

Assessing IT Services Management with ITIL Framework V3: A Case Study

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Abstract. Maturity measurement is very necessary to improving the quality of the IT Service to made business better especially in operational area alignment with the institution purposes. The purpose of this study is to measure maturity level an application for the establishment (IJOP) of RA & Madrasah of The Ministry of Religious Affairs of The Republic of Indonesia. This study will compare maturity level from user which is current condition with their expectations using ITIL V3 domain service operation: event management, incident management, request fulfillment, problem management, access management and maturity level PMF measurement. The method to get the data using interview and questionnaire. This study based on variables contained ITIL V3 Framework Domain Service Operation and maturity level PMF found a large gap, the maturity level of “IJOP” is currently not as expected. The result from measurement in current condition is “2,4” that means repeatable, and the expectation is “4” that mean managed. The Service Level Agreement of this application reaches +/-95%. From that large gap, this study will be purposes a recommendation for improvement the “IJOP” application in features, tools and policy to help improving Service Level Agreement and index maturity level.

Keywords: Evaluation, ITIL V3 framework, Service Operation, Ministry of Religious Affairs of The Republic of Indonesia.

1. Introduction

Today is a Digital transformation era that make technology always improve everytime. This era called industry 4.0. In this era technology reshape and changes the way government institution makes their policies to provide services for the society. In the future technology has a great opportunity for designing continuity of government work. The Government Digital Service (GDS) that conducted a study of tecnological developments in the government in 2017 identify five technologies that can bring in government area: services, processed, regulation, policies, and technology. (Future Technology in Government | The Institute for Government, n.d.) that make the big transformation in services and business process in many areas especially government institution. Many Applications are built massively without evaluation that make difficult to monitor the usefulness of that application. In this study will evaluate one of the big application services in Ministry of Religious Affairs of the Republic of Indonesia. The application is called "IJOP". The purpose of this study is to answer the questions "what the gap of the application and what recommendation that purposes can be to make this application more useful and help to improve the maturity level and SLA?".

To evaluate the service operation of "IJOP" this study will using a framework. The framework that will be using is ITIL V3. ITIL (IT Infrastructure Library) is an ITSM (IT Service Management) framework that support organizations to manage effectively an information technology services. ITIL has been globally recognized as a best practice guide for management of information technology services and considered a model for information technology management services in all categories of organizations around the world. (Carlidge et al., 2012) This framework has five domains: Service Strategy, Service Design, Service Transition, Service Operation and Continual Service Operation. In this study will using domain Service Operation Only and ITIL PMF as measurement.

So that, why this evaluation needed for the application "IJOP"? According to the Presidential Regulation of the republic of Indonesia number 95,2018 Concerning the Electronic-Based Government Systems. In this regulation define that government institution should transform to digital for doing their services to society and every year the government institution will be monitor by government who has been appointed by the president so the all government institution should be prepare in order to get good results from that evaluation. From An Electronic-Based Government Systems is necessary to achieve clean, efficient, transparent, and accountable governance as well as high-quality and dependable public services. Electronic-Based Government System is a government organization that utilizes information and communication technology to serve the public that make government institution improve their digital service value and to prepare for the next evaluation. (RI, 2018) With ITIL V3 Domain Service Operation and ITIL PMF this study will evaluate to support application services in Ministry of Religious Affairs of the Republic of Indonesia to achieve the next level in the next evaluation.

The object of this study is the Application of Operational Permit for the Establishment (IJOP) of RA & Madrasah. The Technical Guidelines for the Establishment of Madrasahs Organized by the Community are outlined in the Decree of the Director General of Islamic Education Number 2161 concerning the Second Amendment to the Decree of the Director General of Islamic Education Number 1385 of 2014. Explicitly, the registration of Madrasah permits is carried out using the application of the Operational Permit for the Establishment of RA & Madrasah. A decree and a charter for the establishment of the madrasah will be generated from the application along with an electronic signature. This demonstrates that the application's users will grow steadily, as seen by the fact that from the app's launch in 2020 to 2022, there were 1,94,787 visitors. Based on these findings, the researcher concluded that to give the best possible service to users, the quality-of-service management needs to be carefully monitored and managed. (Juknis Perubahan Kedua No. 1385 Tahun 2014 Yang Ada Stempel, n.d.)

