

Assessing the Maturity Level of Open Ticket Services Using ITIL V4 Framework

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ABSTRACT

Information technology services are fundamental in facilitating academic operations within higher education institutions. One essential component of IT service delivery is a ticket-based system designed to manage user-reported incidents and service requests. Universitas Sriwijaya implements the Open Ticket system under UPT TIK to support the handling of information technology-related issues submitted by students. This study aims to assess the maturity level of the Open Ticket service by applying the Information Technology Infrastructure Library (ITIL) version 4 framework. A quantitative research design was employed by distributing an online questionnaire using a five-point Likert scale. Data were collected from 381 undergraduate students of the 2022 cohort across ten faculties at Universitas Sriwijaya. The evaluation focused on five ITIL V4 service management practices, namely Incident Management, Service Request Management, Service Desk Management, Monitoring and Event Management, and Continual Improvement. The findings indicate that the Open Ticket service achieved an overall maturity score of 3.82, corresponding to Level 4 (Managed).. This result demonstrates that service processes are systematically implemented, monitored, and evaluated. Nevertheless, further initiatives are required to strengthen continuous improvement mechanisms and move toward an optimized level of IT service management. This study contributes methodologically by integrating user perception-based maturity assessment with ITIL V4 service management practices in a university helpdesk environment, providing measurable insights for continuous IT service improvement.



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I. INTRODUCTION

Information technology (IT) services have increasingly become a strategic enabler in supporting academic and administrative activities in higher education institutions [1]. The growing dependence on digital platforms for learning management, academic administration, and institutional services demands reliable, responsive, and well-managed IT service delivery [2]. Ineffective IT service management may lead to service disruptions, delays in problem resolution, and decreased user satisfaction, which can ultimately affect the quality of academic activities [3].

One of the critical IT services in a university environment is the ticket-based service system, which functions as a centralized platform for managing incidents and service requests submitted by users [4]. A ticketing system enables

systematic recording, tracking, and resolution of IT-related issues, ensuring transparency and accountability in service delivery [5]. Universitas Sriwijaya has implemented the Open Ticket system managed by UPT TIK as a solution to handle information technology complaints and service requests from students. Through this system, users can report technical issues, request IT services, and monitor the status of their submissions.

Despite its implementation, the effectiveness and maturity of the Open Ticket service have not been formally evaluated using a structured IT service management framework [6]. Without systematic assessment, it is difficult to determine whether existing service processes align with recognized best practices or to identify areas requiring improvement. The Open Ticket system functions as a centralized helpdesk platform that enables students to report IT incidents, submit

service requests, and monitor ticket resolution status. Reported issues include network disruptions, academic system access problems, email activation, and other institutional IT services managed by UPT TIK.

The Information Technology Infrastructure Library (ITIL) version 4 offers a comprehensive framework for IT service management through its Service Value System, emphasizing value co-creation, adaptability, and continual improvement [7]. ITIL V4 emphasizes value co-creation, continual improvement, and adaptability to organizational needs [8]. Compared to previous versions, ITIL V4 integrates modern service management concepts and supports digital transformation initiatives, making it suitable for evaluating contemporary IT services in higher education institutions.

This study applies the ITIL V4 framework to assess the maturity level of the Open Ticket service at Universitas Sriwijaya. The analysis focuses on five relevant service management practices : Incident Management, Service Request Management, Service Desk Management, Monitoring and Event Management, and Continual Improvement [9]. These practices were selected because they are directly related to the operational processes of the Open Ticket system and reflect critical aspects of IT service performance.

A quantitative research approach was employed by distributing a questionnaire based on ITIL V4 indicators to undergraduate students from the 2022 cohort. A total of 381 respondents from 10 faculties participated in this study, providing a comprehensive representation of system users. The collected data were analyzed to calculate the average maturity level for each domain and to determine the overall maturity level of the Open Ticket service.

The results of this study are expected to provide valuable insights into the current state of IT service management at UPT TIK Universitas Sriwijaya. Furthermore, the findings can serve as a reference for decision-makers in identifying improvement priorities and developing strategies to enhance the quality and effectiveness of IT services in higher education environments.

