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Contextual ITSM Adoption Across Educational Levels: A University and a Secondary School in Jakarta

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Abstract

This research investigates contextual ITSM adaptation across educational levels through a comparative case study of a university and secondary school in Jakarta. Using qualitative methodology with interviews, observations, and document analysis, we examined implementation patterns at University X (5,000 students, 12 IT staff) and SMA Y (450 students, 2 IT staff). Results show universities achieved semi-formal ITSM maturity levels 2-3 while secondary schools operated at pragmatic levels 1-2, reflecting resource disparities where universities allocated 4% versus 1.5% of operational budgets to IT services. Key findings reveal persistent perception gaps where academic staff predominantly view IT as "repair function" rather than strategic service, with most service requests still submitted through informal channels instead of standardized procedures. Three primary implementation challenges emerged: resource limitations, structural complexity, and cultural resistance. Based on these findings, we propose a phased transformation model (Stabilization, Standardization, Development) accommodating "layered maturity" - allowing institutions to operate at different maturity levels across ITSM domains rather than uniform advancement. This research contributes a contextual ITSM implementation framework bridging industry standards with educational realities, providing practical guidance for institutions balancing digital transformation aspirations with resource constraints, particularly relevant for developing countries facing similar educational technology challenges.

Keywords: ITSM, Educational Institutions, Digital Maturity Model, IT Service Transformation, Contextual ITSM Implementation

1. INTRODUCTION

Information Technology Service Management (ITSM) represents a systematic approach to designing, delivering, managing, and improving IT services within organizations. Originally developed for commercial enterprises, ITSM encompasses frameworks like ITIL that focus on aligning IT services with business needs through structured processes, service catalogs, and performance

measurement. In educational contexts, ITSM becomes particularly crucial as institutions increasingly depend on technology for academic delivery, administrative operations, and research activities.

Digital transformation has accelerated IT adoption across educational institutions globally. Recent studies highlight this trend: Martin and Xie [1] identified seven key areas for enhancing digital learning in higher education post-pandemic, while Serrano et al. [2] demonstrated that effective ITSM implementation significantly improves IT service availability. Antonopoulou et al. [3] further showed that universities with mature digital transformation implementations exhibit higher operational resilience during extreme uncertainty. However, in Indonesia, significant challenges persist as Redjeki et al. [4] and Gemiharto and Priyadarshani [5] identified substantial digital infrastructure gaps and digital divide challenges in online learning processes during the pandemic.

Current ITSM research predominantly focuses on commercial implementations. While Bianchi and Sousa [6] emphasized adapting IT governance mechanisms for higher education's unique needs, and Iden and Eikebrokk [7] highlighted challenges in adapting international ITSM standards across varying organizational contexts, comprehensive studies examining ITSM adaptation across different educational levels remain limited. The pandemic dramatically exposed technology update urgency, as Bygstad et al. [8] found that schools underwent major digital changes when switching to new teaching methods, particularly in creating online learning environments.

The theoretical contribution addresses the gap between commercially-oriented ITSM literature and educational realities. As Martínez-Caro et al. [9] emphasized, digital technology adoption effectiveness depends heavily on organizational culture adaptation. This study extends that proposition by examining how contextual factors at different educational levels influence ITSM practice adaptation. The research builds on digital transformation maturity models proposed by Ifenthaler and Egloffstein [10], while considering insights from Khouja et al. [11] and Bianchi et al. [12] who demonstrated that educational institutions require tailored IT management approaches acknowledging their unique circumstances and international variations.

This research addresses three primary objectives: First, to analyze how ITSM principles are contextually adapted across university and secondary school levels in Jakarta. Second, to identify implementation challenges and maturity patterns specific to educational institutions with varying resource capabilities. Third, to develop a practical ITSM transformation model accommodating educational institutions' unique characteristics and constraints.

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The study focuses on adaptation patterns rather than direct performance comparisons between educational levels, recognizing fundamental contextual differences. Through detailed examination of one university and one secondary school, we investigate how institutions with different maturity levels, resources, and organizational structures develop distinct yet effective ITSM approaches.

This research provides both theoretical and practical contributions. Theoretically, it develops a conceptual framework for educational ITSM adaptation, bridging industry standards with implementation realities in Indonesian educational institutions. Practically, it offers a phased transformation model enabling knowledge transfer from mature to developing institutions, supporting policy makers in developing flexible ITSM regulations and providing IT practitioners with contextually relevant implementation strategies for institutions balancing digitalization aspirations with resource limitations.

2. METHODS

2.1. Contextualization and Adaptation of ITSM Principles in Educational Institutions

ITSM (Information Technology Service Management) wasn't created with schools in mind. These IT service management practices came from the business world but need significant changes to work in educational settings. Schools and universities operate differently than companies - they have complicated structures with many different groups to serve: students, teachers, office staff, and researchers. They also face tight budgets that get set once a year, making it hard to be flexible. On top of this, schools need IT services for both teaching and administrative purposes. All these differences mean that standard business ITSM approaches often miss the mark unless they're thoughtfully adapted to education's unique environment.

ITSM implementation in educational institutions needs to consider the special challenges faced by the education sector. As pointed out by Redjeki et al. [4] in their study on online learning during the COVID-19 pandemic in Indonesia, educational institutions face various technological challenges that require adaptive IT service management solutions. The study identified issues such as limited internet access, lack of adequate devices, and lack of digital skills as the main barriers to online learning implementation. Similarly, Gemiharto and Priyadarshani [5] highlighted the challenges of the digital divide in online learning processes during the COVID-19 pandemic in Indonesia, indicating the need for an ITSM approach that is sensitive to disparities in technology access.

ITSM implementation in educational institutions must also be aligned with the organization's digital maturity level. Ifenthaler and Egloffstein [10] developed a digital transformation maturity model that can assist educational institutions in identifying their current digital capabilities and areas for improvement. Furthermore, Egloffstein and Ifenthaler [13] emphasize the importance of tracking digital transformation in educational organizations as a basis for determining appropriate ITSM implementation strategies. This digital maturity model can help educational institutions to implement ITSM processes in stages according to the level of organizational readiness.

ITSM adaptation in an educational context also needs to consider organizational cultural factors. Martínez-Caro et al. [9] found that digital organizational culture plays an important role in the relationship between digital technology and company performance. This finding suggests that successful ITSM implementation depends not only on technical aspects, but also on a supportive organizational culture. In line with this, Aasi et al. [14] identified five cultural focus areas in IT governance, indicating the importance of cultural considerations in ITSM implementation. Cooper [15] also emphasized the impact of cultural inertia on IT implementation, which is an important factor in the adaptation of ITSM in educational contexts.

National cultural factors also influence technology acceptance and ITSM implementation. Jan et al. [16] in their meta-analysis of Hofstede's cultural dimensions in technology acceptance models, showed that national cultural values such as individualism-collectivism, power distance, and uncertainty avoidance influence how individuals and organizations adopt new technologies. This indicates the need for ITSM adaptations that consider the local cultural context, especially in developing countries such as Indonesia.

In the Indonesian context, ITSM implementation in higher education institutions faces specific challenges. Malik [17] highlighted the importance of digital leadership in fostering a digital culture in Indonesian higher education, which impacts lecturer performance and organizational citizenship behavior. Meanwhile, Huda et al. [18] explored the adoption and implementation of self-development IT applications in public Islamic higher education institutions in Indonesia, which showed the importance of contextual considerations in ITSM implementation.

The ITIL (Information Technology Infrastructure Library) framework, which is one of the most widely used ITSM frameworks, also requires adaptation in the educational context. Cook et al. [19] identified advantages, challenges and success factors in ITIL implementation, which can be an important consideration for educational institutions that want to adopt this framework. In Indonesia, Herlinudinkhaji and Ramadhani [20] examined the application of ITIL v4 for

service estimation in the governance of information technology services, demonstrating efforts to adapt ITIL in the local context.

ITSM maturity models can also assist educational institutions in planning and evaluating ITSM implementations. Machado et al. [21] developed a maturity model for IT service management applied to small and medium enterprises, which can be adapted for educational contexts. Ladu et al. [22] also examined technology adoption and digital maturity in the conformity assessment industry, which provided insights into how to assess an organization's digital maturity.

Serrano et al. [2] in their literature review on ITSM identified challenges, benefits, opportunities, and implementation practices that can guide educational institutions in adapting ITSM. Meanwhile, Ramakrishnan et al. [23] discuss overcoming the knowledge gap in ITSM practices with the "Learning Digital Commons", which provides a new approach to sharing ITSM knowledge and best practices in educational environments.

Thus, contextualization and adaptation of ITSM in educational institutions is not simply a mechanical process of implementing IT practices, but a transformative process that considers the complexity and uniqueness of the educational environment. Successful adaptation not only takes into account differences in structure and process, but also understands the nuances of an educational institution's specific culture, values and goals. Through an adaptive approach that considers factors such as organizational culture, digital maturity level, and local context, ITSM principles can be applied more effectively to support educational institutions' core mission of providing high-quality learning and research experiences.

