


## Freight Forwarding Information System Audit Using IT-IL Version 3 (Case Study : PT. JNE Express Kotabumi North Lampung)

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Article Info	ABSTRACT
<b>Keywords:</b> <i>IT- Version 3, Service Operation, Maturity level, Likert Scale</i>	<i>A freight Forwarding Information System in a company engaged in logistics delivery services is very important in supporting the business competition. The Freight Forwarding System aims to increase effectiveness and efficiency in the process of shipping goods. In this study, an analysis of the freight forwarding information system at PT. JNE Express Kotabumi Lampung Utara uses Framework Information Technology Infrastructure Library (IT-IL) Version 3 with the domain Service Operation (Event Management, Incident Management, Problem Management, Request Fulfillment, Access Management) with a Maturity Level process which aims to determine the maturity level of the goods delivery system at PT. JNE Express Kotabumi North Lampung. This research resulted in a maturity level with an average of 4.25 being at level 4 (Managed and Measurable) which means the maturity level of PT. JNE Express Kotabumi has been well managed.</i>
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## 1 INTRODUCTION

A system is a collection of elements that interact to achieve a specific goal. A system has a specific purpose. Some say the purpose of a system is to achieve a *goal* (goal) and some mention achieving a goal (*objectives*) [1].

PT. JNE Express Kotabumi North Lampung can get a freight delivery information system or often called a *hybrid*. The freight forwarding information system serves to assist employees in facilitating and speeding up the process of shipping goods both manually and through transactions carried out online [2]. An information technology system audit, for now, is a must. An information system audit is a way to test the information system in the organization to find out whether the Information System owned is by the vision, mission, and goals of the organization. This research uses the *Information Technology Infrastructure Library (IT-IL) Version 3* domain *Service Surgery framework*.

## 2 RESEARCH METHODS

This research uses the IT-IL (*Information Technology Infrastructure Library*) method which is a research conducted to audit and evaluate the extent of the performance of the Freight Forwarding System in the company and provide an improvement analysis to improve the performance of the Brang Delivery System with the business processes running in the company. This research is quantitative research with a descriptive approach that aims to describe or explain existing phenomena using numbers. The steps of this research can be seen in figure 1 below:

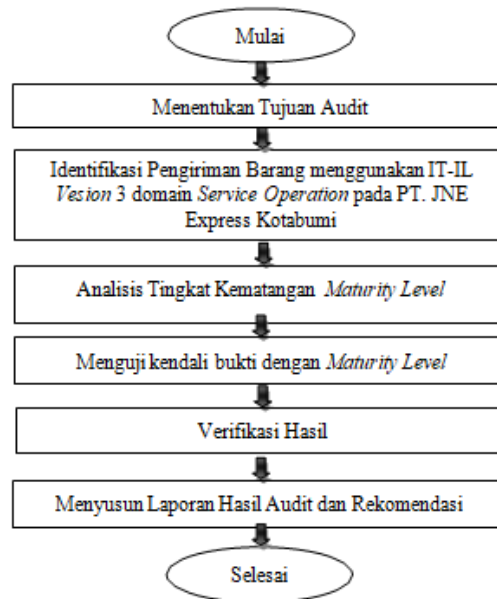


Figure 1 Research Flow

IT-IL (*Information Technology Infrastructure Library*) is an IT service quality standard in a company or *corporate* [3]. In this case, IT-IL will provide a *framework* that is used in IT management so that it becomes better. In the IT-IL framework, business units within the organization that commission and distribute services to IT (such as *Human Resources*, *Accounting*) are considered "customers" of IT services.