II. METHOD

This study employs a quantitative research approach to evaluate the maturity level of the Open Ticket service managed by UPT TIK Universitas Sriwijaya using the ITIL V4 framework [10]. The quantitative approach was selected to obtain measurable and objective data based on user perceptions of IT service management practices implemented in the Open Ticket system.

The overall research procedure was systematically conducted in several stages, as presented in Figure 1.

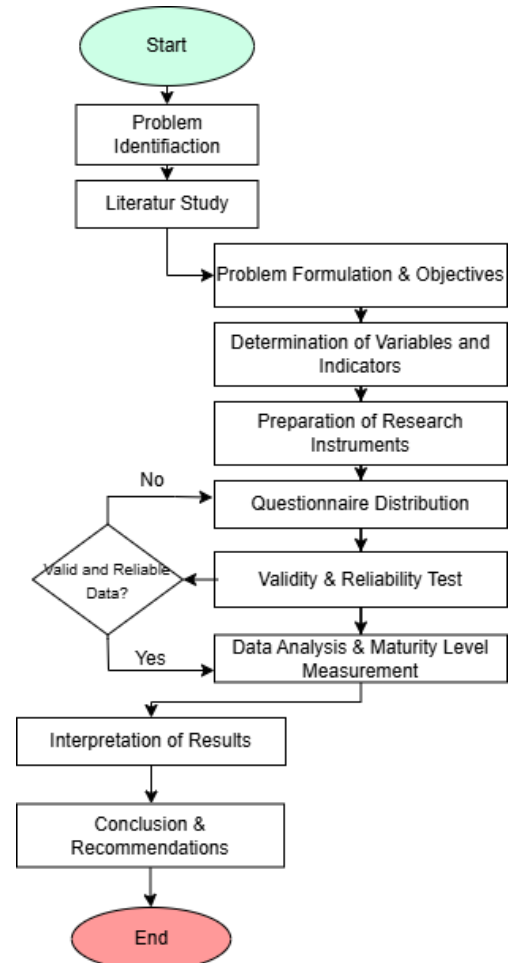


Figure 1. Research Flow Diagram

A. Research Object and Scope

The object of this research is the Open Ticket service system of UPT TIK Universitas Sriwijaya, which is used to manage information technology incidents and service requests submitted by students. The scope of this study focuses on five ITIL V4 service management practices that are directly related to the operational processes of the system, namely Incident Management, Service Request Management, Service Desk Management, Monitoring and Event Management, and Continual Improvement [11].

B. Population and Sample

The population of this study consists of undergraduate students (S1) from the 2022 cohort at Universitas Sriwijaya who have used the Open Ticket service. The total population size is 8,066 students. The sample size was determined using the Slovin formula with a 5% margin of error [12], resulting in 381 respondents. Sampling was conducted using a proportional random sampling technique to ensure representative participation from all 10 faculties at Universitas Sriwijaya.

TABLE I
POPULATION DISTRIBUTION 10 FACULTIES OF UNDERGRADUATE STUDENTS
(S1) AT UNIVERSITAS SRIWIJAYA (2022)

Faculty	Program	Population
Economy	S1- Development Economics	216
	S1 - Accounting	244
	S1 - Management	254
Law	S1 – Science Law	520
Engineering	S1 – Civil Engineering	162
	S1 - Architecture	47
	S1 – Mining Engineering	128
	S1 – Geological Engineering	77
	S1 – Chemical Engineering	133
	S1 – Mechanical Engineering	137
	S1 – Electrical Engineering	138
	Medicine	S1 - Dentistry
	S1 - Medical Education	247
	S1 - Nursing Science	123
	S1 - Psychology	69
Agriculture	S1 - Agribusiness	255
	S1 - Animal Husbandry	117
	S1 - Soil Science	106
	S1 - Plant Protection	91
	S1 - Aquaculture	82
	S1 – Agricultural Engineering	110
	S1 - Agrotechnology	99
	S1 - Agricultural Product Technology	105
	S1 - Agronomy	105
	S1 - Fishery Product Technology	82
Teacher Training and Education	S1 - Mechanical Engineering Education	87
	S1 - Elementary School Teacher Education	109
	S1 - Pancasila and Citizenship Education	102
	S1 - athematics Education	100
	S1 - Physical Education, Health and Recreation	102
	S1 - Guidance and Counseling	104
	S1 - Community Education	72
	S1 - Physics Education	66
	S1 - Biology Education	100
	S1 - Economic Education	100