2.2. ITSM Maturity and Transformation Model: A Phased Development Framework for Educational Institutions

The concept of maturity in information technology service management refers to the level of development and sophistication of IT governance processes, capabilities, and structures within an organization. Maturity models provide a framework for assessing the current state, planning improvements, and measuring an organization's progress in implementing ITSM practices. For educational institutions with varying levels of complexity and resources, an understanding of these maturity stages is critical to planning a realistic and sustainable ITSM transformation.

Commonly used ITSM maturity models such as the ITIL Maturity Model and the COBIT Maturity Model basically divide an organization's maturity level in

managing IT services into several stages, ranging from basic level to optimization level. [24], [25], [26], [27]Research on ITSM adoption, identified five maturity levels that are relevant for the educational context: Initial (initial state with no formal processes), Managed (basic processes are in place but not yet consistent), Defined (processes are documented and standardized), Measured (processes are quantitatively measured and controlled), and Optimized (focus on continuous improvement). [24], [25], [26], [27]

While this maturity model provides a useful framework, its direct application in educational institutions faces several limitations. Traditional ITSM maturity models are developed based on the experience of large organizations with abundant resources, so they do not consider the educational context with limited budgets and human resources. These models also tend to focus on technical and procedural aspects, but pay less attention to cultural and social aspects that are very important in the educational environment. There is a tendency in traditional models to see the highest level of maturity as a universal goal, whereas not all educational institutions require the same level of formalization and complexity in their ITSM practices. [28], [29], [30]

Researchers emphasized the importance of a "small wins" approach to ITSM transformation in Indonesian secondary schools. Rather than attempting to implement a full ITSM framework, this approach starts with small projects that have a real and immediate impact, such as improving incident handling processes. These early successes then built momentum and support for broader ITSM initiatives. This approach is particularly relevant for educational institutions with limited resources and high resistance to change. [31]

Martinez-Caro et al. [32] noticed that colleges and high schools need completely different approaches to IT service management. Universities, with their bigger budgets and more complex organizations, can typically implement more sophisticated systems. High schools, on the other hand, need simpler, more practical solutions that don't require specialized staff or big investments.

This understanding of ITSM maturity models and transformation pathways provides an important conceptual framework for assessing current conditions, planning realistic improvements, and facilitating knowledge transfer between educational institutions with different maturity levels. With a transformation approach that is gradual, contextual, and centered on educational needs, ITSM implementation can become a driver of effectiveness and innovation in digital education service delivery, rather than an additional administrative burden.

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2.3. Research Steps

The researchers chose to use interviews and observations rather than surveys or statistics for this study. They wanted to see how schools actually adapt IT management in real-world situations. This qualitative approach lets them capture the messiness of how people and technology interact in educational settings. As Garcia & Quek [33] noted, qualitative methods are particularly good at revealing the complex social aspects of technology use in natural settings. Whitman and Woszczynski [34] made a similar point, explaining that this approach helps researchers understand the nuanced ways people interact with technology systems. By watching these interactions unfold and talking with the people involved, the researchers could gain insights that numbers alone would miss.

The research design used is a comparative case study, which allows researchers to analyze the differences and similarities of ITSM implementation in different contexts and identify patterns and influential contextual factors. Benbasat et al. [35] state that the case study research strategy is well suited to information systems research, especially when the phenomenon under study cannot be separated from its context and when the research focus is on contemporary phenomena. The research stages in diagrammatic form are shown in Figure 1.

The research utilized purposive sampling to select educational institutions providing rich, in-depth information about ITSM adaptation phenomena. Two medium-scale private educational institutions in Jakarta were selected as representative cases: University X and SMA Y.

For University X, inclusion criteria included: (1) having a structured IT unit or department, (2) implementing at least some ITSM elements, and (3) demonstrating developing ITSM maturity levels. University X is a private university with approximately 5,000 active students across 8 faculties, having implemented formal ITSM practices over the past 3 years, though not yet comprehensively.

For SMA Y, criteria encompassed: (1) using information technology to support academic and administrative processes, (2) having at least one staff responsible for IT services, and (3) being in early stages of IT implementation. SMA Y is a private high school with about 450 students, currently developing basic IT infrastructure and standardizing IT services.

Both institutions represent typical private medium-sized educational institutions in Jakarta, facing similar challenges of having real IT needs while operating with limited resources and human capacity. This selection approach aligns with Benbasat et al. [35] recommendations for choosing representative cases for the studied phenomenon.

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The research team gathered information in three different ways. First, they interviewed key people at each school – from IT heads and technical staff to regular users like teachers and office workers, and even top administrators like vice rectors or principals. These weren't rigid interviews with fixed questions but conversations guided by the researchers. They tailored their questions to each person's role, asking IT managers different things than they would ask teachers. The questions focused on people's experiences with the technology systems, problems they'd encountered, how they'd adapted, and what specific factors at their institution affected how IT services worked. Beyond these interviews, the researchers also observed how things actually operated and reviewed school documents to get a complete picture.

The research team spent time on-site watching how IT services actually worked day-to-day. They observed IT management processes, how staff and users interacted, and what tools were being used. What they found was pretty revealing – both institutions were only partially implementing proper IT service management in their daily operations. At University X, they had some systems in place like incident management (handling problems when they occur), but other important processes like managing changes to systems or keeping track of configurations were either makeshift or completely missing. The situation at SMA Y High School was even more informal – IT service management mostly depended on individual staff members taking initiative rather than following any standard procedures. The researchers took detailed notes during these visits, clearly showing the gap between how things should work according to best practices and how they actually worked in real life. This mismatch between theory and practice was one of their most important findings.

The team also tried to gather IT service management documents from both schools, but found very little formal paperwork. University X had just some basic procedures written down for handling problems and requests, plus a few poorly organized incident reports. The high school (SMA Y) had practically nothing on paper – just the IT coordinator's personal notes and verbal instructions. This lack of documentation itself speaks volumes about how informal and underdeveloped IT man–gement was at both place'. Despite this challenge, the researchers Managed to collect other useful materials like support tickets, emails about IT problems, and notes from IT meetings that showed how things actually worked day-to-day. By combining interviews, observations, and these limited documents, the researchers could cross-check information from different sources. This approach, called triangulation, helped make their findings more reliable despite the sparse documentation.

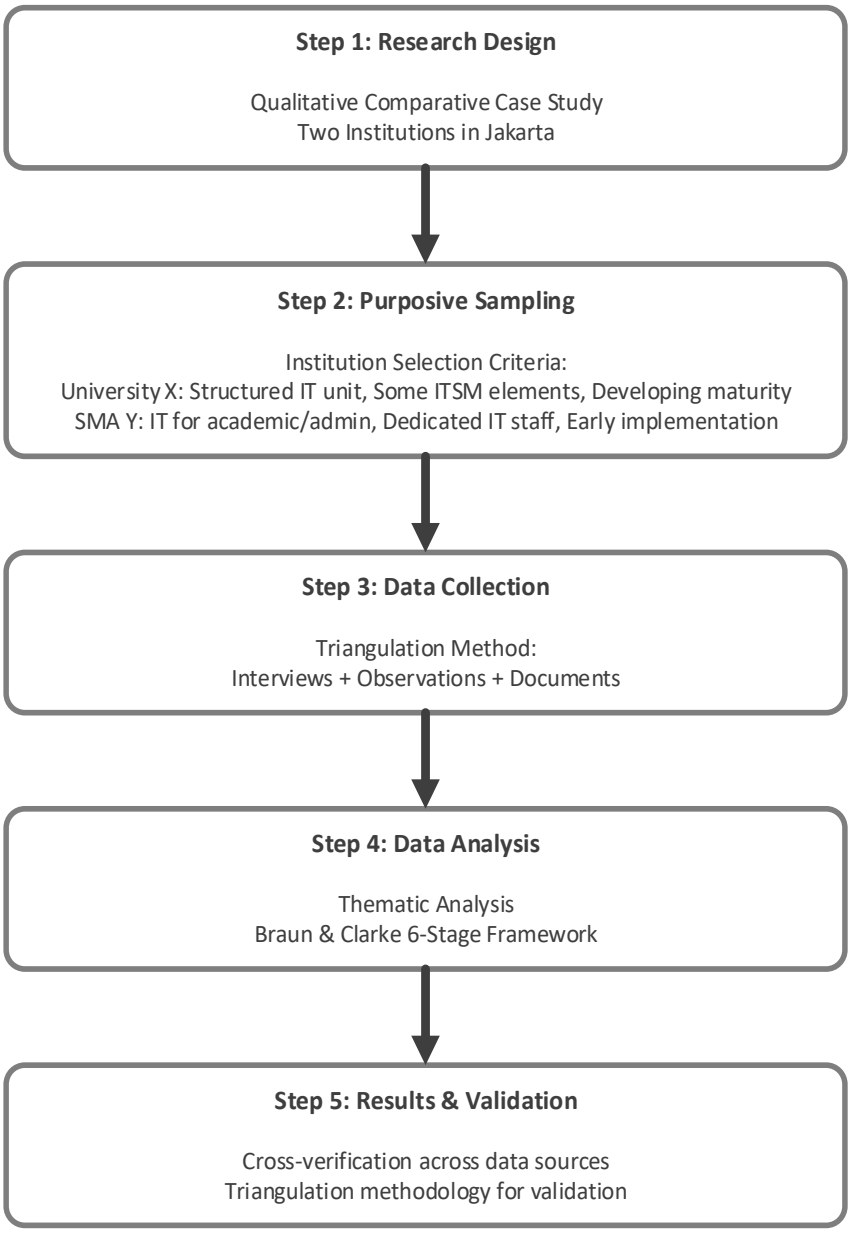

Figure 1. Research stages

Document collection efforts at both institutions revealed significant limitations in formal IT service management documentation. University X provided basic written procedures for incident handling and service requests, along with several poorly organized incident reports. SMA Y presented an even more constrained

