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Request Fulfillment Procedure Planning Internet Network Services in Rise Center Building with Information Technology Framework Library Infrastructure V3

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ABSTRACT

One of the government's frameworks, IT-IL, focuses on information technology services to deliver effective work in optimizing the use of technology in administering Internet services. The goal of this research is to create a draft operational standard procedure and construct an Internet service system that aligns with the IT-IL v3 framework's Internet service request fulfillment process. The flow diagram approach (analysis, implementation, and testing) is the methodology employed. The procedure's design yields data collection through observations, questionnaires, and interviews, with the questionnaire being distributed based on five factors: tangible evidence, empathy, dependability, assurance, and responsiveness. The SOP draft procedure creates a draft SOP that has been verified by the administrator. This draft SOP handles network troubleshooting, account registration, socialization of the login hotspot at the rise center, performing the bandwidth limit, and network verification. It is derived from the request fulfillment process of the Internet network service using the IT-IL V3 framework. Using the IT-IL v3 framework, the researchers may make inferences from the output of Rise Center, the Internet service provider's request fulfillment method, based on the study findings. As a result, the researchers' questionnaire, which consists of thirty questions, employs five criteria. Physical proof averages 2.13, empathy averages 2.06, reliability averages 2,11, response averages 2,03, guarantees averages 2.54, and this leads to draft systems SOP launching the network, account registration, socialization, how hotspot login is blocked rise center, launching bandwidth limit, and network verification. These are the results that are presented as averages for each of the five criteria.

1. INTRODUCTION

In conducting procedural studies to deal with requests for information technology services, including internet access services, registration services, password creation services and user ID information retrieval [1]. Internet service requests are handled by the administrator automatically. However, some service requests require consistent follow-up to avoid difficulties when using hotspots located at the center of the rise. This is due to the lack of conventional standard procedures that can be used to perform Internet network management on access management servers [2].

The focus of this research is on domain service operations using the IT-IL V3 framework [3]. This research uses the framework for this research because domain service operation is aimed at providing effective services to users based on IT management processes [4].

The goal of IT-IL's work is to improve the quality of internet services and operational technology capabilities [5]. The purpose of the IT-IL version 3 is to improve and improve the standard of information technology services provided by the organization [6]. IT-Il is one of the main tools used by the Government. It focuses on providing information technology (IT) services so that it can perform the necessary tasks when providing services that maximize the use of IT and, consequently, strengthen the Internet service provider [7].

Generally speaking, the Rise Center Building is considered a test site for practical exercises with highly functional facilities. Nevertheless, there are still some problems that have been identified by the masters. This is why effective experimentation and teaching are needed for students to be able to take advantage of the lab. To meet the primary objectives of Internet users (students) and to the goal of high-quality services, there is a need for continuous improvement of the quality of services to meet the needs of its owners [8]. For example, meet the requirements of physical infrastructure, quality of service, and technology that can facilitate the provision of Internet services easily accessible to students [9, 10].

Before studying the effectiveness of request fulfilment procedures using the ITIL V3 framework, a lot of research has been using the V3 ITIL framework. Among them is a study published by the Islamic Relief Committee and the Sutabri Study Group on IT Service Management (ITSM) and E-

Learning at the University of Bina Darma. E-Learning, using the ITIL V3 Framework, is the development of information and communication technology that is used in the learning and teaching process without the need for a physical classroom. The aim is to reduce the rate of failure that occurs in the e-learning environment [11]. Atika et al. [12] made the maturity analysis of the hospital management information system domain service operation framework ITIL V3. Where the information is useful to support the services available in the hospital and measurements are carried out to find out how much SIMRS is prepared in support of the services that are available at the hospital. This research uses the Information Technology Infrastructure Library (ITIL) version 3 paradigm for information technology analysis on the Service Operation domain. Putri and Sutabri [13] investigated the use of ITIL V3 in the analysis of information technology management services to improve operational and business activities on CV companies. For the organization to remain in existence and compete with its competitors, good information technology governance is required, such as research made by Priatam and his colleagues [14]. Romadhon [15] conducted the analysis to understand with certainty the quality of services such as what is provided, it is necessary to check the level of maturity of IT service providers. The research conducted by Jonathan and Legowo [16], aims to understand how information technology service management (ITSM) has reached a level of maturity, or Degree of Presence, in terms of improving the quality of IT services in relation to the performance and goals of the organization.