	S1 - English Education	105
	S1 - Early Childhood Education Teacher Education	103
	S1 - Indonesian Language and Literature Education	99
	S1 - Chemistry Education	66
	S1 - History Education	82
Social and Political Science	S1 - Communication Science	307
	S1 - Sociology	197
	S1 - International Relations	241
	S1 - Public Administration	572
Mathematics and Natural Sciences	S1 - Physics	76
	S1 - Pharmacy	118
	S1 - Mathematics	112
	S1 - Marine Science	129
	S1 - Chemsitry	120
	S1 - Biolgy	119
Computer Science	S1 - Information Systems	186
	S1 - Computer Systems	169
	S1 - Informatics Engineering	187
Public Health	S1 - Nutrition	103
	S1 - Public Health	255
	S1 - Environmental Health	96
Totally		8066

To determine the minimum number of respondents, the Slovin formula was applied at a 5% margin of error, which is commonly applied in quantitative research and widely recommended in methodological literature [13], as a practical approach for obtaining an adequate and statistically dependable sample size. Rumus Slovin :

$$n = \frac{N}{1 + N (e)^2}$$

Where:

- n = sample size,
- N = population (8.066),
- e = error tolerance (0,05),

$$n = \frac{8.066}{1 + 8.066(0,05)^2} = \frac{8.066}{1 + 20,165} = \frac{8.066}{21,165} \approx 381$$

C. Data Collection Technique

Primary data were obtained through an online questionnaire distributed via Google Forms. The questionnaire was developed based on ITIL V4 service

management indicators and adapted from relevant previous studies. Each statement item was measured using a five-point Likert scale, ranging from “Strongly Disagree” (1) to “Strongly Agree” (5), to capture user evaluations of service responsiveness, process clarity, system effectiveness, and continuous improvement efforts.

TABLE II
LICERT SCALE MEASUREMENT

Score	Category
1	Strongly Disagree
2	Disagree
3	Neutral
4	Agree
5	Strongly Agree

To evaluate user perceptions of the Open Ticket service at UPT TIK Universitas Sriwijaya, each ITIL V4 service management indicator was analyzed based on its mean score. This approach allows a structured interpretation of user responses across key practices, including Incident Management, Service Request Management, Service Desk Management, Monitoring and Event Management, and Continual Improvement [14]. Data were collected using an online questionnaire distributed via Google Forms and measured with a five-point Likert scale ranging from Strongly Disagree to Strongly Agree. This study employed purposive sampling, targeting undergraduate students from the 2022 cohort who actively utilized the Open Ticket service.

D. Research Instrument

The research instrument consists of 20 statement items derived from the five selected ITIL V4 service management practices [15]. Each domain is represented by several indicators to comprehensively measure service performance. Prior to analysis, the instrument was tested for validity and reliability. Validity testing was conducted using Pearson Product Moment correlation, while reliability was measured using Cronbach’s Alpha coefficient.

TABLE III
PRESENTS THE RESULTS OF THE ITIL V4 MATURITY LEVEL ASSESSMENT

Dimension	Code Item	Indicator
Incident Management	I1	The Open Ticket system makes it easier for me to report IT service disruptions
	I2	I always get a unique ticket number whenever I report a problem
	I3	The status of my report handling is always updated until it is completed
	I4	The same issue rarely occurs again after being reported through an Open Ticket
Service Request Management	R1	The Open Ticket System can also be used for non-incident IT service requests