documentation environment, with only the IT coordinator's personal notes and informal verbal procedures available for review. This documentation scarcity itself provided important insights into the informal and underdeveloped nature of IT management practices at both institutions. Nevertheless, researchers were able to gather alternative materials that proved valuable for understanding actual operational practices. These included support tickets, email correspondence regarding IT issues, and meeting notes from IT-related discussions. The integration of interview data, observational findings, and available documentation enabled systematic cross-verification of information across multiple sources. This triangulation methodology enhanced the reliability and validity of research findings, compensating for the limited availability of formal documentation while providing comprehensive understanding of actual ITSM implementation practices in both educational settings.

Data saturation monitoring was conducted continuously throughout the interview process. After each interview, transcripts were reviewed to identify emerging themes and assess whether new information was being generated. Saturation was considered achieved when three consecutive interviews within the same stakeholder category produced no new themes, patterns, or significant insights related to ITSM adaptation. This typically occurred after 8-10 participants per institution, ensuring comprehensive coverage across all stakeholder categories.

The collected data were analyzed using the thematic analysis method following the six stages proposed by Braun and Clarke [36]. First, we conducted data familiarization through repeated readings of all transcripts and documentation. Second, manual coding of segments of data relevant to the research questions was conducted. Third, similar codes were grouped to identify potential themes. Fourth, the themes were tested for coherence, both internally within a theme and externally between themes. Fifth, the themes that passed the test were defined and named appropriately. Finally, the results of the analysis are compiled in the form of a report that integrates the findings with relevant literature.

Luo [37] demonstrated in his educational technology research that qualitative methodologies provide essential insights into technology operations within intricate institutional environments. Our application of thematic analysis proved particularly appropriate for this study, as it allowed systematic identification of significant patterns while maintaining strong connections to participants' actual experiences. This analytical framework helped illuminate the relationship between institutional characteristics and ITSM adaptation strategies, revealing how different educational levels develop distinct approaches to technology service management based on their specific organizational contexts and operational constraints.

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3. RESULTS AND DISCUSSION

3.1. Profile and Characteristics of the Educational Institutions Researched

This study sampled two educational institutions in Jakarta that have different but representative characteristics for their respective levels. University X is a medium-sized private university with around 5,000 students spread across 8 faculties. The university has been established for 25 years and has a main focus on economics, engineering, and health science. Meanwhile, SMA Y is a private secondary school with around 450 students that has been operating for 15 years and has an A accreditation from the National Accreditation Board.

In terms of IT infrastructure, University X has a more formalized management structure with a Directorate of Information Technology consisting of 12 permanent staff and led by an IT Director who reports directly to the Vice Chancellor for Administration. Their IT infrastructure includes an integrated academic information system, learning management system, institutional email, digital library system, and several operational support systems such as financial and human resource management. The university also has its own data center with 8 physical servers, redundant internet connections, and around 350 computers spread across laboratories and administrative workspaces.

Unlike the university, SMA Y has a simpler IT management structure with only 2 permanent IT staff led by an IT Coordinator who reports to the Vice Principal for Infrastructure. Their infrastructure includes a simple academic information system (some of which are still semi-manual), a computer laboratory with 40 computer units, and around 25 computers for administrative staff. Internet connectivity relies on a single provider with limited bandwidth and no adequate redundancy system. (Table 1)

Table 1. Comparison of Institutional Profiles

Aspect	University X	High School Y
Number of Students	±5,000 students	±450 students
IT Staff	12 full-time staff	2 full-time staff
IT Organizational Structure	IT Directorate with 4 subdivisions (Infrastructure, System Development, Support, Security)	IT Coordinator with support staff
Annual IT Budget	±4% of total operational budget	±1.5% of total operational budget
Server Infrastructure	8 physical servers, virtualization, managed data center	1 physical server for administrative purposes

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Aspect	University X	High School Y
Main Information Systems	Integrated Academic IS, LMS, Digital Library, Institutional Email, HR IS, Financial IS	Basic Academic IS, School Website, Google Workspace Email
IT Policies	Formal IT policy documents and SOPs	Informal policies, minimal documentation
Main IT Services	Online learning, academic administration, digital library, email, research repository	Computer laboratory, school website, grade administration

Looking at IT issues at both schools reveals major differences in what they're dealing with. University X struggles with several complex challenges: getting various systems to work together, protecting sensitive academic and research data, expanding their infrastructure to handle online and in-person learning, and meeting the different tech needs across departments. What they really need are dependable digital learning platforms, technology that supports research activities, and administrative systems where everything connects properly instead of being scattered across different programs.

SMA Y faces more fundamental challenges such as limited infrastructure, unstable internet connectivity, lack of IT staff with specific competencies, and difficulty integrating technology in learning due to the limited digital skills of some teachers. Their main needs include a more reliable academic information system, support for basic digital learning, and automation of administrative processes.

Table 2 presents a comparison of IT challenges and needs in the two institutions based on the core ITSM categories adapted from the ITIL (Information Technology Infrastructure Library) framework.

Table 2. Comparison of IT Challenges and Needs based on ITSM Core Categories (adapted from ITIL framework)

ITSM Category	Challenges at University X	Challenges at High School Y	Needs at University X	Needs at High School Y
Service Strategy	IT alignment with academic vision, IT investment justification	Informal IT planning, limited strategic vision	Integrated IT planning, structured service portfolio	Basic IT roadmap, core service definition
Service Design	System integration complexity, fulfilling	Basic infrastructure limitations, ad hoc design	Integrated system architecture, formal service catalog	Simple service design, basic requirement specification

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ITSM Category	Challenges at University X	Challenges at High School Y	Needs at University X	Needs at High School Y
	diverse faculty needs			
Service Transition	Complex change management, legacy system migration	Minimal testing, undocumented changes	Structured change process, release management	Basic deployment procedures, simple testing
Service Operation	High incident volume, rapid response expectations	Reactive incident handling, staff limitations	Structured incident management, multi-channel service desk	Basic incident handling procedures, service prioritization
Service Improvement	Difficulty measuring service effectiveness, resistance to change	Informal evaluation, focus on reactive improvements	Evaluation framework, service performance metrics	User feedback mechanisms, incremental improvements
Information Security	Cyber-attacks, PDP Law compliance, research data protection	Minimal security awareness, limited protocols	Formal risk management, periodic security audits	Basic access control, routine backups, password policy
IT HR Management	High specialization, talent retention, competency development	Staff shortage, multitasking, limited capacity	Specialist development program, professional certification	Basic training, mentoring, knowledge sharing

These differences in characteristics are an important foundation in analyzing how ITSM principles need to be adapted for each level of education. Organizational complexity, limited resources, and variations in needs indicate that the ITSM implementation approach cannot be applied uniformly to different institutions. University X with a more complex structure and more adequate resources can adopt more formal and comprehensive ITSM practices, focusing on integrating existing systems and improving data security to meet regulatory compliance such as the Personal Data Protection Law. ITSM categories such as Service Strategy and Service Design are priority areas for development. Meanwhile, SMA Y requires a simpler ITSM adaptation with a focus on Service Operations and basic Information Security. ITSM implementation at this level is more directed at stabilizing basic infrastructure, clear operational procedures, and increasing the capacity of existing IT staff.

3.2. Maturity Levels of ITSM at the Institutions Studied

To measure the maturity level of ITSM at the two institutions, this study adopted a simple five-level maturity model based on the ITIL and CMMI frameworks, customized for the Indonesian educational context. This model consists of Level 1 (Initial) which indicates ad hoc processes, to Level 5 (Optimizing) which indicates optimized processes with continuous improvement. The assessment focuses on the five core ITSM domains most relevant to educational institutions: Incident Management, Service Request Management, Change Management, IT Asset Management, and Information Security Management (Table 3).

The assessment results show that University X is at Level 2 (Repeatable) to Level 3 (Defined) maturity levels for most of the domains studied. The incident and service request management processes have reached Level 3, with processes that are documented and implemented consistently although not yet optimal. Meanwhile, the change management, IT asset and security processes are still at Level 2, where processes are in place but documentation and performance measurement are still limited.