The research carried out by Febriant et al. [17] evaluated the maturity of information technology service management systems at 24Slides Corporation. Since the company has information technology services to facilitate online business operations, the study uses the Information Technology Infrastructure Library (ITIL) V3 domain service operation framework to assess the maturity rate. The research carried out by Cahya Indah Safitri and related research on the Analysis of the Performance Level of Information Technology Services Management is also given to employees as users of the National Library of Purbalingga. It is expected that with the availability of information technology services will help users in the work [18]. The purpose of this study is to make it easier for participants of the XYZ Study Program to understand the working conditions or even the quality of the information technology services provided by the Academic Information System by comparing the maturity of the current information technology systems with those expected by compare their maturity rates [19]. Analysis conducted by Salim et al. [20] on Information System Design Helpdesk. Before implementing the Helpdesk Information System, a thorough analysis of the information technology service management (ITSM) job needs should be carried out. This analysis should be carried out in accordance with the needs of the organization and should also provide knowledge management functions.

There are similarities and variations between this study with the eleven other investigations. The utilization of the Information Technology Infrastructure Library (IT-IL) architecture, domain service operation, request fulfillment, and the development of standard operating procedures are among the research's commonalities. However, this research differs since other views were used during the documentation process.

The lack of standard form papers that can be used as a reference while using an internet connection is the main finding of this study, which underscores the necessity for consistent handling to satisfy the ever-increasing demand for IT services [21]. The Framework Information Technology Infrastructure Library V3 process series begins with Network Service Request Processing. The goal is to enable rapid and effective access to standard services that can provide data regarding user requests or extensive requirements [22]. One goal of this research is to use the IT-IL v3 framework to optimize the Internet service provider's system and create a standard operating procedure that aligns with the work process of satisfying the providers' requests [23].

2. RESEARCH METHODS

Figure 1 illustrates this research methodology is a framework for carrying out an action or a framework for thinking to develop a focused concept that is connected to a purpose.

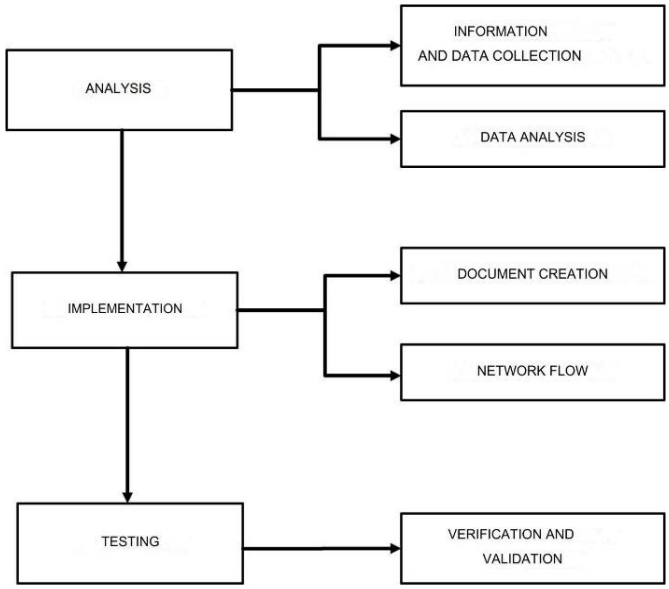

Figure 1. Research methods

2.1 Analysis

The examination of the requirements needed to develop the system is done in the first step. This analysis's two phases are the gathering of data and information and the data analysis.