	R2	The UPT TIK officer responded promptly to my request
	R3	Request status information is easily accessible through the "Check Ticket Status" menu
	R4	The ticket handling process follows a clear flow and procedure
Service Desk Management	D1	The UPT TIK helpdesk staff are communicative and friendly in handling reports
	D2	The response given was appropriate for the issue I reported
	D3	I can communicate with the helpdesk team via email or the ticket feature without any issues
	D4	Services cannot be processed if an official email @student.unsri.ac.id or @unsri.ac.id is not used
Monitoring and Event Management	M1	The Open Ticket system automatically sends notifications when the ticket status changes
	M2	The UPT TIK team routinely monitors the stability and performance of IT services
	M3	Disturbance reports are used as evaluation material by the UPT TIK
Continual Improvement	C1	UPT TIK conducts periodic evaluations of the effectiveness of the Open Ticket service
	C2	After the ticket is closed, users can provide feedback or rate the service
	C3	I am aware of system updates based on user feedback
	C4	The changes made improve the quality of Open Ticket services
	C5	In general, the Open Ticket service at UPT TIK has been running effectively and professionally

The instrument structure in Table III demonstrates a systematic operationalization of ITIL V4 service management practices into measurable indicators. The confirmed validity and reliability of all items indicate that the instrument provides a robust methodological foundation for assessing IT service maturity [16]. This measurement approach enables consistent, objective, and replicable evaluation of ticket-based IT service systems in higher education institutions.

E. Data Analysis Technique

Data analysis was carried out in several stages. First, descriptive statistical analysis was performed to obtain the

average score of each indicator and domain. Second, the maturity level of each ITIL V4 practice was calculated by determining the mean value of the corresponding questionnaire items. The resulting scores were then mapped to the ITIL maturity level scale ranging from Level 1 (Initial) to Level 5 (Optimized) [17]. The overall maturity level of the Open Ticket service was determined by calculating the average maturity score across all analyzed domains.

To calculate the maturity value, the average score of each questionnaire item was obtained using the following formula [18]:

$$Average\ Item\ Score = \frac{\sum Response\ Weight}{Number\ of\ Respondents}$$

Furthermore, the maturity index for each ITIL V4 service management practice was calculated by averaging the scores of all indicators within the same domain, as expressed by the following equation:

$$Maturity\ Index = \frac{\sum Average\ Item\ Score}{Number\ of\ Items}$$

After obtaining the maturity index for each domain, the overall maturity level of the Open Ticket service was determined by calculating the average of all domain maturity indices using the following formula:

$$Overall\ Maturity\ Level = \frac{\sum Maturity\ Index}{Number\ of\ Domains}$$

The resulting maturity values were then interpreted using the ITIL V4 maturity level scale, as presented in Table IV.

TABLE IV
LICERT SCALE MEASUREMENT

Index Maturity	Status
0.00 – 0.50	Non - existent
0.51 – 1.50	Initial / Ad Hoc
1.51 – 2.50	Repeatable
2.51 – 3.50	Define Process
3.51 – 4.50	Manage and Measurable
4.51 – 5.00	Optimized

The five ITIL V4 practices were selected because they directly represent operational IT service delivery within a university helpdesk environment. This analytical procedure provides a clear and structured framework for translating user perception data into quantifiable maturity levels. By mapping mean scores to the ITIL V4 maturity scale, the method enables an objective assessment of IT service performance and supports comparative evaluation across service domains [19]. Consequently, this approach strengthens the reliability of maturity level measurement and enhances its applicability for continuous improvement in IT service management.

III. RESULT AND DISCUSSION

This section presents the results and discussion of the maturity level assessment of the Open Ticket service at UPT TIK Universitas Sriwijaya using the Information Technology

Infrastructure Library (ITIL) version 4 framework [20]. The analysis is based on questionnaire data collected from undergraduate students as the primary users of the Open Ticket system.

A. Respondent Profile

The respondents of this study consisted of 381 undergraduate students from the 2022 cohort at Universitas Sriwijaya, representing 10 faculties. The respondents were selected using proportional random sampling to ensure that each faculty was proportionally represented according to the population size.

The distribution of respondents shows that the Faculty of Teacher Training and Education had the highest number of participants, followed by the Faculty of Social and Political Sciences and the Faculty of Agriculture. Although some faculties contributed a smaller number of respondents, all faculties were represented, ensuring that the collected data reflect a comprehensive perspective of Open Ticket service users.