SMA Y is at Level 1 (Initial) for most domains, with incident and service request management slightly better at Level 2 (Repeatable). Incident and request handling already have basic workflows although they are not well documented, while change, asset and security management are still reactive and highly dependent on individual initiatives.

Table 3. ITSM Maturity Levels Mapping for Core Domains in Both Institutions

ITSM Domain	University X Maturity Level	High School Y Maturity Level	Key Characteristics at University X	Key Characteristics at High School Y
Incident Management	Level 3 (Defined)	Level 2 (Repeatable)	Documented process flow, structured incident categorization and prioritization, response time targets	Consistent but informal incident handling, basic recording using spreadsheets
Service Request Management	Level 3 (Defined)	Level 2 (Repeatable)	Available service catalog, structured approval process, simple SLAs	Basic request workflow, no formal catalog, consistent handling

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ITSM Domain	University X Maturity Level	High School Y Maturity Level	Key Characteristics at University X	Key Characteristics at High School Y
Change Management	Level 2 (Repeatable)	Level 1 (Initial)	Standard change forms, basic approval process, minimal impact documentation	Ad hoc changes, minimal planning, no formal testing process
IT Asset Management	Level 2 (Repeatable)	Level 1 (Initial)	Basic asset inventory, standard procurement procedures, scheduled maintenance	Manual asset recording, no tracking system, reactive maintenance
Information Security Management	Level 2 (Repeatable)	Level 1 (Initial)	Basic security policies, scheduled backups, simple access controls	Minimal security approach, basic passwords, inconsistent backups

This condition reflects the reality of ITSM implementation in Jakarta's educational institutions, where the main focus is still on operational aspects such as incident handling and service requests, while strategic aspects such as change management and information security are not yet a top priority.

The ITSM implementation gap between the two institutions can be analyzed based on four main dimensions: Process, People, Technology, and Governance (Table 4). In the Process dimension, University X has several SOPs for core processes such as incident handling and service requests, while SMA Y still relies on informal and undocumented procedures. In terms of People, University X has a clearer division of tasks with 2-3 staff responsible for the service desk, while in SMA Y, two IT staff have to handle all aspects of IT services without specialization.

Table 4. ITSM Implementation Gap Analysis in Both Institutions

Dimension	University X	High School Y	Gap
Process	Documented SOPs for main services. Structured incident and service request management.	Informal and undocumented processes. Basic workflow for incident handling.	High School Y needs at least 2-3 basic SOPs for core processes. The largest gap is in documentation and standardization.

Dimension	University X	High School Y	Gap
People	Basic role distribution within the IT team. 2-3 staff for service desk functions.	IT staff perform various roles. No specialization.	High School Y needs at least clear role division. Gap in specialization and capacity.
Technology	Simple ticketing system, structured spreadsheets for assets.	Email and chat for reporting, basic spreadsheets for recording.	High School Y needs at least a more structured incident recording system.
Governance	IT decision-making structure with middle management involvement.	IT decisions centralized on coordinator and principal.	High School Y needs at least more formal IT service reporting and evaluation mechanisms.

This matches what IT managers at both schools told the researchers. The high school's IT coordinator admitted: "We know we should document everything and follow proper processes, but with our limited staff and time, we just focus on keeping things running. When problems come up, we have to fix them right away." Over at the university, the head of IT services explained: "We're still developing our IT service management. Right now we're concentrating on making our basic services reliable and documenting our most important processes before we tackle bigger strategic issues." Based on data analysis, this research identified five main factors that influence the level of ITSM maturity at both institutions (Table 5).

1) Leadership and Management Awareness
   At University X, department heads and IT managers recognize that proper IT service management matters, even though the top executives haven't made it a priority in their strategic planning. Meanwhile, at the high school, administrators still view technology as just a helpful tool rather than something that could fundamentally transform how they operate and teach.

2) Resource Limitations
   The difference in budget allocation (4% vs. 1.5%) and number of IT staff (12 vs. 2) directly affects ITSM implementation capacity. University X can allocate time for documentation and process improvement, while SMA Y is focused on daily operations.

3) User Needs and Expectations
   Universities with diverse faculties and study programs face more complex service demands, driving the need for more structured processes. SMA Y with a more homogeneous scope of users can get by with a more hands-on approach.

4) External Pressures
Higher education accreditation and collaboration with external parties pushes University X to have better documentation and processes. SMA Y faces less external pressure.

5) Access to ITSM Knowledge and Practices
University staff can easily tap into professional networks and resources to keep up with the latest IT management approaches, while high school IT teams rarely get these opportunities. The university crowd attends conferences, joins online forums, and reads industry publications, keeping their knowledge fresh. High school IT folks are mostly stuck figuring things out on their own without easy access to training or professional communities where they could learn current best practices.

Table 5. Factors Influencing ITSM Maturity Levels in Both Institutions

Factor	University X	High School Y	Level of Influence
Leadership and Management Awareness	Medium	Low	High
Resource Limitations	Medium	High	Very High
User Needs and Expectations	High	Low	Medium
External Pressure	Medium	Low	Medium
Access to ITSM Knowledge	Medium	Low	Medium

The findings show that limited resources are the most influential factor, especially in SMA Y. This reflects the reality in many secondary education institutions in Jakarta, where IT budgets are limited and priorities are still on basic infrastructure, not on process development. This condition is an important consideration in developing an ITSM adaptation model that is suitable for the Indonesian educational context. As expressed by the Vice Principal for Infrastructure of SMA Y: "We realize the importance of better IT management, but at the moment our focus is still on fulfilling basic needs such as functioning computers and a stable internet connection for learning. Formal processes may only become a priority after the basic infrastructure is met."

3.3. Maturity Levels of ITSM at the Institutions Studied

ITSM principles developed in a business context require significant adaptation to be relevant and effective in an educational environment. This research identified how the two institutions studied adapted the ITSM principles to meet the specific needs of their organizations. These adaptations show different patterns based on IT maturity level, resource availability, and institutional characteristics (Table 6).

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At University X, the IT team has taken a somewhat formal approach to managing technology services. They've modified some standard industry practices (ITIL concepts) to better fit their academic environment. Their adaptations focus on four main areas: simplifying processes because they don't have unlimited resources; adjusting service schedules around the academic calendar with its unique rhythm of semesters and breaks; customizing their approach to work with the university's faculty-based structure rather than fighting against it; and connecting IT systems with core academic processes like enrollment and course management.

The Head of IT Center of University X explains: "We did not adopt ITIL in its entirety because it was too complex for our context. Our approach is to take the most relevant concepts, simplify the documentation, and ensure IT services support the academic cycle. For example, we categorize services based on the needs of faculties and academic units, not based on internal IT structures."

University X's adaptation can be seen in the adjustment of service targets (a kind of simple SLA) that follow the rhythm of the academic calendar. For example, high priority services are set for systems related to student enrollment, lecture scheduling, and examination systems during critical periods. Similarly, the system change process is adjusted to the academic schedule, avoiding major system changes during exam or enrollment periods.

In practice, University X faces challenges in implementing formal processes due to time and resource constraints. As a senior IT staff expressed: "We often have to balance between following procedures and responding to immediate needs. For example, although we have a system change request form, in emergency situations we often turn to verbal approval via phone or WhatsApp from the relevant leaders."

University X did not adopt the entire ITIL framework, but selected the most relevant concepts based on the needs and capacity of the organization. Priority was given to incident management, service requests, and simple service cataloging, while more complex processes such as capacity management and availability were applied minimally or not at all.

In contrast to the university, the ITSM adaptation at SMA Y shows a more informal and pragmatic approach. SMA Y does not refer to a formal ITSM framework, but develops IT service management practices based on the daily needs and experience of IT staff. SMA Y's IT coordinator stated: "We don't recognize the term ITSM formally, but we have our own ways to ensure that computers and the internet can be used for teaching. Our focus is to make sure teachers are not hampered by technical problems when teaching."

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Although not formalized, the adaptation at SMA Y shows some interesting characteristics, especially the highly personalized and relationship-based approach. IT staff know almost all users personally, allowing for a highly contextualized service approach. This adaptation can be seen in the use of WhatsApp groups as the main channel for reporting problems and requesting assistance, prioritization of handling based on the impact on teaching and learning activities, and problem handling procedures that adjust to the school schedule.

SMA Y also developed the practice of "IT Help" scheduled during teachers' free time or after class hours, where IT staff provide time for teachers to consult on technical issues or learn to use learning applications. This practice emerged as a creative adaptation of the service desk concept, tailored to staff limitations and user capacity building needs. However, in practice, this schedule often changes according to the busy schedules of IT staff who also handle other administrative tasks.

SMA Y's IT coordinator revealed the implementation challenges: "We want to make a fixed schedule for IT assistance, but in reality, it is difficult to be consistent because I and one other staff also have to take care of the school website, online PPDB, and various reports. So the schedule is more often based on need and time availability."