2.1.1 Collection of information and data

At this point, data and information are gathered with the intention of gathering the information required for the service desk to process and fulfill internet service requests. The process of gathering data involves making surveys and observations to gather information for the purpose of creating questions or questionnaires, which are then distributed to enrolled students. To achieve valid results, an interview is conducted with the administrator following the creation of a questionnaire.

2.1.2 Data analysis

The following phase in the data analysis procedure is to create papers after all the information and data on the fulfillment of requests for Internet network services that the rise center has prohibited has been collected.

2.2 Implementation

This researcher's implementation step incorporates all prior study findings. As of right now, the rise center is responsible for handling the document generation and Internet network setup needed to carry out request fulfillment upon service reception [24].

2.2.1 Document creation

A methodical procedure is followed to create a document at the document generation stage that satisfies requirements for Internet network services. To fulfill requests after receiving services, rise center is necessary [25].

2.2.2 Network flow

To assist and better grasp the ideas of logical network topologies, this phase discusses the hardware and the network topology architecture on the Rise Center Building.

2.3 Testing

Conducting validation and verification to ascertain the Internet service provider's compliance with the rise center is the next stage in the inquiry procedure.

2.3.1 Verification

Document verification is the act of rewriting or validating a standard operating procedure (SOP) document to ascertain whether the project's draft satisfies the requirements to be employed in response to the Rise Center's request for Internet connection services [26].

2.3.2 Validation

For the results to be used in the next step, document validation is the process of confirming that the interview question that was sent to the respondent is legitimate and trustworthy. The process of identifying the rise center request of the Internet service provider involves the use of SOP documents that have been produced and modified to meet the needs.

3. RESULT

The findings of the "Request fulfillment" study phase of Internet service consumers using the IT-IL V3 framework in three stages: first analysis, second implementation, and third testing with validation and verification [27].

3.1 Analysis

It is possible to draw conclusions about certain demands in the design of the Internet network service request fulfillment method, which is intended to create a process for the fulfillment of requests for Internet network services at the rise center, based on the issues that are already present [28]. Among the steps in the procedure planning process are:

3.1.1 Collection of information and data

During the information and data gathering phase, a survey is conducted to gather data for creating a questionnaire. This is accomplished by selecting a sample of the population and utilizing an instrument or questionnaire to collect data [29]. Prior to the questionnaires being distributed, they are created. Each questionnaire consists of two questions: a positive and a negative one. The questions are selected by a positive and negative question expert who has read the questions and has adjusted them to the KBBI dictionary. So in the questionnaire distribution stage, Zoho forms are used to speed up data collection [30]. Students are given a questionnaire with a total of thirty questions as part of the data collection procedure. After the results of the questionnaires are sent, Microsoft Excel is used for data processing and result calculation purposes [31].

The closed questionnaire is the one that is utilized [32]. To ensure reliable findings, the researchers spoke with the administrator directly in addition to using a questionnaire. Students majoring in computer engineering who are enrolled in classes and have used the Internet network under the rise center make up the study's population. The study's sample population consisted of 307 semester students, specifically 3.5, 7, 9, 11, and 13 pupils. This study used basic random samplings with probability sampling as the sample strategy [33]. Poluakan et al. [34] applied the Slovin formula during sample collecting since the study's population is known.

$$n = \frac{N}{1 + Ne^2} \tag{1}$$

where, *n*=sample size; *N*=population size; *e*=the percentage of inappropriate release due to sampling errors that are still tolerable.

Table 1 shows the non-research relaxation rate was 10%, sample determination based on percentage [35].

Table 1. Pickup percentage

Large Population	Sample Size
0-100	100%
101-1000	10%
1.001-5.000	5%
5.001-10.000	3%
>10.000	1%

The number of samples utilized in this investigation, computed using the formula, is as follows:

$$\begin{aligned} n &= \frac{N}{1 + Ne^2} \\ n &= \frac{307}{1 + 307(10\%)^2} \\ n &= \frac{307}{1 + 307(0.01)} \\ n &= \frac{307}{4.07} = 75.42 = 75 \end{aligned} \tag{2}$$

Table 2 shows the Slovenian method, the sample number came out to be 75.42, which was rounded to 75. Thus, a minimum of 75 respondents would be needed to reflect the population. Every respondent is a current student who has used the rise center's internet hotspots.

