

Optimizing Student Practice Work Governance With The Information Technology Infrastructure Library (ITIL) V4 Approach

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Abstract.

The Practical Work (KP) process in the Information Systems Study Program at Muhammadiyah University of Pontianak still faces obstacles, such as the absence of reporting standards, limited partner information, monitoring difficulties, and an assessment system that is not yet transparent and integrated. This research aims to optimize KP service governance using the ITIL V4 approach with a focus on Service Request Management, Service Desk, and Continual Improvement. The research result is a website-based application that supports the KP process in an integrated manner, starting from determining location, managing daily logbooks, to online guidance documentation. This system also facilitates educational staff and supervisors to monitor student activities in real-time, so that the evaluation process becomes more objective and accountable. Testing with Black Box Testing ensures all functions run as required, while User Acceptance Testing (UAT) results in a satisfaction level for KP partners of 91%, students of 89%, and Study Program Admins of 95% (strongly agree category). This system is expected to improve efficiency, service quality and KP governance in a sustainable manner.

Keywords: *Practical Work, ITIL V4, Black Box Testing, Service Request Management, Service Desk and Continual Improvement.*

I. INTRODUCTION

The development of information technology in the current digital era has brought significant changes in various fields, including the education sector. Educational institutions are required to be able to utilize information technology to improve the quality of academic services, operational efficiency, and the effectiveness of managing student activities. One of the academic activities that has an important role in the formation of student competencies is practical work.

Practical Work Activities (KP) are a bridge between theory obtained in college and real practice in the world of work. However, in its implementation, the governance of practical work in several educational institutions is still carried out manually. Administrative processes such as registration of practical work, submission of places, appointment of supervisors, guidance processes, and reporting of practical work results still use physical documents and conventional recordings. This leads to various obstacles, such as a time-consuming process, large resource usage, and a high risk of errors and data loss. In addition, the implementation of practical work is also still very dependent on manuals or physical references that must be owned by students.

The KP handbook is often the only source of information related to the procedures for implementing practical work. This condition poses several problems, including a lack of flexibility in delivering information, difficulties in making updates if there is a change in policy, and an uneven distribution of information to all students. As a result, students often experience confusion in understanding the flow and requirements of practical work. On the other hand, the institution, especially the supervisor and the administration department, also have difficulties in monitoring and evaluating the implementation of student practical work. Without an integrated system, the monitoring process becomes less than optimal due to limited access to real-time data. This has an impact on the lack of optimal supervision and the difficulty of conducting an objective and measurable evaluation of student performance during practical work.

These problems show that a more structured, standardized, and information technology-based governance system is needed. One approach that can be used to optimize information technology-based service governance is the Information Technology Infrastructure Library (ITIL) framework version 4. ITIL V4 is a framework that focuses on IT service management with an approach that emphasizes value creation through the integration of various service activities. By applying the principles in ITIL V4, such as a focus

on value, collaboration, transparency, and continuous improvement, it is hoped that the work governance of student practice can be significantly improved.

This approach allows for the design of a system that is able to integrate the entire practical work process, from registration to final evaluation, in one platform that is structured and easily accessible to all parties involved. Therefore, this study was conducted to examine and design the optimization of student practice work governance with the ITIL V4 approach. The results of the research are expected to be a solution in overcoming existing problems and improving the quality of academic services in educational institutions.

The purpose of this study is to analyze the existing conditions of student practice work governance which is currently still carried out manually in the Information Systems Study Program, University of Muhammadiyah Pontianak, as well as identify various problems and obstacles that arise in its implementation. Furthermore, this study uses the ITIL V4 concept approach to optimize practical work governance to be more structured and efficient. Based on the results of the analysis, this study also focuses on designing an integrated and information technology-based student practice work governance system. In addition, the resulting model or prototype will be demonstrated in the study program environment as a form of validation of the functions and benefits of the developed system. This research is expected to provide various benefits for stakeholders, including for educational institutions as a solution to improve the efficiency and effectiveness of student practice work management through an integrated system. For students, this research provides ease of access to information, understanding procedures, and carrying out practical work in a more structured and transparent manner. For supervisors, the system developed can help in the process of monitoring and evaluating students more effectively and in real-time. In addition, for future researchers, the results of this research are expected to be a reference in the development of studies related to ITIL V4-based academic service governance.