Table 6. Differences in ITSM Principles Adaptation in Both Institutions

ITSM Principle	Adaptation at University X	Adaptation at High School Y
Service Orientation	Semi-formal service grouping based on faculty and unit needs. Basic service definitions.	Services understood informally. Focus on teacher needs and learning activities.
Performance Measurement	Response time targets for different problem categories. Simple monthly reports.	No formal targets. Informal measurement based on user satisfaction and problem resolution.
Roles and Responsibilities	Basic task division (helpdesk, technicians, system admin). Responsibility distribution for main services.	Informal task division based on expertise of two IT staff. Flexible and situational responsibilities.
Incident Handling	Structured categorization and prioritization although recording is not always consistent. Escalation based on complexity.	Prioritization based on impact on learning. Minimal or no recording. Direct handling by IT staff.

ITSM Principle	Adaptation at University X	Adaptation at High School Y
Change Management	Change request forms for major changes. Approval through coordination meetings for significant changes. Schedule follows academic calendar.	Changes directly approved by principal or vice principal. Implementation based on time availability and operational impact.
Communication	Email, staff WhatsApp groups, and online forms for problem reporting. Service announcements through simple portal.	WhatsApp groups for communication and problem reporting. Direct announcements at teacher meetings.

The comparative analysis shows that both institutions make different adaptations but have similarities in terms of adaptation to the educational context. Some of the common adaptation patterns identified include:

1) Alignment with the Academic Cycle: Both institutions adapt IT processes to the rhythm of academic activities, albeit with different levels of formality.
2) Prioritization Based on Learning Impact: Services that directly impact learning activities receive higher priority.
3) Process Simplification: Both institutions simplified standard ITSM concepts to overcome resource constraints.
4) Emphasis on Relationships and Communication: Compared to the business context, the ITSM adaptations at both educational institutions showed a greater emphasis on communication and user relationship aspects.
5) Adjustment to Resource Limitations: Both institutions had to compromise between the formality of the process and the reality of limited human resources and time.

Despite the similarities, there are fundamental differences in the approach to adaptation. University X showed a more "top-down" adaptation by customizing some ITSM concepts for the university context, although the implementation was not as rigid as the documentation. In contrast, SMA Y displays a "bottom-up" adaptation where IT service management practices grow organically from day-to-day needs and generate creative solutions despite not referring to formal standards (Table 7).

University X puts more effort into making sure their technology supports the institution's broader objectives, while the high school focuses mainly on day-to-day operations and classroom support. You can see this difference in how they handle documentation - the university spends time developing formal procedures and organizing their services into logical categories, while the high school

prioritizes creating simple how-to guides and providing direct help when teachers or staff need it.

Table 7. Comparison of Adaptation Strategies in Both Institutions

Adaptation Aspect	University X Strategy	High School Y Strategy
Basic Approach	Semi top-down: Adaptation of selected ITSM concepts with implementation flexibility	Bottom-up: Development of organic practices based on daily needs
Main Focus	Alignment of IT with academic and administrative needs	Direct support for learning activities
Documentation	Development of simple standard procedures and service grouping	Technology usage guides for teachers and direct assistance
Decision Making	Coordination meetings for major changes, quick decisions for urgent matters	Relationship-based with direct decisions from management
Service Improvement	Evaluation based on simple reports and periodic discussions	Direct user feedback during interactions
Main Challenges	Gap between documentation and implementation due to time constraints	Service consistency affected by diverse workload and staff limitations
Priority Aspects	System stability for main academic activities	Response speed and direct support for teachers

These findings suggest that effective ITSM adaptation in educational institutions is not simply the application of business ITSM principles, but a fundamental reconfiguration that considers academic cycles and priorities, educational organizational structures, and resource limitations. This adaptation also needs to consider the organization's IT maturity level, with a semi-formal approach more appropriate for institutions with higher IT maturity, and a pragmatic approach for institutions with lower maturity.

The Vice Chancellor at University X explained their situation clearly: "We can't just copy corporate IT models here. Universities operate differently and have different priorities. Our main job is supporting teaching, learning and research - not maximizing profit. We need an approach with enough structure to be effective but enough flexibility to handle the constantly changing needs of professors, researchers and students."

Similarly, the Principal of SMA Y emphasized: "For us, technology is a learning tool. Its management should be simple and directly useful for teachers and students. The important thing is that problems can be resolved quickly and teachers are not hampered when teaching with technology."

3.4. Challenges of ITSM Implementation in Educational Institutions

ITSM implementation in educational institutions faces a variety of complex and interrelated challenges. Through research at both institutions, we identified a number of barriers that affect the successful implementation of ITSM practices. These challenges can be grouped into three main categories: structural and organizational challenges, resource and capability challenges, and cultural and change resistance challenges (Table 8).

In the structural and organizational aspects, educational institutions have different characteristics from business organizations where ITSM principles were originally developed. At University X, the faculty-based structure creates academic "silos" that each have different IT service needs and expectations. The Head of IT Center at University X revealed: "Each faculty has its own interests. Sometimes it is difficult to unify all requests in the same priority system. One feels important, the other also feels important. In the end, we are confused about which one to prioritize."

Similar challenges also occur at SMA Y, although on a smaller scale. SMA Y's IT coordinator explains: "Teachers have different needs. Some need help to make videos, some for online exams. It is difficult to create a standard service that can satisfy all." The long decision-making path is also an obstacle, especially at University X. The approval process for technology changes must pass through several layers of approval, from the study program level to the vice chancellor, which often slows down the implementation of solutions. At SMA Y, although the decision path is shorter, challenges arise from unclear authority regarding IT decisions, so IT coordinators are often unsure whether they can decide on their own or must seek approval from leadership. Resource and capability challenges were the most significant barriers for both institutions. University X struggled to allocate a dedicated budget for ITSM initiatives such as training and procedure development. Despite having 12 IT staff, most of their time is taken up with daily operations, leaving little room for ITSM process development.

The situation at SMA Y is much more challenging with only two IT staff who have to handle all aspects of technology. In an interview, SMA Y's IT staff stated: "Let alone making documentation, taking care of lab computer breakdowns sometimes we are overwhelmed. If a teacher asks for help, we immediately handle it. We don't have time to take notes or make procedures." In addition to limited numbers, there

is also a capability gap. IT staff at both institutions generally have technical backgrounds without a deep understanding of ITSM. University X had sent two staff to a basic ITIL seminar, but not enough to implement a comprehensive framework. While at SMA Y, the IT staff had never been exposed to the ITSM concept at all.

Table 8. ITSM Implementation Challenges Faced by Both Institutions

Challenge Category	University X	High School Y	Handling Strategy at University X	Handling Strategy at High School Y
Structural and Organizational	Faculty silo structure; long decision paths; diverse needs across units	Unclear IT responsibility division; different needs among teacher groups	Regular coordination meetings with faculty representatives; simple service prioritization procedures	Personal approach to understand teacher needs based on subjects
Resources and Capabilities	Limited staff time; lack of ITSM training; minimal support systems	Very limited IT staff; no ITSM training; limited infrastructure	ITIL introduction seminar for several staff; simple documentation templates	Focus on simple recurring problem recording; assistance from ICT teachers
Culture and Resistance	Informal culture among academics; perception of IT as support	"Quick-fix" culture; resistance to formal procedures; IT viewed as "repair service"	Gradual socialization through faculty meetings; support from some deans	Personal approach; utilizing WhatsApp for more structured reporting

Limited supporting infrastructure is also an obstacle. University X only uses online forms and spreadsheets for problem logging, while SMA Y still relies on WhatsApp groups and manual notes. The absence of adequate supporting tools makes implementing formal ITSM processes difficult and burdensome.

Cultural issues and staff pushback created real headaches for both schools when implementing better IT management practices. At University X, professors and instructors fought against the new standardized procedures for requesting IT help. They were used to the old informal way of doing things. One experienced professor complained: "Before, we'd just call IT directly when something broke. Now they make us fill out these forms first. Sometimes we've got urgent problems

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but still have to wait for them to process our ticket. It's just made everything more complicated." At SMA Y, the "fast-paced" and informal culture is very strong, with teachers accustomed to getting immediate help without formal procedures. The IT coordinator's efforts to implement a more structured problem reporting system are often ignored, with teachers preferring to report problems directly through personal chats or even asking for help when meeting in the school corridor.

Both institutions also face challenges related to the user mindset that views IT as a "fixer" rather than a strategic service provider. At University X, despite efforts to position IT as a strategic partner, the perception that IT only plays a role when there is a breakdown still persists. A similar condition is seen at SMA Y, where the IT function is seen as limited to ensuring that computers and the internet work. Although both institutions face some similar challenges, there are significant differences in their intensity and impact (Table 9). A comparison of the challenges between education levels shows that SMA Y faces more fundamental constraints related to resources and capabilities, while University X is more constrained by structural complexity and diverse needs.