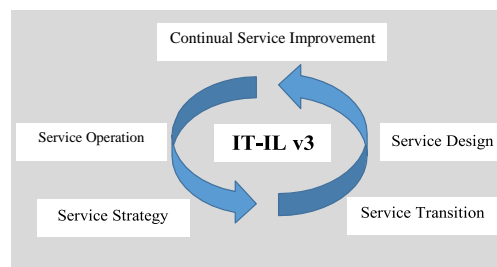


Figure 2. IT-IL Framework Version 3

IT-IL is built into five main components, namely: *Service Strategy*, *Service Operation*, *Service Design*, *Service Transition*, and *Continual Service Improvement* [4]. The explanation of the five components above is as follows:

1. **Service Strategy:** Guides implementers on how to view concepts not just as organizational capabilities. Processes covered in *Service Strategy*:
  - a. Service Portfolio Management
  - b. Financial Management
  - c. Demand Management
2. **Service Operation:** Lifecycle stages that include daily operational activities of managing IT services. It contains various guides on how to manage IT services efficiently and effectively. Processes covered in *Service Operations*:
  - a. Event Management  
The process ensures all configuration items and running IT services are always monitored, filters, and categorizes each IT service condition for appropriate action.
  - b. Incident Management  
The process of managing every inch that occurs in IT services so that IT services for users can be recovered as soon as possible
  - c. Problem Management  
The process of managing the root causes of IT service incidents so that they do not occur again in the future and minimizing the impact of incidents that cannot be prevented.
  - d. Request Fulfillment  
The process of meeting IT service user requests
  - e. Access Management

The process of granting IT service access rights to entitled users and preventing unauthorized users from accessing. This process implements the policies that have been formulated.

3. **Service Design:** Contains design principles and methods for converting the strategic objectives of IT and business organizations into portfolios/collections of IT services and service assets, such as servers, storage, and so on.
4. **Service Transition:** Provides guidance to IT organizations on how to develop and the ability to transform the results of a well-specified IT service design into an operational environment.
5. **ContinualServiceImprovement:** Providing important guidance in structuring and maintaining quality services from the design, transition, and operation process, CSI combines various principles and methods of quality management.

## Maturity Level

The maturity *level* model used for management and control of information technology processes is based on the organization's expansion method, which can evaluate itself from none (0) to optimistic (5). The maturity model is intended to determine the existence of existing problems and how determine the priority of improvement [5]. The maturity index table and its description are as follows:

Table 1. Maturity Level Index

Maturity Level	Measurement Scale
Scale 0 – Non-Existent	0,00 – 0,50
Scale 1 – Initial/ Ad Hoc	0,51 – 1,50
Scale 2 – Repeatable but Intuitive	1,51 – 2,50
Scale 3 – Defined	2,51 – 3,50
Scale 4 – Managed and Measurable	3,51 – 4,50
Scale 5 – Optimised	4,51 – 5,00

## Likert scale

The *Likert scale* is a scale that can be used to measure the attitudes, opinions, and perceptions of a person or group of people about an educational phenomenon or phenomenon. The Likert scale is a psychometric scale commonly used in questionnaires and is the most widely used scale in survey research. The scale is named after *Rensis Likert*, an American educator, and psychologist. *Rensis Likert* developed a scale to measure people's attitudes in 1932. The *Likert scale* is used to measure the attitudes, opinions, and perceptions of a person or group of people about social phenomena. With the *Likert Scale*, the variables to be measured are translated into variable indicators [6].

## 3 RESULTS AND ANALYSIS

The questionnaire is a method of collecting data carried out by giving a set of questions or statements to respondents to answer. The questions that will be asked contain questions that are following the *IT-IL Version 3 framework of the Service Operation domain*. Respondents in this study consisted of employees and customers of PT. JNE Express Kotabumi. The following are the results of managing questionnaires on respondents using the *Likert scale*.