II. LITERATURE REVIEW

2.1. Previous Research

Based on previous research in the past decade, the implementation of the ITIL framework, especially ITIL V4, shows a significant role in improving the governance of information technology services. Research conducted by Pratama and Nugroho (2021) shows that the development of a web-based practical work information system is able to increase efficiency in student administration management. The system that was previously carried out manually has been successfully changed to an integrated digital system, so that the process of registration, document collection, and information submission becomes faster and more accurate. In addition, the ease of access to information for students has also increased so that administrative errors can be minimized.

Furthermore, research by Siregar, Rahman, and Putri (2020) examined the application of the ITIL framework in the management of information technology services in educational institutions. The results of the study show that the implementation of ITIL is able to improve the quality of services through process standardization, better documentation, and the implementation of continuous evaluation. This confirms that ITIL provides a systematic framework for managing IT services to be more effective and efficient. Another research conducted by Wijaya and Kurniawan (2022) discusses the implementation of ITIL V4 in the management of digital-based academic services. The results of the study show that the Service Value System (SVS) approach in ITIL V4 is able to create more integrated and value-oriented services. With this integration, the academic service process becomes more transparent, easy to monitor, and can be evaluated on an ongoing basis.

Other research also supports the importance of system integration and the implementation of ITIL V4, as stated by Lestari and Anggraini (2023) who stated that an academic information system with real-time monitoring and evaluation features can improve the quality of educational services. In addition, Safrina (2023), Ramadhan et al. (2023), and Herlinudin et al. (2023) emphasized that the application of practices in ITIL V4 such as incident management and problem management is able to improve service response and system stability. Studies by Fathan et al. (2023) and Setyaningsih et al. (2023) also show that ITIL V4-based

service evaluation can improve overall IT service performance. Furthermore, Pratama and Nurhayati (2022) and Saputra and Wibowo (2021) emphasized that the implementation of ITIL V4 in the university environment is able to improve the quality of academic services through a structured, measurable, and user-oriented approach. Thus, based on these various studies, it can be concluded that the implementation of ITIL V4 and the development of integrated information systems are effective solutions in improving the governance of academic services, especially in the management of student practical work.

2.2. Design and Build Systems

System design is a structured process stage which includes needs analysis, architectural design, implementation, and evaluation in order to get results and solutions that are in accordance with the goals.

2.3. Website

A website is a collection of interconnected pages that store various content such as documents or images on a web server. Access to this web application is done by the user through a browser. Websites can function for a variety of purposes, such as providing information, providing a communication platform, or enabling online transactions.

2.4. Practical Work

Practical Work (KP) is an academic activity that provides opportunities for students to apply the knowledge and skills gained during lectures into a real work environment in a company, agency, or organization relevant to their field of study. Through this activity, students can gain professional experience, understand the work process in the industrial world, and develop technical and non-technical competencies as a form of integration between the theories learned in higher education and practices that occur in the world of work.

2.5. Unified Modelling Language (UML)

Unified Modelling Language (UML) It is a visual modeling language used to describe, specify, build, and document object-based systems in the software development process. In addition, UML is used to design, describe, document and to plan the interaction between components in a system.

2.6. ITIL V4

ITIL V4 is a framework that focuses on IT service management with an approach that emphasizes value creation through the integration of various service activities. By applying the principles in ITIL V4, such as a focus on value, collaboration, transparency, and continuous improvement, it is hoped that the work governance of student practice can be significantly improved.

2.7. Service Request Management

Service Request Management is a practice in ITIL V4 that aims to manage all service requests from users effectively and standardized. Service requests can be in the form of requests for information, service access, document approvals, or other administrative needs that do not fall into the category of incidents or service interruptions. This practice is designed to ensure that every user request can be received, processed, monitored, and resolved according to established procedures, thereby improving operational efficiency and user satisfaction. In the context of student practical work, *Service Request Management* It can be used to manage the process of applying for a practice work location, applying for a cover letter, submitting a supervisor, and other administrative processes in an integrated manner.