Following of ITIL V3 Framework Domain Service Operation and ITIL PMF, from the research and referencies. This study found the result that the gap between current conditions with expectation is too large and the Service Level Agreement yet achieve 99% with the conditions should be fixing. This study will contribute to purposes improvement recommendations for "IJOP" based on problem that found

during evaluation with ITIL V3.

2. Relate Work

The following are some of the successful previous studies that are also a reference for the authors provided. From Researcher Stopira Ricambi, 2020. With the research title Evaluation of Chatbot Service Using ITIL V3 Framework on XYZ Bank. The resulting research is conducting chatbot evaluations and providing improvement recommendations to Bank XYZ. This thesis will evaluate the document management system that has been integrated with chatbot system in Bank XYZ. Evaluation process will refer to ITIL V3 Framework and focus on sub-domain service operation. The goal of the evaluation process is to gain insight into the current maturity level and the expected maturity level by HSSC as users. It will generate recommendations for improvement for improving document request service of the company (SR). (Ricambi, 2020)

Researcher Fitriani, 2019. with the research title Evaluation of IT Service Desk Management System Using ITIL V3 Case Study: DSIK Airlangga University. The resulting research is to evaluate the current service desk condition at DSIK Airlangga University, find out the level of maturity expected by users and provide recommendations for improvement. (Fitriani & Ginardi, 2019)

Researcher Firman Hartawan, 2016. with the research title Information Technology Service Evaluation Based on ITIL V3 2011 and Cobit 5 case study at the Data and Information Center of the Ministry of Defense. The resulting research is to evaluate the current condition of information technology services at the Ministry of Defense knowing the benefits expected by users and providing recommendations for improvement. This research aims to measure the capability of service information in the Ministry of Defence to improve stakeholder satisfaction. Measurement capability is used COBIT 5 with qualitative method and the case study method. Stages of this research are the analysis of the condition of the eighth COBIT 5 process, the target area of process improvement, gap analysis and the determination of strategies for achieving capability. The result of this research activity is in the form of recommendations adopted policies and procedures of ITILV3 2011, as well as KPI recommendations for case study at the Data and Information Center of the Ministry of Defense. (OGC, 2007)

3. Methodology

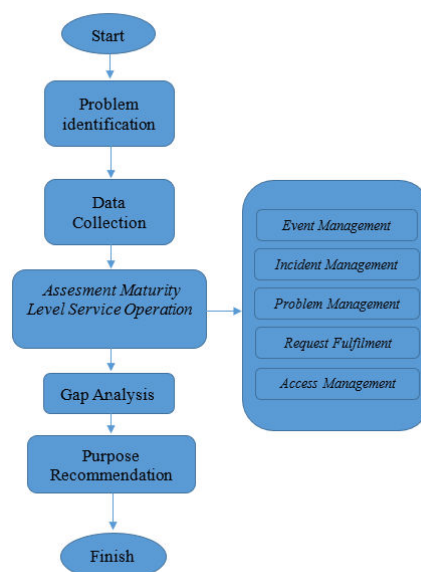


Fig. 1: Evaluation Step.

ITIL stands for Information Technology Infrastructure Library. ITIL is an international de facto management framework that describes the "best practices" of IT services to the board of directors. The ITIL framework evolved from a British government effort in the 1980s to compile information on how organizations could effectively approach service management. They have written many publications detailing IT Service Management best practices by the early 1990s. ITIL has experienced multiple changes and was the most recently updated with the introduction of version 3 of 2007. The scope of documented practices has expanded during this development to keep up with the ongoing expansion of the IT sector and to satisfy the demands of ITSM specialists. (Malone et al., 2009) The purpose of ITIL is to provide a framework that provides direction to best practices in conducting information technology service management. (Cartlidge et al., 2012)

According to (OGC, 2011) the advantages and benefits of adopting ITIL are:

1. Increased user and client pride with its offerings,
2. Increased business benefits from improved service availability,
3. Financial savings by reducing rework or managing wasted time resource usage,
4. Reduce time to market for new products or services,
5. Improve decision-making and decrease risk. (OGC, 2011)



Fig. 2: ITIL V3 Lifecycle.