3.1.2 Analysis of data

Table 2 shows process involves gathering information that will be used to plan the procedure for fulfilling requests for Internet service at the Rise Center [36]. The information was gathered by distributing questionnaires to students in semester levels 3,5, 7, 9, 11, 13, and 14. The results of the questionnaire show how many respondents indicated that they agreed, disagreed, or were unsure about each topic used in the study.

Table 2. Aspects of physical evidence

No.	Question	Yes	Nervous	No.	Total
		3	2	1	
1	Has the rise center building never had a power outage?	77	2	20	255
2	Have the facilities and services provided by the administrator been fulfilled?	59	1	39	218
3	Do you often access hotspots in the Rise Center Building?	85	0	14	269
4	Does rainy weather not affect the internet network?	44	3	52	190
5	Does the internet network in the Rise Center Building always have a connection when users access?	38	3	58	178
	Total				1110

According to the findings of the questionnaire distribution, question 1 yielded a total result of 255, or the values of Yes 77, Doubt 2, and No 20. Next, question 2, which has a total score of 218-Yes for 59, Doubt for 1, and No for 39-is examined. Given a total score of 269 for question 3, where the answers are Yes 85, Doubt 0, and No 14. regarding question 4, which has a total score of 190 with ratings of Yes 44, Doubt 3, and No 52. Proceeded to question 5, where the total score was 178, with the values of Yes 38, Doubt 3, and No 58. With 1110 in total.

3.2 Implementation

Using information from administrator interviews, the researchers will create a document in this phase that details how rise centers will fulfill requests for network services and create a draft set of standard operating procedures (SOPs) that will help all current users' work at the centers become more organized [37].

3.2.1 Documentation

The presence of SOP as a support for the deployment of services is covered at the documentation and draft SOP stage, along with recommendations that include the operational procedures that are currently in use within the business.

Table 3 shows the illustration and it describes how to register an account at the Rise Center. The student completes the account registration form given by the administration, submits it to the administrator, and the administrator enters the student's information after finishing their meal. The student is then informed that their account has already been registered.

3.2.2 Network flow

Figure 2 shows the network architecture of the Rise Center Building. The RB CCR 1009-7G-1C-1S+router in the Rectorate Building has an IP address of 10.0.1.xxx/xx from the internet source. The engineering faculty router is connected to the RB CCR 1009-7G-1C-1S+router port, which has an IP address of 10.10.0.xxx/xx. On port 4, the RB CCR 1009-7G-1C-1S+connects to the Mikrotik router RB 9412 ND, which has an IP address of 10.10.10.xxx/xx for the hotspot line. The router Mikrotik RB 941 is connected to the RB CCR 1009-7G-1C-1S+router.

Table 3. Draft SOP for account registration

SOP Account Registration					
	No	PIC	Flowchart	Description	Related Doc
Phase	1	Student	Mulai	Students register an account by filling out the form provided by the administrator and sending it via google form.	Registration Form
	2	Administrator	Registrasi Akun Hotspot Menyerahkan Formulir Input data Mahasiswa	Administrator creates network accounts for students who have registered for an account or filled out a form, after completion, it is informed to students that the account has been created and can be used.	Registration Data Students
	3	Student	Memberikan Informasi Menerima Informasi Selesai	Students receive information from the administrator that their account has been registered and can be used for internet access.	