Service Desk is the main point of contact (*single point of contact*) between service providers and users in the IT services ecosystem. This practice functions as a communication center that receives, records, coordinates, and follows up on various requests and problems experienced by users. *Service Desk* Not only does it focus on problem solving, but it also ensures that users get the information and support they need while using the service. In the management of student practice work, *Service Desk* can act as a means of communication between students, supervisors, education staff, and practical partners so that all information, consultation, and follow-up can be carried out more quickly, documented, and coordinated.

2.8. Continual Improvement

Continual Improvement ITIL V4 is a practice that focuses on continuously improving the quality of services, processes, and organizational performance through the identification of improvements, evaluation of user needs, performance measurement, as well as the implementation of value-added changes.

In the student practice work system, this practice is applied through periodic evaluation of the administrative process, monitoring the implementation of KP, measuring user satisfaction, and developing a system based on input from students, lecturers, and partners.

2.9. Black Box Testing

Black box testing It is a software testing method used to ensure that all application functions run properly according to the user's needs, without looking at the program code directly. In this study, black box testing was carried out by testing every feature in the KP application, such as filling in data on each form, managing daily logbooks, and online guidance documentation, to ensure that the system is able to operate optimally and support the KP process in an integrated manner.

2.10. User Acceptance Testing (UAT)

User acceptance testing (UAT) is the final test that is carried out to ensure the software or application developed is in accordance with the needs of the user. UAT is a direct test of interaction between the end-user and the system that serves to verify that the feature has run according to the user's needs. UAT testing includes the final phase in the testing process on the system, before which the system has been completed through the development stage. The testing stage using the UAT method will be implemented with a scale questionnaire *Likert* which is generally used for research in the form of surveys and providing questions to respondents (*user*) where the answer to the question consists of levels that can be chosen.

III. RESEARCH METHODS

This research is carried out through several stages that are systematically arranged to produce optimal solutions in the governance of students' Practical Work (KP) using the ITIL V4 approach. The initial stage of the research begins with the identification of problems through observation of the ongoing practice work management process. At this stage, the researcher identified various obstacles that occurred, such as administrative processes that had not been integrated, service delays, and suboptimal monitoring and reporting of practical work activities. After the problem was successfully identified, the research continued with a literature study aimed at obtaining a theoretical foundation related to information technology governance, IT service management, ITIL V4 framework, and various previous research relevant to the management of information technology-based academic services.

The next stage is the collection of field data which is carried out through observation, interviews, documentation, and literature studies. Observations were made directly on the process of implementing Practical Work in the Information Systems Study Program, University of Muhammadiyah Pontianak. Interviews were conducted with students, supervisors, coordinators of practical work, and education staff to obtain information about service needs, obstacles faced, and expectations for the system to be developed. In addition, the researcher also collected supporting documents such as standard operating procedures, administrative forms, and various archives related to the implementation of practical work.

The collected data is then analyzed and mapped using the ITIL V4 framework. The analysis was conducted to identify gaps between the current service conditions and the best practices recommended by ITIL V4. The practical work process is mapped into the main components of ITIL V4, such as the Service Value Chain, Guiding Principles, and Practice Domain. The results of the analysis are the basis for designing a more effective, efficient, and structured model of practical work governance.

Based on the results of the analysis, the researcher designed a student practice work governance model with reference to ITIL V4 principles. The model designed includes service flows, division of roles and responsibilities, service management mechanisms, performance indicators, and the development of a prototype of the Helpdesk IT system as a supporting medium for practical work services. In the implementation stage, the ITIL V4 framework is implemented through several main practices, namely Incident Management, Problem Management, Service Request Management, Service Level Management, and Continual Improvement to improve the quality of services provided to students.