These differences in challenges have important implications for the appropriate ITSM implementation approach for each level. University X requires an approach that focuses on aligning processes between units and streamlining bureaucracy, while maintaining flexibility to accommodate the unique needs of faculty. On the other hand, SMA Y requires a very simple approach that focuses on essential processes with minimal documentation requirements and integrates with existing work habits. When asked about tackling the challenges of implementing better IT management, the IT Center boss at University X stressed that gradual changes work best: "We can't dump all these new ITSM concepts on everyone at once. It's smarter to start with just one process - like how we handle tech problems. Once people see that actually helps them, then we can slowly introduce other changes." Meanwhile, SMA Y's IT Coordinator emphasized a practical approach: "The important thing is to solve the problem first. Procedures can exist, but they must be simple, just one page, and can be used immediately. Teachers don't want to be complicated; they want the problem solved quickly so they can teach smoothly."

Table 9. Comparison of Challenge Levels Between Educational Levels

Challenge Type	Challenge Level at University X	Challenge Level at High School Y	Impact on ITSM Implementation
Structural complexity	High	Low-Medium	Universities face greater barriers in process standardization

Challenge Type	Challenge Level at University X	Challenge Level at High School Y	Impact on ITSM Implementation
IT HR availability	Medium	Very High	High schools face fundamental constraints in time allocation for ITSM initiatives
ITSM competency	Medium	High	Both institutions need knowledge improvement, more critical in high schools
Availability of supporting infrastructure	Medium	High	Tool limitations are a significant barrier in high schools
Cultural resistance	Medium	High	Informal culture is more deeply rooted in school environments
Strategic perception of IT	Medium	High	IT is viewed more as a tactical function than strategic in high schools

This comparison shows that the challenges of ITSM implementation in educational institutions are not only related to technical limitations, but are also strongly influenced by organizational context, institutional priorities, and socio-cultural dynamics. An effective ITSM implementation model must take into account these multi-dimensional challenges and offer an approach tailored to the specific characteristics and limitations of each educational level.

3.5. ITSM Transformation Model for Educational Institutions

Based on our research at both institutions, we developed a tailored ITSM transformation model for Indonesian educational institutions, particularly in Jakarta. This model takes into account the specific conditions, challenges and needs of schools with varying levels of IT maturity. Unlike conventional ITSM transformation approaches that push for comprehensive implementation, our model emphasizes a phased, adaptive, and contextual approach better suited to the limited resources typical in educational settings (Table 10).

The ITSM transformation model consists of three progressive levels: Stabilization, Standardization, and Development. Each level has its own focus, objectives, and core processes to prioritize. Importantly, the model doesn't require institutions to reach the highest level; instead, schools can choose the transformation level that

best suits their needs and capacity. For resource-limited institutions like SMA Y, simply reaching the Stabilization level can significantly improve IT services.

Table 10. Phased Transformation Framework

Level	Main Focus	ITSM Priority Processes	Success Indicators	Initiative Examples
Stabilization	Ensuring basic service reliability; Handling incidents effectively	Basic problem recording and handling; Simple service requests; Informal service list	Issues recorded though simple; Users know how to report problems; Similar problems handled consistently	Incident recording using structured spreadsheets / WhatsApp; Basic IT service list; Simple problem handling workflow
Standardization	Process consistency; Clear service definition; Basic documentation	Clear service listing; Structured problem handling; Simple change procedures; Inventory management	Procedures available for main processes; Services documented; System changes recorded; Device inventory maintained	Simple standard procedures; Service request forms; System change approval forms; Maintained inventory list
Development	Quality improvement; Basic measurement; Continuous improvement	Simple service time targets; Basic capacity planning; Problem resolution guides; Service evaluation	Resolution time measured; Guides for common problems; Quality improvement visible; User feedback collected	Simple service targets; Common problem resolution guides; Service satisfaction survey; Simple service performance report

The model allows for a gradual transition from a reactive approach focused on problem solving, to a more structured, quality improvement-oriented approach.

It's important to note that transitions between levels don't have to be perfectly sequential; some elements from higher levels can be adopted earlier as needs and opportunities arise. The head of University X's IT Center confirms this approach: "We started by tidying up the way we handle day-to-day issues first. After the team got used to recording and following up consistently, then we started to create standardized procedures and more organized forms. We didn't implement all ITSM processes, we just chose the ones that were most needed."

This phased transformation approach has proven more effective in educational institutions than ambitious overhauls that often fail because they don't account for resource constraints. The phased approach allows users and IT staff to adapt gradually, reduces resistance to change, and builds on early successes that can motivate further improvements. In Jakarta's educational institutions, ITSM knowledge transfer from more mature institutions to those in earlier stages often happens informally. Nevertheless, we identified several knowledge transfer mechanisms that can be further developed to support ITSM transformation (Table 11).

The high school's IT coordinator highlighted how valuable casual networking has been: "Whenever I hit a problem I can't figure out, I call up my buddies who work in university IT departments. They've usually seen it all before and can suggest practical fixes. Sometimes I even ask them to share forms or procedures they're using, then I'll tweak them to fit our school's needs."

Table 11. Realistic ITSM Knowledge Transfer Mechanisms for Jakarta Context

Transfer Mechanism	Description	Implementation Example	Benefits	Challenges
Informal Networks	Inter-personal relationships between IT managers from various institutions for consultation and experience sharing	WhatsApp groups of school/campus IT managers; informal meetings to discuss specific problems	Sharing real experiences; Quick solutions for common problems; Moral support	Dependent on personal relationships; Unstructured; Undocumented knowledge

Transfer Mechanism	Description	Implementation Example	Benefits	Challenges
Training and Seminars	Basic ITSM training organized by education associations or IT vendors	Simple helpdesk management workshop for school IT staff organized by Education Department	Introduction to basic concepts; Networking; Formal certification / recognition	Content often not contextual; Limited follow-up; Participation costs
Internship and Observation	IT staff from lower maturity institutions have opportunities to observe practices in more advanced institutions	High school IT coordinator interns for a week at university IT department to learn incident handling processes	Direct experience; Contextual understanding; Seeing actual implementation	Time arrangement difficulties; Access limitations; Scale and context differences
Ad Hoc Consultation	Informal consultation when facing specific problems or certain development needs	High school IT coordinator consults with university contacts when developing an asset recording system	Focus on specific needs; Pragmatic; Time and cost efficient	Not systematic; Dependent on availability; Incomplete knowledge

The ITSM transformation model also requires contextual customization for different education levels. Based on our analysis of the two case studies, we identified specific recommendations for universities and secondary schools that account for the unique characteristics of each level (Table 12). For universities, the focus of ITSM customization needs to be on:

1) Balancing standardization with flexibility to accommodate diverse faculties and units.
2) Developing IT coordination mechanisms that involve academic representatives in key decision discussions.
3) Aligning service priorities with the academic calendar and critical university activities.
4) Integrating ITSM processes with existing administrative systems.
5) Developing service listings that accommodate the diverse needs of students, faculty, and administrative staff.

For high schools, IT management needs to be adjusted in several practical ways:

1) Simplifying complex IT processes into basic guides that don't demand extensive staff or resources.
2) Connecting IT support with existing administrative processes rather than creating separate systems.
3) Using familiar communication tools - like WhatsApp - for reporting tech problems instead of specialized software.
4) Focusing limited resources on maintaining classroom devices and teaching applications.
5) Creating basic troubleshooting guides that help teachers solve common problems independently.

The ITSM transformation model we developed should be applied as an adaptive framework that can be tailored to each institution's specific context. Successful implementation depends largely on the institution's ability to adapt ITSM principles to their operational realities, resource constraints, and organizational culture. As the Vice Chancellor of Administration at University X observed: "The most important thing is not how sophisticated our IT system is, but how well it helps academic and administrative processes. We need IT management that is practical and suits the way we work, it doesn't need to be too formal but it should be organized." Similarly, the Principal of SMA Y emphasized: "For a school like ours, the important thing is that IT problems are resolved quickly so as not to disrupt learning. We can't have a complicated system, but we need a clear way so that teachers and students know where to go if there are problems with computers or the internet."

Table 12. Contextual Adaptation Recommendations for Both Educational Levels

ITSM Component	Recommendations for Universities	Recommendations for High Schools
Organizational Structure	IT team with basic task division; Regular coordination meetings with unit representatives	IT coordinator with support from tech-interested teachers; Integration with existing vice principal structure
Priority Processes	Problem recording and management; Structured service list; Simple change procedures; IT inventory management	Simple problem recording; Basic service list; Device inventory; Learning device support
Documentation Approach	Simple documentation for core processes; Standard forms for main services	Very minimal documentation; Illustrated guides for common problems

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ITSM Component	Recommendations for Universities	Recommendations for High Schools
Supporting Tools	Simple online forms; Structured spreadsheets; Organized WhatsApp groups	Basic spreadsheets; Separate WhatsApp groups per service type; Simple forms
Performance Measurement	Resolution time records; Simple satisfaction surveys	Problem resolution records; Informal feedback from teachers
Capacity Development	Basic training for IT staff; Problem resolution guides	Practical workshops; Knowledge sharing between staff
Implementation Approach	Gradual implementation one process per semester; Starting with most needed processes	Focus on one process until running well; Integration with existing workflows

A practical approach to IT service management that considers the unique circumstances of Jakarta's schools leads to more successful implementation. Rather than enforcing rigid industry standards that might not fit educational settings, this model offers a realistic path forward that schools can adapt based on their current capabilities and constraints. It focuses on making steady improvements to IT services that actually benefit teaching and learning, instead of chasing benchmarks more suited to corporations. This flexible approach means schools can make sustainable progress at their own pace, gradually building better technology support systems that genuinely enhance education.

