pillar, PT Digital Inovasi Bisnis's reliance on an unstructured shared spreadsheet is almost identical to the condition of PT Puskomedia Indonesia Kreatif in the findings of Diyandi et al., where digital documentation is not yet optimal and incident detection still relies on manual reports because there is no automated monitoring system [10]. A similar pattern appears in the evaluation by Ambar Fisty et al. of DPMPTSP Kabupaten Banyumas, which identified gaps in service data management through CMMI-based capability level measurement [12]. The lack of a dedicated communication channel for updating stakeholders on progress is also consistent with the findings of Suratman and Kawet on the Lazada application. Information transparency during service disruptions is a weak point directly felt by users, even though service reliability and response speed were rated fairly good [9].

These three pillars place PT Digital Inovasi Bisnis at the characteristics of Maturity Level 2 (Explored), where an operational foundation has been established in each pillar, but cross-pillar formalization has not yet been unified. Human resources excel in capacity allocation but are weak in SLAs and vendor monitoring. IT assets are already partially automated, but disruption detection remains manual. Information and data are already guided by a checklist for impact analysis, but record-keeping remains unstructured. Relevant tactical steps for these three pillars include developing a formal SLA and vendor KPIs for the human resources pillar, developing automated alerting for the IT assets pillar, and migrating the database from spreadsheets to a digital service management system for the information and data pillar. These three steps are consistent with the guiding principles of progress iteratively with feedback and optimize and automate in ITIL v4, and enable the company to build process standardization gradually without disrupting the rhythm of simultaneously running projects.

5. Conclusions

This study evaluates and maps the implementation of ITIL v4 resource management at PT Digital Inovasi Bisnis through three pillars: human resources, IT assets, and information and data. In the human resources pillar, the company shows a strong foundation in team capacity allocation and business-impact-based work prioritization, but does not yet have a formal SLA for incident handling and has not regularly monitored third-party vendor performance. In the IT assets pillar, some core processes already run automatically and change management is already conducted gradually, but system disruption detection still relies on manual checking without automated alerting. In the information and data pillar, a structured checklist already guides cross-system impact analysis, while daily operational activity record-keeping still relies on an unstructured shared spreadsheet, and progress communication to stakeholders does not yet have a dedicated channel.

These three pillars place PT Digital Inovasi Bisnis at the characteristics of Maturity Level 2 (Explored). An operational foundation has been established in each pillar, but cross-pillar formalization has not yet been unified into a single, cohesive resource management system. Scientifically, this study provides strong justification that the operational agility of a medium-scale software house must be balanced with the simultaneous formalization of all three resource management pillars, not just one of them, so that service quality is maintained as project complexity increases. The practical implications of this study include three main steps. In the human resources pillar, the company needs to develop a measurable incident-handling SLA and a mechanism for monitoring third-party vendor performance. In the IT assets pillar, the company needs to develop an automated alerting system to accelerate service disruption detection. In the information and data pillar, the company needs to migrate from spreadsheet-based record-keeping to a digital service management system that supports automated record-keeping and clear progress communication channels for stakeholders.

This study's tangible contribution to the development of knowledge is filling the literature gap regarding the integrated evaluation of the three ITIL v4 resource management pillars within the dynamic organizational structure of a local software developer. As a recommendation, future research could be directed toward a longterm analysis of the effectiveness of implementing automated alerting and real-time monitoring systems in the IT assets pillar, an evaluation of the impact of formal SLAs and vendor KPIs on human resource performance,

and a measurement of the impact of digital record-keeping system migration on the quality of information and data management in similar software house ecosystems.

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