ITIL V3 consists of five service lifecycles, namely service strategy, service design, service transition, service operation, and continuous service improvement. In this research, the evaluation process will focus on the cycle of service operation. This is because the system is already running but it is felt that the resulting IT service does not provide satisfaction. (The Stationery Office, 2011)

Service Operation aims to help service providers maintain business satisfaction and confidence through the delivery of IT services. Service operations constitute the processes, features, enterprise, and tools used to aid the ongoing system of presenting or assisting a provider. The processes included in a service operation are event management, incident management, request fulfillment, problem management, and access management.

The data collection methods used in this research is Observation (Ongus & Nyamboga, 2019). Observation directly related to business processes at the Directorate of KSKK Madrasah the place that

“IJOP” application managed. To get the real data this study Observations on the application of the RA & Madrasah Establishment Operating Permit, how the section currently works in completing the process, Interviews will be conducted to the parties involved. For example: person in charge of the application, IT Division coordinator. The interview time took place according to a mutually agreed schedule. The interview discusses the process and problems that occur as well as the solutions that arise and the development that want to make. Documentation is carried out by storing information source documents for the work on the research. The results of biased documentation are in the form that have been provided, non-functional records of requirement from institution, and so on. The questionnaire was conducted by distributing questions to the Directorate of KSKK Madrasah. Which consists of several user respondents or application admins and coordinators. The respondents will give a score of 1-5 reference from ITIL PMF. (AlShamy, 2012)

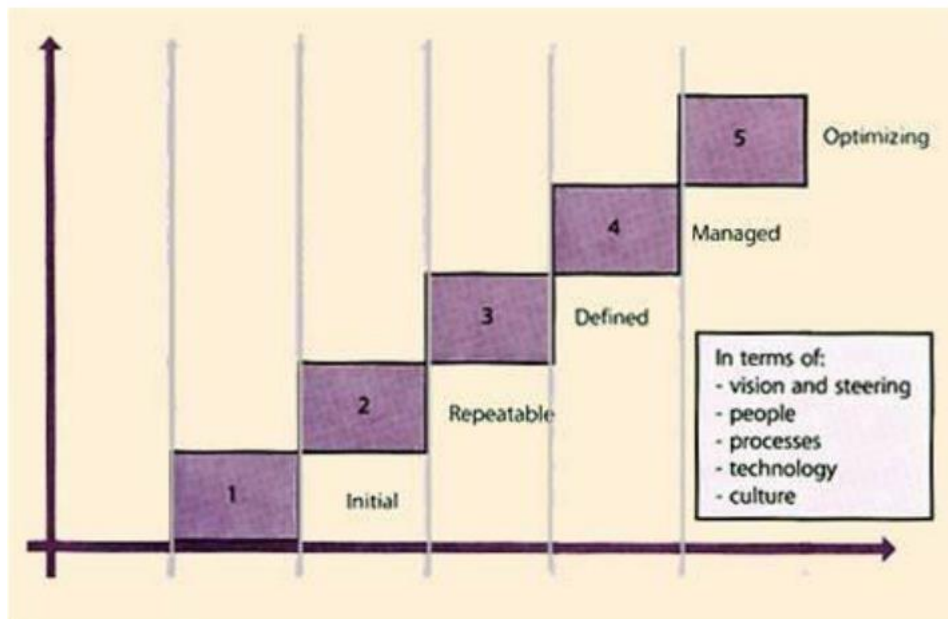


Fig. 3: ITIL PMF.