3.6. Practical Implications and Implementation Strategies

This research not only contributes to theoretical understanding of ITSM adaptation in educational institutions but also provides practical guidance for IT managers implementing ITSM. Our findings from both institutions show that effective ITSM implementation requires an approach quite different from standard corporate practices, taking into account the unique characteristics of educational institutions. This section presents practical implications along with implementation strategies that IT managers at universities and secondary schools can apply (Table 13). For university IT managers, implementing proper IT service management affects how they run their department in several key ways. First, they need to adapt their services to match the university's scattered academic structure. This means creating more collaborative management approaches that can handle the different needs of various schools and departments. Second, they have to sync their IT processes with the school year - planning for heavy usage during registration periods, exam weeks, and end-of-semester crunches when students and faculty need more support. Third, their help desk must be set up to deal with a wide range

of users - from tech-savvy students to less computer-literate professors to researchers with specialized needs to administrative staff with yet another set of priorities.

The head of University X's IT Center emphasized the importance of a phased approach: "We can't implement everything right away. It's better to start with the basics first, such as problem logging and help requests. If these are already running smoothly, then we can gradually add other processes." For high school IT managers, implications focus more on optimizing limited resources. With minimal IT staff, ITSM implementation in secondary schools needs to emphasize core processes that directly impact learning services. IT coordinators need to develop approaches that involve teachers and other staff in handling basic IT issues, allowing the IT team to concentrate on more complex problems. Another key implication is the need to integrate ITSM processes with existing administrative workflows rather than creating burdensome parallel systems.

As expressed by SMA Y's IT Coordinator: "There are only two of us, it's impossible to handle everything by ourselves. The important thing is to record the problems that often arise, create a standardized way of solving them, then teach it to some teachers who can help. So, we don't have to run here and there for the same problem."

Table 13. Practical Implications of ITSM Implementation in Both Educational Levels

Aspect	Implications for Universities	Implications for High Schools
Organizational Structure	Need to balance centralization of IT services with faculty decentralization needs	Need to optimize non-IT staff roles in supporting basic services
Resource Management	Focus on fair resource allocation across units with clear priorities	Focus on optimal utilization of minimal available resources
Service Approach	Need to accommodate diverse user types with different expectations	Need to prioritize support that directly impacts learning
Change Management	Need to synchronize with academic calendar and coordinate between units	Need to minimize disruption to learning activities
Performance Measurement	Need simple measures that show IT service impact on academic processes	Need basic indicators directly related to learning system availability

A realistic and effective ITSM implementation strategy needs to be tailored to the institution's maturity level. Based on our research, we identified three categories of institutions based on ITSM maturity: Novice (little or no formal ITSM practices), Transitional (some basic ITSM practices implemented), and Developing (more structured ITSM practices implemented). Different implementation strategies are required for each category (Table 14). For Novice institutions, implementation strategies should focus on:

1) Building awareness of simple ITSM practice benefits.
2) Identifying and documenting core IT services.
3) Developing basic problem recording and handling processes.
4) Initiating simple issue logging and categorization.
5) Introducing IT staff and key users to basic IT service concepts.

For Transitional institutions, strategies should focus on:

1) Improving service documentation and standardization processes.
2) Developing a more structured service list.
3) Setting target resolution times for common problem categories.
4) Implementing simple change procedures.
5) Developing resolution guidelines for frequently occurring problems.

For Developing institutions, strategies should aim at:

1) Aligning IT services with the institution's strategic priorities.
2) Optimizing resource allocation based on service usage data.
3) Developing a mechanism for gradual service improvement.
4) Improving management of cooperation with external service providers.
5) Developing a simple approach to anticipate IT risks.

Table 14. Implementation Strategies for Various ITSM Maturity Levels

Implementation Aspect	Strategy for Novice Institutions	Strategy for Transitioning Institutions	Strategy for Developing Institutions
Overall Approach	Bottom-up: Start from daily operational issues	Mixed: Operational improvements with some strategic initiatives	Top-down: Alignment of IT services with institutional priorities
Initial Scope	Very limited: 1-2 core processes (problem recording and resolution)	Limited: 3-4 basic processes (problem handling, requests, simple changes, inventory)	Moderate: Improvement of existing processes and addition of 2-3 new processes

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Implementation Aspect	Strategy for Novice Institutions	Strategy for Transitioning Institutions	Strategy for Developing Institutions
Formalization	Minimal: Basic recording and simple workflows	Moderate: Simple procedures and standard forms	Substantial: Processes and procedures documented in sufficient detail
Supporting Tools	Very simple: Spreadsheets, WhatsApp, manual notes	Basic: Google Forms, structured spreadsheets, organized WhatsApp groups	Simple but structured: Integrated online forms, advanced spreadsheets, simple guide repository
Roles and Responsibilities	General: Informal task division based on expertise	Semi-structured: Basic role definitions for main processes	Structured: Clear responsibility division for all main processes
Implementation Timeline	6-12 months for basic adoption	12-18 months for standardization	18-30 months for continuous development
Development Approach	Highly iterative: Quick improvements in short cycles	Incremental: Gradual improvements with periodic evaluation	Planned: Simple roadmap with phased targets

Schools need their own way to measure IT success, not borrowed from business. Unlike companies focused on profits, educational institutions should evaluate whether their technology actually helps teachers teach and students learn. This means checking if professors and students find the systems helpful, whether different departments get the support they need, and if the school can maintain these services with limited funding. The standard corporate metrics just don't make sense in classrooms and research labs where the goals are completely different.

The research team recommends using three categories of measurements to evaluate IT performance in schools (as shown in Table 15). First, operational indicators assess how well the IT department handles its day-to-day work. Second, service indicators show whether students and teachers are actually getting the help they need when technology problems occur. Third, impact indicators reveal if technology is truly improving education at the school. By examining all three areas instead of just tracking technical statistics, schools can better understand if their technology investments are delivering value.

Schools should select measurements that make sense for their particular situation. Those just starting out should stick to the basics - tracking problems solved and whether core services remain available. More advanced institutions can use broader

measures showing how technology supports their educational mission. Each school should focus on metrics matching their capabilities and priorities.

University X's Vice Chancellor for Administration explains: "What we need is not just technical reports like how many tickets were resolved. We need to know how IT helps lecturers teach better and students learn more smoothly. That determines whether our IT investment is successful or not." Implementation of a measurement framework should be gradual, starting with a few simple measures that are easy to collect, such as the number of issues resolved and informal feedback from users. Over time, other indicators can be added as the institution's capacity develops. Most importantly, these measures should not create a significant additional administrative burden, especially for institutions with limited resources.

IT managers in schools and universities need to develop approaches that actually support what their institutions are trying to achieve, rather than blindly following industry standards that don't fit educational settings. By considering practical realities, choosing strategies that match their current capabilities, and measuring the right things, they can make steady improvements to their technology services. This approach lets schools enhance their IT support at a pace that makes sense for their situation and priorities, instead of trying to make dramatic changes all at once that might overwhelm their resources.

Table 15. Framework for Measuring ITSM Implementation Success

Category	Key Indicators	Measurement for Universities	Measurement for High Schools
Operational	Problem handling efficiency	Number of problems resolved per period; Average resolution time; Number of unhandled problems; Recurring problems	Number of problems resolved per month; Repeatedly occurring problems; Availability of critical services (internet, computer labs)
	System change effectiveness	Number of successful changes; Number of problems due to changes; Downtime during changes	Number of changes that can be scheduled; Disruptions due to changes
	Asset management	Inventory completeness; Device utilization; IT asset condition	Device list completeness; Device age; Device failure rate
Service	User satisfaction	Informal user feedback; Complaints received; Simple service assessment after problem resolution	Informal feedback from teachers and students; Frequently expressed complaints

Category	Key Indicators	Measurement for Universities	Measurement for High Schools
Impact	Service availability	Operational time of main services; Unplanned downtime; System performance during peak usage	Availability of internet and learning devices; Computer lab downtime
	Service accessibility	User knowledge about how to get help; Ease of problem reporting	Teacher understanding of how to get IT help; Ease of reporting problems
	Support for core activities	IT role in supporting learning; Support for research activities; Support for academic administration	IT utilization in learning; Support for school administrative activities
	Capacity development	Improvement in user digital capabilities; IT staff skills	Increased teacher confidence in using technology; Basic ability to solve simple IT problems
	Innovation and adaptation	Ability to adopt new learning technologies; Speed of responding to new needs	Use of new technologies in learning; Ability to adapt to changes (such as online learning)

3.7. Stakeholder Perspectives on ITSM Adaptation

The success of ITSM adaptation in educational institutions depends heavily on support and involvement from various stakeholders. Our research identified significant differences in perceptions, expectations and priorities between stakeholder groups that must be understood to develop effective adaptation approaches. Through interviews and discussions with various parties in both institutions, we uncovered diverse perspectives that influence ITSM implementation (Table 16).