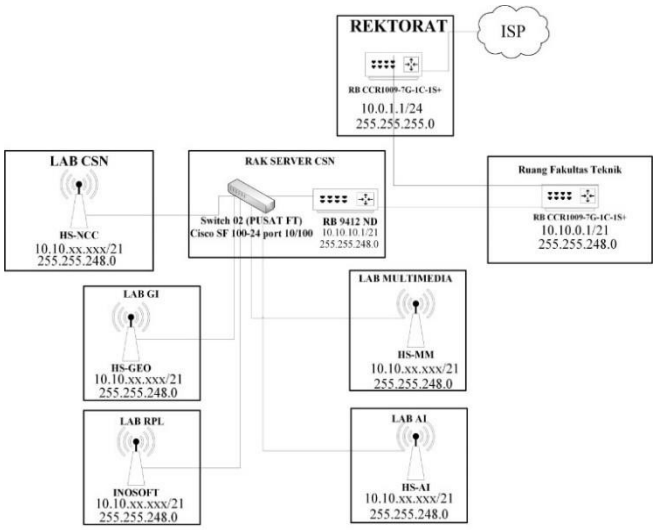

Figure 2. Network topology

3.3 Verification and validation testing

The next stage following the creation of the draft SOP is to confirm and validate the document as evidence that the drafting SOP document accurately reflects the research object.

3.3.1 Verification testing

Table 4 shows at this point, the administrator tests the proposed SOP.

Table 4. Draft sop for account registration

Draft SOP Account Registration	
Purpose	Verify the Account Registration document to verify the accuracy of the information defined and loaded in the SOP document.
Method	Interview
Goal	Administrator
Result	The results of verification of the draft Account Registration SOP that have been revised by the administrator.

3.3.2 Validation testing

At the rise center building, a network service system was created during the five draft SOPs' validation test phase.

If the user does not know how to access the login page for the Rise Center Building, Figure 3 illustrates how account registration functions, beginning with the student gaining access to the hotspot SSID and ending with the login page being shown. Students can then click the register option if they don't already have an account, or they can input their username and password if they do. The Telegram bot will display a notification as soon as the registration is complete. The user may then utilize the login page to report or criticize the network if there is a problem with the rise center building's network hotspot. If the complaint has already been made, the telegram bot will be notified.

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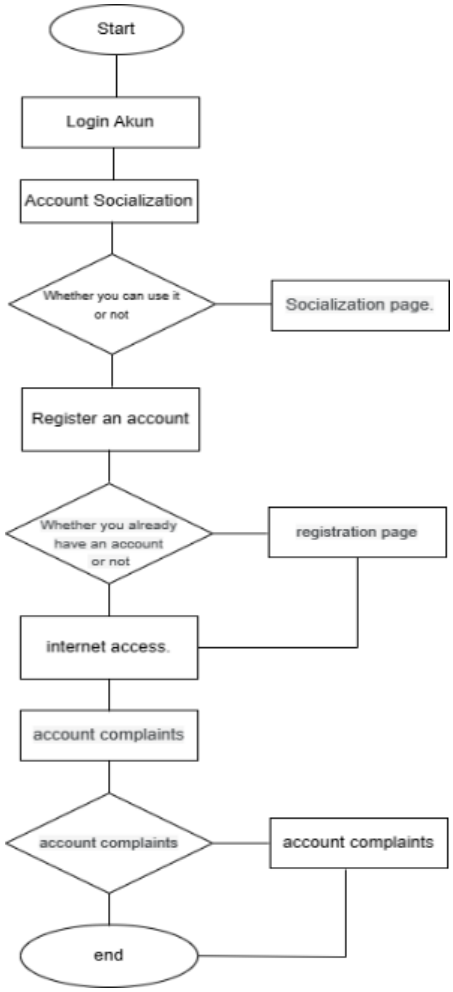

Figure 3. System workflow

Figure 4. Login using smartphone

(1) Instructions through smartphone

Here are the steps to use:

(a). Figure 4 shows at connect the smartphone device to the WIFI with the SSID name: RISE CENTER.

(b). Figure 5 shows after selecting the SSID, a page display will appear where on the main page there are 3 menus namely the first account registration menu, the second socialization, and the third network complaints.