This research approach uses the Service Value Chain (SVC) which consists of six main stages. The Plan stage is carried out to determine the research objectives, the scope of the system, and the needs of the services to be developed. The Engage stage is conducted through interviews, observations, and data

collection to understand user needs and current service conditions. The Design and Transition stage focuses on designing service solutions, drafting Service Level Agreements (SLAs), and designing system prototypes. Furthermore, the Obtain/Build stage is carried out by building and integrating the IT Helpdesk system according to the needs that have been analyzed. In the Deliver and Support stage, the system is implemented to users and monitoring of service performance and feedback collection. The last stage, namely Improve, is carried out to evaluate the results of implementation, identify system deficiencies, and prepare recommendations for continuous improvement to improve the quality of practical work services.

The developed models and prototypes are then evaluated through Focus Group Discussions (FGD) with lecturers, administrative staff, and other related parties to obtain validation of the suitability, ease of use, and benefits of the designed system. In addition, the system prototype was also tested using the Black Box Testing method on various key features such as login, service ticket creation, ticket management, and system notifications to ensure that all functions run according to user needs. The results of all stages of the research are then compiled in a final report containing the results of analysis, design, implementation, testing, evaluation, and recommendations for the development of ITIL V4-based student practice work governance.

IV. RESULTS AND DISCUSSION

I.1. System Implementation

This stage is the implementation of a website-based Practical Work service system that has been designed in the previous stage. The implementation includes the appearance and functions of the system that can be accessed by students, supervisors, and Study Program admins, according to the needs of each user.

I.2. Login Page

In figure 4, is the view of the login page, where this display page is used by lecturers, students and partners to log in or access the system.



Fig. 1. Login Page

I.3. Admin Page

In the image, it shows the Admin Dashboard page on the Practical Work Information System (SIKAP). This dashboard functions as a center for monitoring and managing student Practical Work activities. On the main page, you will find a summary of important information, such as the number of accounts that need to be verified, pending payments, the total number of active students, and the number of internships that are ongoing. In addition, account information is available that requires verification and system statistics that include the number of active lecturers, active partners, open vacancies, and seminars waiting for examiners. The dashboard view is designed to be simple and informative, making it easier for admins to monitor system conditions and take necessary actions quickly and efficiently.

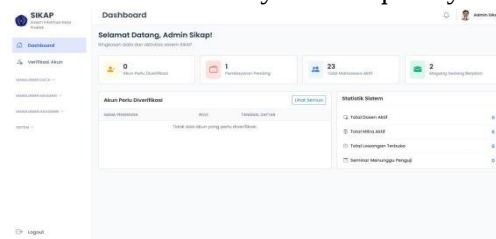


Fig. 2. Dashboard Admin

I.4. Lecturer Data Management Page

Figure 3 shows the **Lecturer Data** page on the Practical Work Information System (SIKAP) used by the admin to manage supervisor data. This page provides search and filter features by functional job title

to make it easier to manage data. The information displayed includes the lecturer's name, NIDN, email contact, area of expertise, number of guidance students, and account status. In addition, there is an action feature to view details and manage lecturer data. Through this page, the admin can monitor the availability of supervisors and ensure that the lecturer data used in the Practical Work process is always accurate and up-to-date.

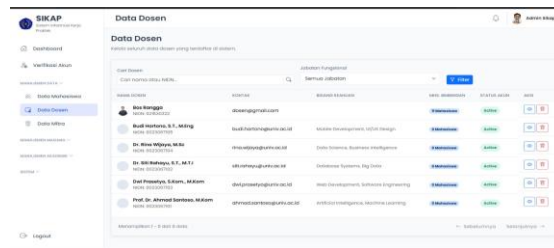


Fig. 3. Lecturer Data

I.5. Student Data Management

The image shows the Student Data page on the Practical Work Information System (SIKAP) which is used by the admin to manage student data participating in the Practical Work. This page provides search and filter features based on payment status to make it easier to manage your data. The information displayed includes the student's name, NIM, email contact, supervisor, account status, and payment status. In addition, there is an action feature to view details and delete student data. Through this page, admins can monitor the administrative and academic status of students centrally so that the process of managing Practical Work participants becomes more effective, structured, and easy to do.