The purpose of this questionnaire is to identify the condition of the application for the RA & Madrasah Establishment Operating Permit and clarify the objectives to be achieved in the service. (Long, 2012)

There are 2 types of data sources produced. Among them are the following:

Primary data, obtained by conducting research directly. The data comes from a questionnaire. This data is the result of an assessment to the Directorate General of KSKK Madrasah. The form of questionnaire is related to domain service operations such as: incident management, problem management, event management, request management, and access management. For details of the questionnaire can be seen in the appendix. The collection of questionnaire data about the currently running system and with the expected system conditions is given simultaneously in 1 questionnaire. The first step is to calculate the questionnaire average per respondent with the formula:

$$\bar{X} = \frac{x_1 + x_2 + \dots + x_n}{n}$$

X Bar Assessment:

Information:

X: Number of Scores from all questions

N: Number of Respondents

After the questionnaire has been filled in, the respondent is calculated the integrity of the value will be added up and after that the average is calculated. This calculation is done by increasing the entire number of values then dividing as many as the number of respondents. With the formula:

$$\bar{X} = \frac{x_1 + x_2 + \dots + x_n}{n}$$

X Double Bar Assessment:

Information:

X: Sum of Average

K: Number of Questions

4. Result

The result from this study presents by descriptive and quantitative. From ITIL V3 framework domain service operation and ITIL PMF the result defines from the table following bellow.

Table. 1: Descriptive measurement results (Initial stage)

| Maturity level | Level Criteria | Measurement Results |
|----------------|--|--|
| Initial Stage | There is a minimum procedure for the Registration Process for Operational Permits for the Establishment of RA and Madrasah on the IJOP Application service | The Directorate of KSKK Madrasah, Ministry of Religious Affairs of the Republic of Indonesia, already has procedures to manage the Registration Process for Operational Permits for the Establishment of RA and Madrasah on the IJOP Application |
| | Categories of services are understandable, but there is no documentation yet | The IJOP application has been used since 2020, each user stores documents related to the Application |
| | Limited documented procedures | Submission of registration through manual approval procedure application Reporting incidents that still use email and contact via phone or Social media |
| | Data has not been centralized and recorded with a standard | The data is still separated from other applications. |

Table. 2: Descriptive measurement results (repeatable stage)

| Maturity level | Level Criteria | Measurement Results |
|-------------------|---|---|
| Rrepeatable stage | Each User / Admin understands his responsibilities and duties even though they have not been documented | Every User / Admin involved understands the role being carried out but still has a lot of coordination with the head office |

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|--|---|---|
| | Monitoring process of IJOP Application services | The monitoring process is carried out by the central admin by monitoring the processes in the application. There is no centralized documentation tool yet |
| | Institutions are aware of improvements in service quality | An assessment is carried out by a company that focuses on improving the quality of service |
| | There is an evaluation but not routine | There is already an evaluation related to service maturity in the Electronic Based Government System Evaluation. |
| | There is an SLA in the Registration process on the IJOP Application service | There is already an SLA related to the process of registering an Operational Permit |

Table. 3: Descriptive measurement results (Defined stage)

| Maturity level | Level Criteria | Measurement Results |
|----------------|---|---|
| Defined stage | There is an application to record and generate reports periodically | There is already an application that generates reports |
| | There are already reports on the number and status of registrants in the IJOP application service | There are already reports on the number and status of registrants in the IJOP application |
| | There are devices to support processes from the IJOP App service | There is a form that is filled out when registration takes place. |

Table. 4: Descriptive measurement results (Managed Stage)

| Maturity level | Level Criteria | Measurement Results |
|----------------|---|--|
| Managed Stage | Each process is integrated with one another | Currently the process is still separate |
| | Activities in the IJOP application service are automated and have a standard | Activities already have standards but not yet best practices and many processes that have not been automated such as sending physical documents directly |
| | Users can track the registration status they submitted | Status tracking is already available in the IJOP application service |
| | Can display reports in the form of review results from operational permit registration activities | Report the number of visitors per day, the number of visitors per month and the number of visitors per year |