TABLE V
DISTRIBUTION OF RESPONDENT BY 10 FACULTIES

Faculty	Total	Percentage
Faculty of Economy	36	9,4 %
Faculty of Law	35	9,2 %
Faculty of Engineering	37	9,7 %
Faculty of Medicine	59	6 %
Faculty of Agriculture	64	12,9 %
Faculty of Teacher Training and Education	64	16,8 %
Faculty of Social and Political Science	62	16,3 %
Faculty of Mathematics and Natural Sciences	31	8,1%
Faculty of Computer Science	25	6,6%
Faculty of Public Health	19	5%
Totally	381	100%

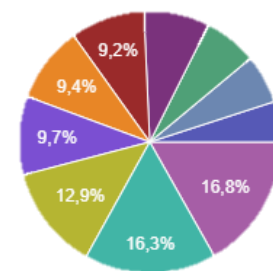


Figure 1. Distribution of Respondents by Faculty

The proportional representation of respondents strengthens the validity of the findings and allows the maturity level analysis to accurately reflect the actual condition of the Open Ticket service at Universitas Sriwijaya.

B. Validity and Reliability Testing

Before conducting the maturity level analysis, the research instrument was tested for validity and reliability to ensure the accuracy and consistency of the collected data.

1) Validity Test

The validity of the research instrument was examined using Pearson Product Moment correlation by measuring the relationship between each item score and the total score. With a sample size of 381 respondents and a significance level of 5% ($\alpha = 0.05$), the critical r-table value was approximately 0.098. An item was considered valid when the calculated correlation coefficient exceeded the r-table value and the significance value was below 0.05 [21]. The results show that all questionnaire items satisfied these criteria, indicating that each item is valid and suitable for subsequent analysis. Validity testing ensures that each questionnaire item accurately measures the intended construct, while reliability testing evaluates the internal consistency of the measurement instrument.

TABLE VI
VALIDITY TEST RESULT

Dimension	Item	r-count	r-table	Status
Incident Management	I1	1	0,098	Valid
	I2	0,410	0,098	Valid
	I3	0,486	0,098	Valid
	I4	0,279	0,098	Valid
Service Request Management	R1	0,392	0,098	Valid
	R2	0,433	0,098	Valid
	R3	0,450	0,098	Valid
	R4	0,379	0,098	Valid
Service Desk Management	D1	0,451	0,098	Valid
	D2	0,445	0,098	Valid
	D3	0,401	0,098	Valid
	D4	0,321	0,098	Valid
Monitoring and Event Management	M1	0,398	0,098	Valid
	M2	0,353	0,098	Valid
	M3	0,341	0,098	Valid
Continual Improvement	C1	0,284	0,098	Valid
	C2	0,315	0,098	Valid
	C3	0,305	0,098	Valid
	C4	0,382	0,098	Valid
	C5	0,372	0,098	Valid

Overall, the validity test results demonstrate that all questionnaire items are statistically valid and capable of accurately measuring the selected ITIL V4 service management practices. The strong correlation between each item and the total score confirms the adequacy of the instrument in capturing user perceptions of the Open Ticket service. Therefore, the validated instrument provides a solid methodological foundation for subsequent maturity level analysis.

2) Reliability Test

Reliability analysis was conducted using Cronbach's Alpha coefficient to assess the internal consistency of the instrument. The results indicate a Cronbach's Alpha value of

0.940 for the 20 questionnaire items [22], which exceeds the commonly accepted threshold of 0.70. This finding confirms that the instrument demonstrates excellent reliability and is appropriate for measuring the maturity level of IT service management practices in the Open Ticket system.

TABLE VII
RELIABILITY TEST RESULT

Cronbach's Alpha	No Items	Status
0,940	20	Reliabel

The high Cronbach's Alpha value indicates that the research instrument has excellent internal consistency, ensuring that all items consistently measure the same construct. This result confirms the reliability of the questionnaire and supports its suitability for assessing the maturity level of IT service management practices in the Open Ticket system.