Institutional leaders at both education levels recognize IT's importance, but with different approaches. At University X, the Vice Chancellor for Administration and Finance who oversees the IT function views information technology as supporting academic and operational activities. He stated: "We need reliable IT to support teaching and learning and administration. The important thing is that the system is stable and problems can be resolved quickly with the budget we have." This shows that university leaders have expectations of good IT services, although their understanding of IT service management remains general.

Meanwhile, at SMA Y, the Principal focuses more on IT's basic functions to support learning. He said: "The important thing is that the internet can be used, the school website is running, and the computer laboratory can be used for exams. I leave the management issues to the IT department and the head of infrastructure." School leaders' expectations are more modest and oriented towards the availability of basic functions.

IT staff at both institutions showed varying understanding of IT service management practices. At University X, the Head of IT and staff have basic knowledge of IT service practices although they don't always use formal ITSM terminology. One senior IT staff member revealed: "Actually we have implemented some IT service practices such as problem logging and prioritization categories, but it is not complete like in the company. The obstacle is limited human resources, while there are many requests from faculties and units."

IT staff at SMA Y show a more pragmatic approach oriented towards immediate problem solving. SMA Y's IT coordinator stated: "We don't have a formal IT service system yet. What we do now is to record problems using a spreadsheet, solve them based on urgency, and sometimes make notes on how to solve problems that often arise."

Table 16. Key Stakeholder Perspectives on ITSM Implementation

Stakeholders	Perspective at University X	Perspective at High School Y	Implications for ITSM Adaptation
Institutional Leadership	IT as operational support; Expecting reliable services; Focus on budget efficiency; Limited understanding of technical aspects	IT as a learning support tool; Focus on basic service availability; Delegation of technical management; Priority on minimal costs	Explanation of benefits in non-technical language; Emphasis on value for investment; Simple and clear reporting
IT Staff	Implementation of some basic IT service practices; Awareness of the need for structured processes; Frustration due to resource limitations; Difficulty handling diverse requests	Pragmatic and reactive approach; Simple problem recording; Focus on direct problem resolution; Improvisation to overcome limitations	Simplification of ITSM processes for local context; Gradual skills enhancement; Focus on processes with direct value

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Stakeholders	Perspective at University X	Perspective at High School Y	Implications for ITSM Adaptation
Educators	Expecting quick response; Reluctant to follow formal procedures; Preference for direct contact with IT staff; Need for customized solutions	Focus on direct support during teaching; Need for very quick response; Need help with technology usage; Less patient with procedures	Simple and fast procedures; "Fast track" options for urgent needs; Support integrated with learning activities
Administrative Staff	Expecting stable systems; Wanting clear instructions; Focus on smooth routine work; Need training on system usage	Need for reliable basic systems; Support for administrative tasks; Limited digital skills; Need direct assistance	Procedures supporting routine operations; Emphasis on system reliability; Simple and visual guides

The perspectives of IT service users show interesting variations. At University X, lecturers and researchers tend to expect responsive and flexible IT services. A Head of Study Program revealed: "If there is a problem with the academic system or online classes, we want it resolved immediately. Sometimes the procedure of reporting through the form first takes too long, so we call directly or chat with IT staff we know." Administrative staff, on the other hand, prefer system stability and clear guidelines.

At SMA Y, teachers are particularly concerned about direct support for classroom technology use. As one teacher expressed: "When we want to teach using the projector or the wifi has problems, we need help right away. We can't wait for the reporting procedure. That's why I often call the IT Coordinator directly instead of filling out the form." Users in secondary schools also indicated a greater need for training in technology use.

The study uncovered several mismatches in how different groups viewed IT services (Table 17). Most notably, school leaders and IT workers weren't on the same page. Administrators expected high-quality technology services despite tight budgets, while IT staff felt they simply didn't have enough resources to deliver what was being asked of them. The IT manager at University X complained: "They keep piling more systems on us without adding staff or money. They expect corporate-level service, but we don't have the people or tools to make that happen." Second, there is a priority gap between IT staff and users. IT staff try to implement standardized processes for efficiency, while users prioritize speed of response. A lecturer at University X said: "We don't care what the process is, the

important thing is that if there is a problem while teaching, we can be helped immediately. Sometimes we are told to fill out a form first when the class is already waiting."

Third, most users simply don't understand what IT service management means or why it matters. When the IT team tries to explain why everyone should follow certain procedures, like submitting proper help tickets instead of sending quick emails, they face confusion. Users don't see how structured processes help everyone get better service in the long run – they just see extra steps between them and fixing their immediate problem.

Understanding these diverse perspectives provides an important foundation for developing more contextually appropriate ITSM adaptation approaches. Some strategies that can bridge the perception gap include:

1) Using simple, non-technical language when communicating about IT services, avoiding unfamiliar ITSM terminology.
2) Involving user representatives when developing IT service procedures to ensure processes are practical and not burdensome.
3) Developing standardized procedures while still providing "fast track" options for urgent needs, especially those directly related to learning activities.
4) Improving communication about problem-handling status so users know when their issues will be resolved.

Table 17. Analysis of Perception Gaps Between Stakeholders

Gap Type	Manifestation at University X	Manifestation at High School Y	Bridging Strategies
Expectation Gap	Leadership expects reliable services with minimal budget	Principal expects quick solutions with limited IT staff	Open communication about limitations; Realistic expectations; Service prioritization based on importance
Priority Gap	IT staff want standard procedures, users prioritize speed	IT coordinator tries to maintain records, teachers want immediate solutions	Simple procedures for urgent needs; Explanation of long-term benefits; Quick help options for important cases
Understanding Gap	Users do not understand the importance of standard procedures	Service management concepts unfamiliar to school community	Use of non-technical language; Simple explanations of benefits; Relevant concrete examples

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Gap Type	Manifestation at University X	Manifestation at High School Y	Bridging Strategies
Communication Gap	Users not always aware of problem handling status	IT service information not well distributed	Problem handling status notifications; Easily accessible service information; Proactive communication

The Head of IT at University X concluded: "The essence of good IT services on campus is not about rigidly following industry standards, but how we can help academic and administrative processes run smoothly with the resources available. We need to listen to user needs while gradually introducing more structured processes." This comprehensive understanding of various stakeholder perspectives provides a strong foundation for developing ITSM adaptation approaches that are more responsive to educational institutions' needs. By recognizing and addressing existing perception gaps, ITSM implementations can gain broader support and deliver more substantial value to the entire educational institution community.

4. CONCLUSION

This research contributes significant insights into ITSM adaptation within educational contexts, extending beyond traditional commercial applications to address the unique challenges faced by academic institutions. The study's primary theoretical contribution lies in developing the "layered maturity" concept, which fundamentally challenges conventional ITSM implementation paradigms. Unlike existing models that assume linear progression toward uniform maturity levels, our layered maturity framework recognizes that educational institutions can and should operate at different maturity levels across various ITSM domains based on their specific contexts and resource capabilities. The practical implications demonstrate how educational institutions can implement contextually appropriate ITSM practices without attempting to replicate corporate standards. Universities can leverage semi-formal approaches achieving maturity levels 2-3, while secondary schools can operate effectively at pragmatic levels 1-2, both delivering value-appropriate services within their resource constraints. For policymakers, these findings provide evidence for developing differentiated ITSM standards that acknowledge institutional diversity rather than imposing uniform requirements across all educational levels. Educational institutions should adopt phased transformation approaches starting with stabilization of core services before progressing to standardization and development phases. IT managers must focus on adaptation strategies that align with their institution's specific characteristics, user expectations, and resource availability rather than pursuing comprehensive ITSM implementations. Policymakers should develop tiered ITSM guidelines that

provide flexibility for institutions to progress at sustainable paces, particularly important for developing countries with diverse educational landscapes.

Based on the findings of this study, several key recommendations emerge for educational institutions, policymakers, and practitioners. For institutions, it is crucial to implement a gradual ITSM transformation, focusing initially on stabilizing core services before progressing to standardization and development. Institutions should align their IT service priorities with the academic cycles and educational needs, while also developing informal-to-formal progression pathways to accommodate their resource constraints and specific contexts. Policymakers should create flexible ITSM standards that acknowledge the diverse nature of educational institutions, avoiding one-size-fits-all approaches. Additionally, they should support capacity building through inter-institutional knowledge transfer and develop funding mechanisms that are context-appropriate to facilitate sustainable ITSM implementation. Practitioners, on the other hand, should focus on effective stakeholder communication to bridge perception gaps regarding ITSM's value. They are encouraged to creatively utilize existing tools, avoiding the need for costly software, and to focus on building momentum by demonstrating ITSM value through small wins. This incremental approach will help educational institutions adapt ITSM practices that fit their unique needs and resources.

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