Table. 5: Descriptive measurement results (Optimizing Stage)

| Maturity level | Level Criteria | Measurement Results |
|------------------|--|--|
| Optimizing Stage | Methods for analysing user satisfaction with IJOP application services | Methods for analysing user satisfaction with the IJOP application service are not yet available |
| | There is a basic metric of assessment | The metric for conducting the evaluation has not yet been determined |
| | All organizations and stakeholders can monitor the request process | Monitoring requests can currently only be done by the Directorate of KSKK Madrasah, Ministry of Religious Affairs of the Republic of Indonesia |

After the maturity assessment output is carried out, data will be obtained which is then used to compare the currently running system with the expected system. The gaps of the system will be displayed in the table:

Table. 6: Comparison of maturity levels of the current condition with expected conditions

| Service | Current | Expected | Gap |
|---------------------|-------------|-------------|-------------|
| Event management | 2,07142857 | 3,619047619 | 1,547619049 |
| Incident management | 1,904761905 | 3,5 | 1,595238095 |
| Request Fulfillment | 2,2 | 3,657142857 | 1,457142857 |
| Access Management | 2,214284715 | 3,880952381 | 1,666667666 |
| Problem Management | 2,476190476 | 4 | 1,523809524 |

Here are the results of the comparison of gaps presented in the form of a graph:

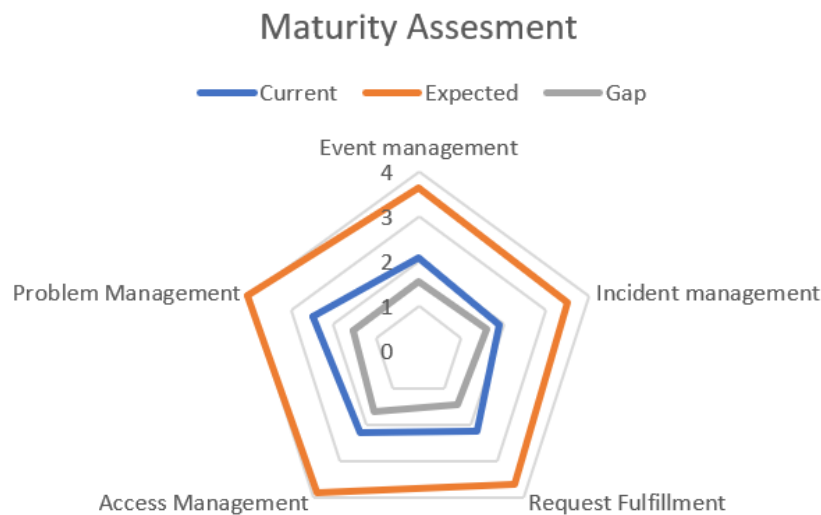


Fig. 4: Graph image comparing the current maturity value with the expected value in the IJOP App

After obtaining the results of the calculation of the data, the next data will be carried out gap analysis. The following is an explanation of the gap analysis inferred from each service operation domain:

Table. 7: Gap analysis results on the IJOP Application

| Process | Gap | Impact |
|---------------------|---|--|
| Event management | The approval process is still manual from each registration process in the "IJOP" Application service | sometimes approval takes more time than SLA. |
| Incident management | No feature is yet available in the "IJOP" App for issue reporting | user directly reports to the head office via telephone and email |
| Request fulfilment | Documents are still sent manually | Must work twice to prepare online requirements documents and offline documents for users |

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|--------------------|---|--|
| | There are no reports related to the process of fulfilling the registration document | There is no clear measurement of the registration document process. There is no periodic evaluation of the process of fulfilling the satisfaction of "IJOP" application services |
| Problem management | Unorganized and unstructured technical error resolution | Solving old problems and needing regular follow-ups |
| Access management | The registration process still occurs online and online even though there is already an application | Users must prepare physical documents and documents in the form of soft files |