### 3.1 Maturity Level

The following is a table of the *levels of the Maturity Level* process owned by the organization:

Table 2. Maturity Level Index Scale

Maturity Level	Measurement scale
Scale 1 – Initial / Ad Hoc	0,51 – 1,50
Scale 2 – Repeatable but Intuitive	1,52 – 2,50
Scale 3 – Defined	2,51 – 3,50
Scale 4 – Managed and Measurable	3,51 – 4,50
Scale 5 – Optimised	4,51 – 5,00

#### 3.1.1 Domain Event Management Domain Level Maturity Process

Table 2 Domain Event Management Domain Level Maturity Process

Sub Domain	Scale	Target	Gap
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Statement 01: Freight Forwarding Information System provides satisfactory service for users/operators	4.4	5	0.6
Statement 02: This Freight Forwarding Information System has been running according to the established procedure policy	4.3	5	0.7
Statement 03: The freight Forwarding Information System is easy for operators to access and navigate	4.2	5	0.8
Statement 04: This Freight Forwarding Information System simplifies and accelerates operator performance	4.4	5	0.6
Statement 05: Freight Forwarding Information System has management that supports external performance	4.3	5	0.7
Statement 06: The freight Forwarding Information System makes it easy for operators to identify problems	4.3	5	0.7
Sum	25.9	30	4.1
Average	4.32	5	0.68

From the calculation of maturity level, an average value of 4.32 (*Managed and Measurable*) is obtained for the *Event Management* domain, so it can be concluded that the maturity of the Freight Forwarding Information System has been properly defined at PT. JNE Express Kotabumi North Lampung. So the graph below is obtained:

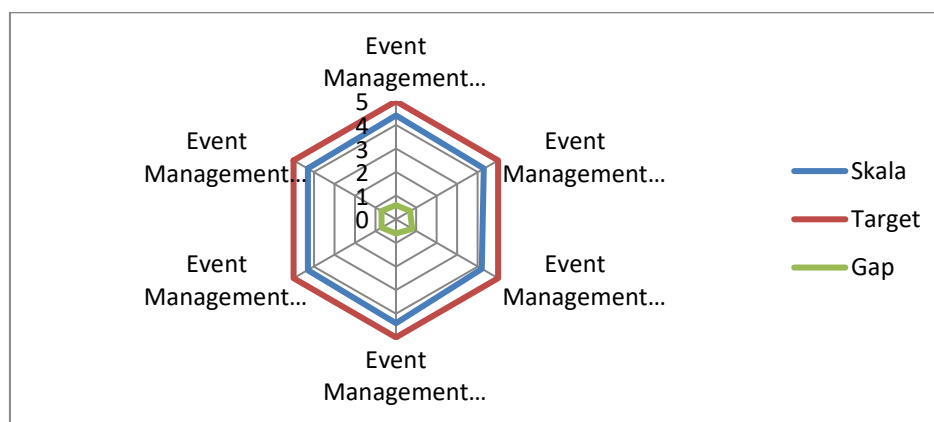


Figure 3. *Event Management Domain Domain Level Maturity Process Graph*

### 3.1.2 Domain Incident Management Domain Level Maturity Process

Table 3. Domain *Incident Management Domain Level Maturity Process*

Sub Domain	Scale	Target	Gap
<b>Statement 07:</b> The Freight Forwarding Information System returns to its original display during reconnection	4.1	5	0.9
<b>Statement 08:</b> The freight forwarding information system will resume data storage during reconnection	4.1	5	0.9
<b>Statement 09:</b> The freight Forwarding Information System does not store data during reconnection but will reload previous data	4	5	1
<b>Statement 10:</b> When reconnecting the overall appearance of all menu features provided by the Freight Forwarding Information System will return to the original	4.1	5	0.9
Sum	16.3	20	3.7
Average	4.08	5	0.93

From the calculation of maturity level, an average value of 4.08 (*Managed and Measurable*) is obtained for the *Incident Management* domain, so it can be concluded that the maturity of the Freight Forwarding Information System has been properly defined at PT. JNE Express Kotabumi North Lampung. So the graph below is obtained:

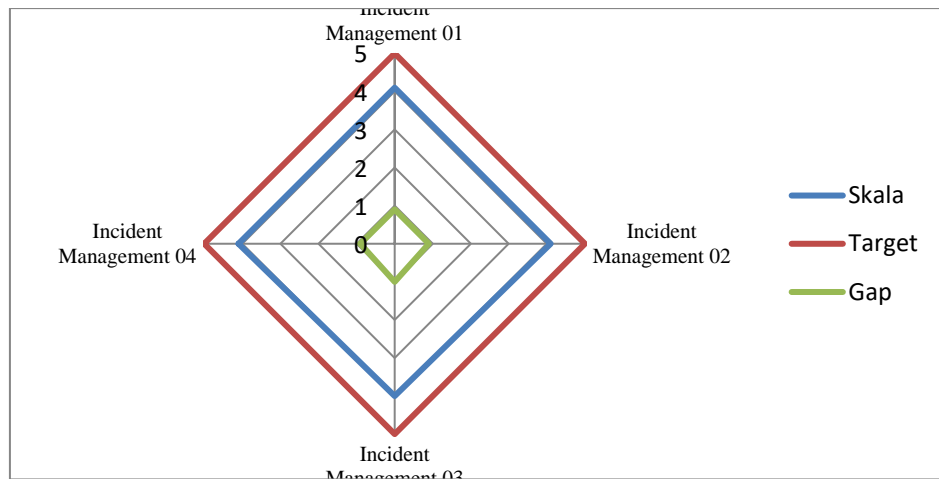


Figure 4. Domain *Incident Management Maturity Level* Process Graph

### 3.1.3 Domain *Problem Management Domain Level Maturity* Process

Table 4. Domain *Problem Management Domain Level Maturity* Process

Sub Domain	Scale	Target	Gap
<b>Statement 11:</b> The Freight Forwarding Information System can find problems in the process of shipping goods	4.3	5	0.7
<b>Statement 12:</b> The Freight Forwarding Information System can analyze the input of freight forwarding data for company reports	4.3	5	0.7
<b>Statement 13:</b> A freight Forwarding Information System makes it easier to monitor shipments	4.4	5	0.6
<b>Statement 14:</b> The Freight Forwarding Information System provides convenience in making reports on shipping data quickly and accurately	4.4	5	0.6
Sum	17.4	20	2.6
Average	4.35	5	0.65

From the calculation of maturity level, an average value of 4.35 (*Managed and Measurable*) is obtained for the *Problem Management* domain, so it can be concluded that the maturity of the Freight Forwarding Information System has been properly defined at PT. JNE Express Kotabumi North Lampung. So the graph below is obtained:

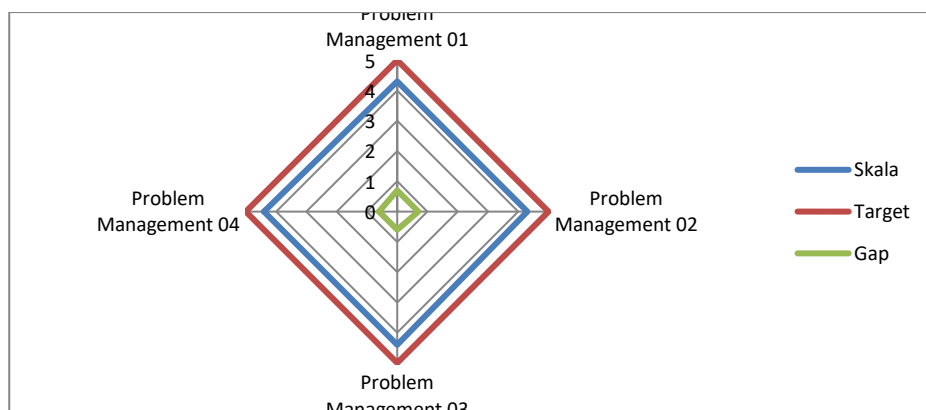


Figure 5. *Maturity Level Domain Problem Management* Process Graph

### 3.1.4 Domain *Request Fulfillment Domain Level Maturity* Process

Table 5. Domain *Request Fulfillment Domain Level Maturity* Process

Sub Domain	Scale	Target	Gap
<b>Statement 15:</b> This Freight Forwarding Information System uses an integrated multi-platform facility	4.1	5	0.9
<b>Statement 16:</b> Freight Forwarding Information System provides for customers to access information easily through the website	4.4	5	0.6
<b>Statement 17:</b> Freight Forwarding Information System simplifies data	4.3	5	0.7