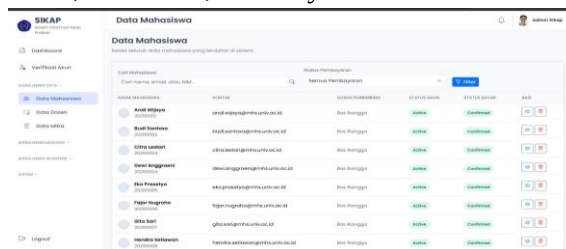


Fig. 4. Student Data

I.6. Pengujian User Acceptance Testing

The *User Acceptance Testing* (UAT) test method is a testing method that aims to find out how much the system can be accepted by users. In this test, the researcher distributed questionnaires to 40 respondents consisting of 30 respondents for system testing on students and 10 respondents for system testing on partners. The UAT test was carried out using a *likert* scale used for measuring questionnaire results based on a scale of 1 to 4. This is done to measure attitudes and opinions in providing assessments based on the level of approval or disapproval of respondents to an item. The following table 1 is the percentage value of the *Likert* scale.

Table 1. Likert Scale Percentage Value

Score Likert	achievement Presentation Interval	Featured Categories
1	0% - 20%	Strongly Disagree
2	21% - 40%	Disagree
3	41% - 60%	Neutral
4	61% - 80%	Agree
5	81% - 100%	Strongly agree

I.7. User Acceptance Testing

The following are the results of the customer UAT testing questionnaire on 30 customer respondents (students).

Table 2. Customer UAT Results (students)

Variable	Questions	Answer					
		SS	S	N	T	S	STS

Design	Is the interface of this Practical Work system attractive and easy to understand?	14	12	4			
Usability	Does the KP location scheduling feature and daily logbook make it easier for you to manage Practical Work activities?	23	7				
Ease Of Use	Do you feel comfortable using this system without needing help from others?	16	12	2			

Based on the distribution of questionnaires to 30 respondents with 10 questions and 5 answer choices, the results of the customer's UAT were as follows.

- Strongly Agree (SS) = $5 \times 177 = 885$
- Agree (S) = $4 \times 108 = 432$
- Neutral (N) = $3 \times 15 = 45$
- Disagree (TS) = $2 \times 0 = 0$
- Strongly Disagree (STS) = 0

Table 3. UAT MITRA Results

Variable	Questions	Answer					
		SS	S	N	T	S	STS
Design	Do you find the interface of the Practical Work system to be easy to understand and use in the student guidance process?	2	6	2			
Usability	Does the scheduling and monitoring feature of student activities make it easier for you to manage your tutoring time and reduce the risk of scheduling errors?	5	5				
Ease Of Use	Is it easy to add, edit, and delete student guidance or activity data in the Practical Work system?	7	3				

Based on the results of the calculation of user satisfaction level with the Practical Work service system, a score of 91% from partners, 89% from students, was obtained. These values, according to the Likert scale, fall within the 81%-100% interval and fall into the category of strongly agree. Thus, it can be concluded that the level of acceptance and satisfaction of users with the Practical Work service system is very high and in accordance with their needs.

V. CONCLUSIONS AND SUGGESTIONS

Based on the results of the research, the website-based Practical Work service system was successfully designed and built according to the needs of users. This system provides key features such as user registration and login, KP location determination, daily logbook management, guidance documentation,

and real-time monitoring of student activities for supervisors and admins. This system is able to overcome previous problems, such as lack of reporting standards, limited information, monitoring difficulties, and assessments that have not been integrated and transparent. The development process uses the System Development Life Cycle (SDLC) method to ensure that the system is built systematically and in a targeted manner. The *black box testing* shows that all functions are running as needed. The User Acceptance Testing (UAT) results in a satisfaction rate of **91%** from partners, **89%** from students of the Study Program, all of whom are in the likert scale interval of **81%-100%** (strongly agree category). This shows an excellent level of acceptance from all users of the Practical Work service system. It is hoped that this Practical Work service system can continue to be developed by adding new features according to the development of user needs, as well as periodic evaluations to ensure that the quality of services is maintained and can increase the efficiency, transparency, and accountability of the implementation of Practical Work in the Information Systems Study Program on an ongoing basis.

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