Figure 5. Main page view

(c). Figure 6 shows at should the user want to create an account if they do not already have one, the account registration screen will look somewhat like this.

Figure 6. Signup page

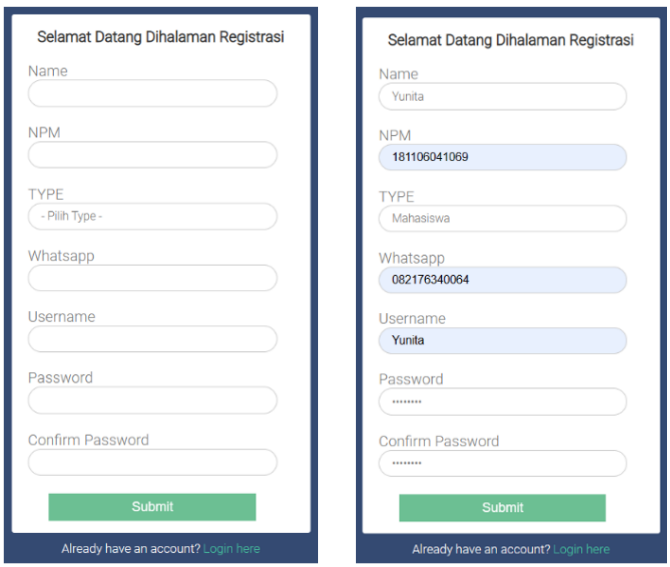

Figure 7. Account registration display

(d). Figure 7 shows the user chooses the signup option based on where it appears on the screen. Clicking it will bring up an account registration view with instructions on how to fill in any missing information, including name, npm, WhatsApp, username, and password.

(e). Figure 8 at the user chooses submit after completing the data to register it. After then, a notice confirming the successful submission of your submit request will show up.

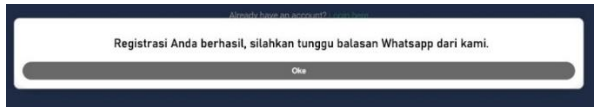

Figure 8. Account registration notification successful

(f). In Figure 9, the user can access the hotspot in the Rise Center Building after successfully registering for an account. by entering the previously registered account. If the user is having trouble navigating the Rise Center building's hotspots, they can click on socialization, which will cause the socialization page to load.

Figure 9. Account socialization view image

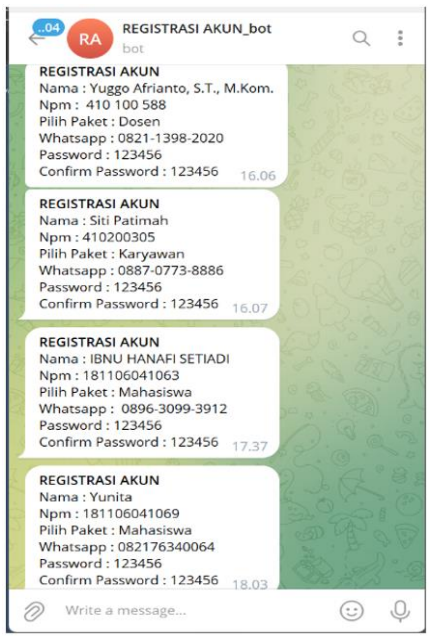

Figure 10. Account registration notification

(g). Figure 10 shows at the user chooses submit after completing the data to register it. After then, a notice confirming the successful submission of your submit request will show up.

(h). Figure 11 shows a successful account registration process, and individuals may access their previously registered account by logging in.

Figure 11. Login page

(i). Figure 12 shows upon successful login, the student will be sent to the login status page.

Welcome ibnu!