In the implementation of the ITIL V3 framework, not all can be used. However, it must be adapted to the existing conditions in the object of research and carried out in stages in accordance with the business needs of the Ministry of Religious Affairs of the Republic of Indonesia. The "IJOP" Application service will be optimized to be even better, one level that is expected to meet electronic-based government system standards and play a role in helping to increase the electronic-based government system index value of the Ministry of Religious Affairs in the future. From the data and the results obtained. The recommendations are adjusted to the expectations of stakeholders of the Ministry of Religious Affairs of the Republic of Indonesia. Especially in the Directorate of KSKK Madrasah, it is in accordance with the ITIL V3 framework. The recommendations given by the researcher are as follows:

Table. 8: Recommendations for improvements to the IJOP Application service

| Process | Recommendation | Impact |
|---------------------|---|--|
| Event management | SLA that has been approved must be applied according to the predetermined time. Tracking approval process designed into the system and integration into employee contacts (email / WhatsApp). Approval can be done via email / WhatsApp which is integrated with the "IJOP" Application service | The registration process can be manipulated, approvals faster and expected to be SLA compliant or faster. |
| Incident management | Additional incident management features or reports if there are problems in the registration process so that Foundation users who apply for permits can monitor this. And add notifications or information related to the incident. | Users can submit errors they find via screenshot/others can be uploaded and get a response from the admin of the application centre. |
| Request Fulfilment | Required documents can be uploaded and approved via the application by adding the complete requirement document upload feature | The registration requirements document can be monitored in the IJOP application service and stored in the database so that the Foundation does not need to send it twice |
| | Make a report for the permit application document so that it makes it easier for management to find out the recap of the permit registration report submitted | The process of monitoring and assessing the registration process becomes more optimal |

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|--------------------|--|--|
| Problem management | Documenting errors and how to fix errors as internal documents of the Directorate of KSKK Madrasah | Technical error handling is quickly resolved, the science for technical error handling reaches all "IJOP" central admins |
| Access management | Make registration regulations centralized digitized through the IJOP application | Users do not need to send physical documents to the office of the Ministry of Religious Affairs of the Republic of Indonesia |

5. Discussion

The discussion is presents from the table, there are strengths and weaknesses in several things including the following:

Table. 9: Disadvantages and advantages of IJOP

| Disadvantages | Advantages |
|---|--|
| In the IJOP application, the available features are not complete. Still to be developed again including: 1. Addition of add address feature, Change of Foundation, and organization, and correct miswritten name of Institution, 2. It is necessary to add features for the closure of madrasah and the availability of the closing decree format. 3. Data retrieval features need to be added to Active Institutions because so far there are only level features, NSM (Madrasah Statistical Number), institution and province names, and there is no complete address, making it difficult for users. Especially admin for tracing Foundation addresses, 4. There is no information about the opening and closing schedule that needs to be added to the application. | The IJOP application already uses electronic signatures so that printed SK or Charter no longer needs to be signed manually. This makes SK creation automatic by the system. |
| In terms of Organization and policy. In the Decree of the Director General of Islamic Education Number 1385 of 2014 concerning Technical Guidelines for the Establishment of Madrasahs needs to be corrected because the regulation does not contain detailed instructions for the establishment of madrassas such as: 1. There is no regulation regarding the justification of names in madrassas that are wrong in writing. The management is expected to provide clear policies related to the guidelines for the establishment of madrasahs to cause ambiguity. | |
| In the Decree of the Director General of Islamic Education Number 1385 of 2014 concerning Technical Guidelines for Establishment on page 16, Madrasah takes 4 months. which consists of document verification carried out a maximum of 30 days, field verification carried out a maximum of 30 days, consideration meetings no later than 60 days, determination of 15 working days is considered long enough if you look at the conditions of the service. On the other hand, foundations that register do not get updated news about the progress of permit registration. | From the results of the interview, it is known that it turns out that the permit process can be completed faster than the time set on the technical instructions. |
| The weakness is that tracing obstacles have not been recorded and there has been no grouping of incident | In terms of incident management in this service, there is already a tiered structure in |