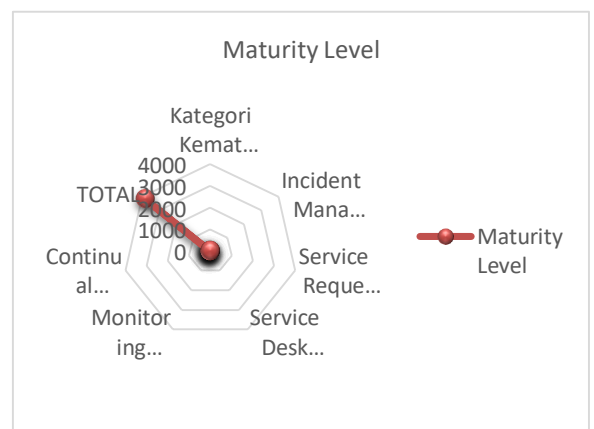
C. ITIL V4 Maturity Level Analysis

The maturity level assessment was conducted based on ITIL V4 service management practices relevant to the Open Ticket system, including [23] :

- a. Incident Management
- b. Service Request Management
- c. Service Desk Management
- d. Monitoring and Event Management
- e. Continual Improvement

Each indicator was measured using a five-point Likert scale, and the average score for each domain was calculated to determine the corresponding maturity level.

Figure 2 illustrates the radar diagram of the ITIL V4 maturity level assessment for the Open Ticket service at UPT TIK Universitas Sriwijaya. The diagram visualizes the maturity scores across five ITIL V4 service management practices, namely Incident Management, Service Request Management, Service Desk Management, Monitoring and Event Management, and Continual Improvement. To enhance result interpretation, a radar diagram is utilized to visualize maturity level distribution across ITIL V4 practices.



The radar diagram shows that all evaluated domains have reached Level 4 (Managed), indicating that the service processes are well-defined, monitored, and consistently implemented. Service Desk Management demonstrates the highest maturity level, reflecting effective user support and communication, while Continual Improvement shows relatively lower values, suggesting opportunities for further optimization.

The detailed maturity level results for each domain are summarized in Table VIII. The overall maturity level score of 3.82 confirms that the Open Ticket service is positioned at Level 4 (Managed), indicating that the service processes are well-controlled, measurable, and consistently aligned with IT service management best practices.

TABLE VIII
MATURITY LEVEL RESULT

Dimension	Average	Level Maturity
Incident Management	3,9	Level 4 - Managed
Service Request Management	3,82	Level 4 - Managed
Service Desk Management	3,92	Level 4 - Managed
Monitoring and Event Management	3,74	Level 4 - Managed
Continual Improvement	3,73	Level 4 - Managed
Average	3,82	

Service Desk Management achieved the highest maturity score of 3.82 places the Open Ticket service at Level 4 (Managed), indicating that the service processes are well-controlled, measured, and consistently implemented. The obtained maturity level (3.82 – Managed) is consistent with previous IT service maturity studies in higher education environments

D. Discussion

The maturity level assessment revealed that all evaluated ITIL V4 service management practices achieved Level 4 (Managed). At this level, service processes are formally defined, consistently implemented, and monitored using established performance indicators [24]. Among the analyzed domains, Service Desk Management obtained the highest average score, highlighting the effectiveness of the service desk in facilitating user communication and handling service requests efficiently.

Conversely, the Continual Improvement domain recorded the lowest average score, although it remained within the Managed level. This result suggests that improvement activities have been initiated; however, opportunities still exist to enhance systematic improvement through more structured utilization of performance metrics and user feedback [25].

To achieve Level 5 (Optimized), UPT TIK should adopt predictive service analytics. Overall, the findings demonstrate that ITIL V4 provides a robust framework for assessing IT service maturity in higher education institutions. The results

align with previous studies that emphasize the role of ITIL-based service management in improving service quality, operational efficiency, and user satisfaction.

IV. CONCLUSION

This study assessed the maturity level of the Open Ticket service at UPT TIK Universitas Sriwijaya using the ITIL version 4 framework. The evaluation focused on five key service management practices relevant to ticket-based IT service operations. The findings indicate that the Open Ticket service achieved an overall maturity score of 3.82, corresponding to Level 4 (Managed).

This result signifies that IT service processes have been systematically implemented, monitored, and controlled in accordance with established procedures. Although the service has reached a managed level of maturity, further improvements are required to progress toward an optimized state. Future enhancement efforts may include strengthening continuous improvement mechanisms, increasing service automation, and leveraging user feedback more effectively.

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