Remaining time:	Unlimited
Remaing Data:	Unlimited
Bytes up/down:	12.7 KiB / 17.4 KiB
Lama Uptime:	1s
status refresh:	1m

Logout

You just had to logout

user name	ibnu
IP address	192.168.5.2
MAC address	78:2B:46:DF:24:01
session time	1m13s
bytes up/down:	1297.1 KiB / 5.0 MiB

log in

Figure 12. Login and logout success page

(j). Next is the website for network complaints, where users can file grievances and offer recommendations on the network in the building's rise center.

(k). Figure 13 shows a display like the one below occurs when a user clicks on a network complaint page.

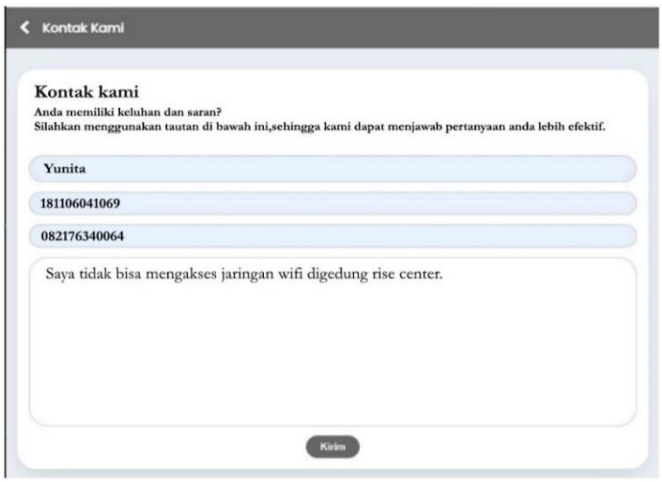

Figure 13. Complaint view

(l). Figure 14 shows when the user fills out the form on the page, writes a complaint or recommendation, then clicks Send, the page will appear as follows:

Figure 14. Sent message notification

(m). Figure 15 shows that the admin will be notified of any grievances or recommendations from the user that show up on the Telegram bot.

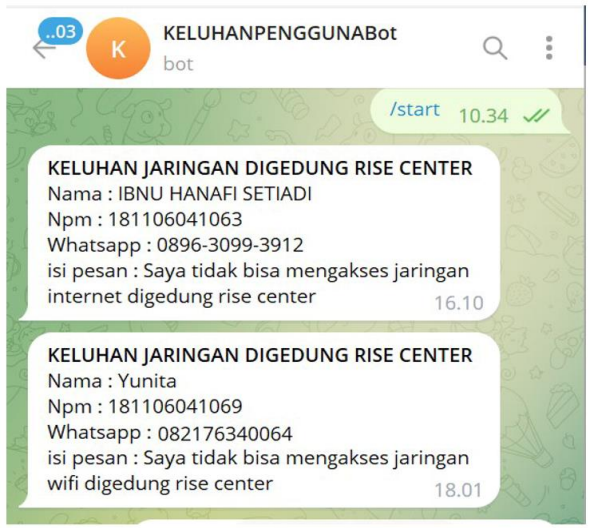

Figure 15. Notification of complaints on telegram bot

4. CONCLUSION

The researchers can make the following deductions from the outcome of the procedure design request fulfillment of the Internet network services offered by the Rise Center using the Framework Information Technology Infrastructure Library v3 based on the research findings: Data gathering methods include student interviews, surveys, and observations of their activities within the RICE CENTER facility. To create the questionnaire, samples from the public were taken utilizing a questionnaire as a means of gathering data throughout the information and data collection stage. Utilizing the five criteria of physical proof, empathy, dependability, responsiveness, and security in the RICE CENTER building. After the questionnaires have been distributed, the data is processed and the survey results are calculated using Microsoft Excel. To get precise results, the researchers also spoke with the administrator directly during interviews in addition to using the questionnaire. The study's population consists of active computer engineering major students who have accessed the Internet network under the rise center. to create a draft of the SOP draft method, which is in line with the IT-IL framework v3 request fulfillment process for Internet network services. Next, generate the administrator-verified draft SOP, which includes network troubleshooting, account registration,

socialization, limit bandwidth, network verification, and application-shaped system validation.

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