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| types so that it cannot be used as evaluation or analysis material for improvement in terms of organization. | the process of handling problems that occur, namely handling is carried out from the district, then the Province and the Center. Problems that exist in application services are also carried out through social media groups. |
|--|--|

The findings above provide understanding to researchers that top level management needs to improve regulations and public administration services, especially “IJOP” which in this study is used as the focus object. From the evaluation, it is also known that the management, in this case, the Directorate General of KSKK Madrasah still requires the development of “IJOP” application services. With the evaluation of Electronic-Based Government Systems with a value of 2,6 and considered very good, it has not provided a satisfactory picture for top management as evidenced by the maturity level value of the current condition +/- 2.4 (defined) with the expected condition +/- 4 so that with the improvement of regulations and also the development of service operation services, the “IJOP” application will continue to be used to serve permit registration and be utilized optimally to support digitalization at the Ministry of Religious Affairs of the Republic of Indonesia.

After evaluation using ITIL V3 domain service operation framework. In this case event management, Incident Management, Request Fulfilment, Problem Management, access management by conducting interviews, observations, and interviews with IJOP stakeholders at the Ministry of Religious Affairs obtained the results of this study that there are aspects that must be improved both from the system and regulations. Especially in electronic-based administrative services and electronic-based public services in have been evaluated with an index of 2,4/5 with a define predicate. From the results of the evaluation of Electronic-Based Government Systems the “IJOP” service application, From the result found that the difference before and after recommendation.

Table. 10: Before and after Recommendation Condition

| Process Before Recommendation | Process After Recommendation |
|--|--|
| The Operational Permit Registration process is carried out through the RA & Madrasah Operational Permit Application (IJOP) by completing the required documents uploaded to the system, then sending physical documents to the Ministry of Religion office so that the process occurs redundance process and the user works twice for 1 registration application process. Conditions where the Foundation took the initiative to come directly to the Ministry of Religion of City office. | The Operational Permit Registration process is carried out through the RA & Madrasah Operational Permit Application (IJOP) by completing the required documents uploaded to the system. In this recommended process, the user does not need to send physical files, but the process has entered the system where the uploaded data can be verified from the system or downloaded if needed. |
| Related to the Operational License registration process Completion of the registration process until the issuance of a 4-month permit. | The process of sending certificates and charters has been set automatically because the approval matrix has been added and arranged. The completion time of the permit process becomes clearer to handle applications that were not previously followed up due to the difficulty of monitoring submissions. So, there are no complaints from foundations/organizations that apply for permits. |
| Incomplete reporting features so that sometimes data cannot be monitored and used as a reference for further analysis. | The existence of a reporting system feature makes monitoring submissions easier. Because it can be monitored monthly regarding entry permits, permits that must be processed and completed the process. |

| | |
|---|---|
| Incident reporting that still uses email and contact via telephone or WhatsApp application. | Errors that occur in the system can be tracked and there is also error reporting through the helpdesk menu. |
| Registration submitted through the application uses a manual approval procedure. | Approval is carried out through the system on the RA & Madrasah Operational Permit Application (IJOP) service with a clear application tracking process so that the Foundation / organization applying for the permit knows to what extent the permit is submitted. |

6. Conclusion

Maturity level measurement can be used as a reference for the improvement services of IJOP application from this study it can be concluded that, with ITIL V3 Domain Service Operation framework with implementation sub domain event management, request fulfilment, access management, Incident Management, Problem Management for Technology Service Evaluation information getting SLA results of +/-95%. The value is known from the steps of the method that have been applied. Recommendations for improvement provided in the evaluation of the IJOP Application service in this study are: Flow Recommendations, Check Status, Category Design service, application status, matrix approval, incident reporting, and design Reporting. Service Level Agreement (SLA) of around +/-95% this is known because some areas are still difficult to access the internet due to the network less stable. Services are an important aspect in the business processes of the Ministry of Religious Affairs of the Republic of Indonesia. In particular, the IJOP service application is expected to help achieve Electronic-Based Government Systems index and improve service quality for the better. Therefore, advice is needed in the hope that it can help improve the quality of service from time to time.

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