collection of goods			
<b>Statement 18:</b> A freight Forwarding Information System makes it easier to monitor the process of shipping goods	4.4	5	0.6
Sum	17.2	20	2.8
Average	4.3	5	0.7

From the calculation of maturity *level*, an average value of 4.3 (*Managed and Measurable*) is obtained for the *Request Fulfillment* domain, so it can be concluded that the maturity of the Freight Delivery Information System has been defined by laying on PT. JNE Express Kotabumi North Lampung. So the graph below is obtained:

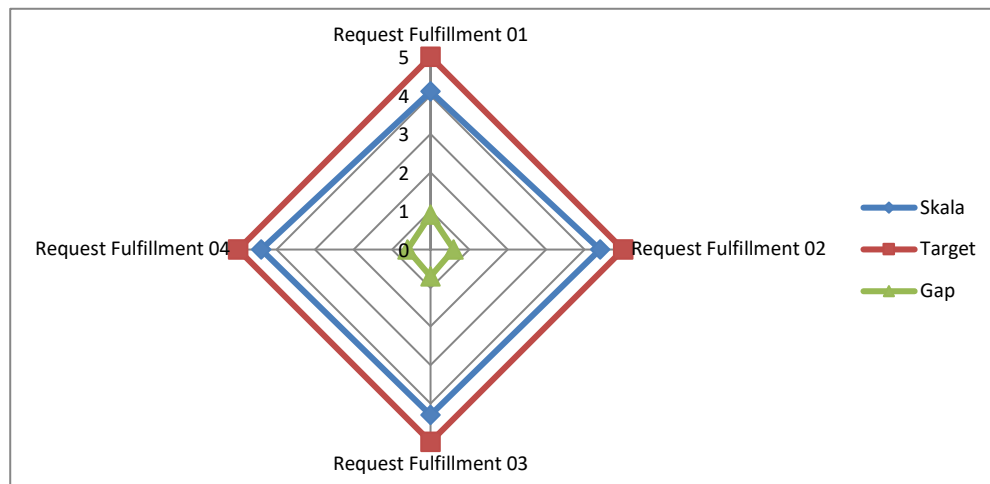


Figure 6. Domain *Request Fulfillment* Domain Level Maturity Process Graph

### 3.1.5 Domain Access Management Maturity Level Process

Table 6. Domain Access Management Maturity Level Process

Sub Domain	Scale	Target	Gap
<b>Statement 19:</b> The Freight Forwarding Information System has very adequate security	4.2	5	0.8
<b>Statement 20:</b> This Freight Forwarding Information System has been running according to the established procedure policy	4.2	5	0.8
<b>Statement 21:</b> The Freight Forwarding Information System will not provide access to other companies' goods data.	4.2	5	0.8
Sum	12.6	15	2.4
Average	4.2	5	0.8

From the calculation of maturity *level*, an average value of 4.2 (*Managed and Measurable*) for the *Access Management* domain can be concluded, so it can be concluded that the maturity of the Freight Forwarding Information System has been properly defined at PT. JNE Express Kotabumi North Lampung. So the graph below is obtained:

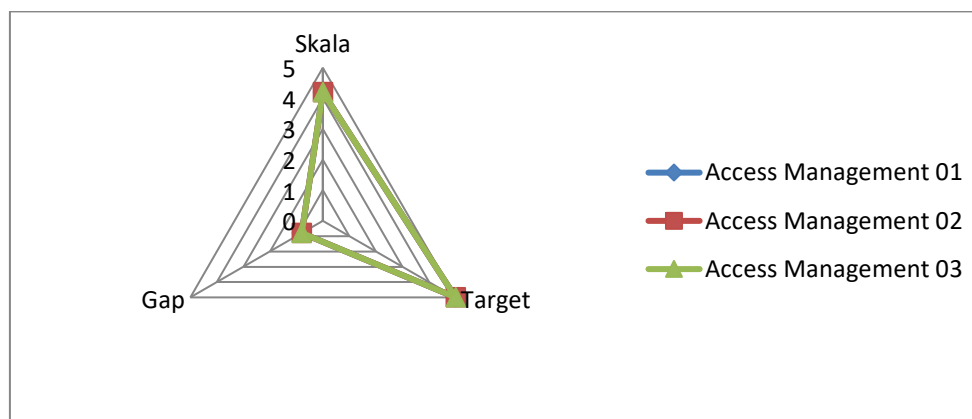


Figure 7. Domain Access Management Maturity Level Process Graph

### 3.2 GAP Analysis

Table 7. GAP Analysis

Domain	Maturity Level	Target	GAP Level Maturity Analysis
Event Management	4.32	5	0.68
Incident Management	4.08	5	0.93
Problem Management	4.35	5	0.65
Request Fulfillment	4.3	5	0.7
Access Management	4.2	5	0.8
Average	4.25	5	0.75

From the overall calculation on all domains, the average produced for *the maturity level* is 4.25 (*Managed and Measurable*). So it can be concluded that the capability of the Freight Forwarding Information System has been defined as stable to be implemented at PT. JNE Express Kotabumi North Lampung. So that the graph for the maturity level analysis GAP is obtained as follows:

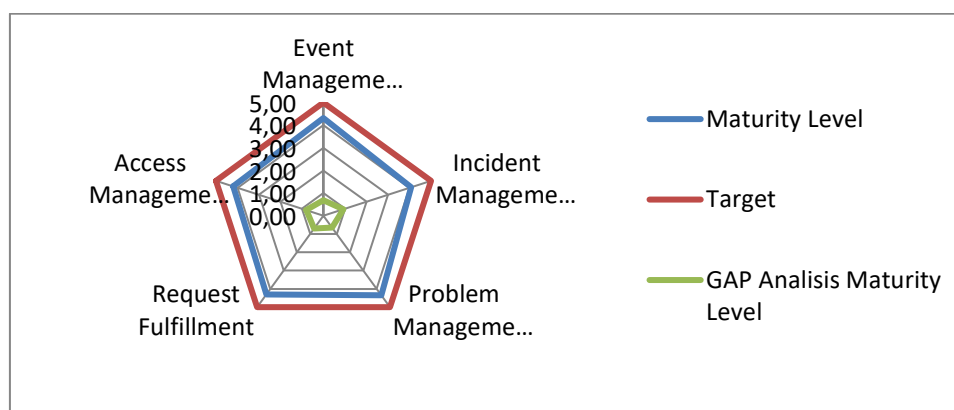


Figure 8. Maturity Level Graph

### 3.3 Likert scale

The following is the result of the Likert scale calculation from respondents' responses to PT. JNE Express Kotabumi North Lampung :

Table 8. Likert scale

Domain	1(STS)	2(TS)	3(KS)	4(S)	5(SS)
Event Management	2	1	25	353	219
Incident Management	2	9	50	229	111
Problem Management	2	2	14	218	164
Request Fulfillment	5	4	13	227	151
Access Management	4	4	18	175	99
Sum	15	20	120	1202	744

Based on the results of the Likert scale calculation, the highest number of respondents' choices was Agree, namely 353 in Event Management, 229 in Incident Management, 218 in Problem Management, 227 in Request Fulfillment, and 175 in Access Management. Here is a graph of the Likert Scale:

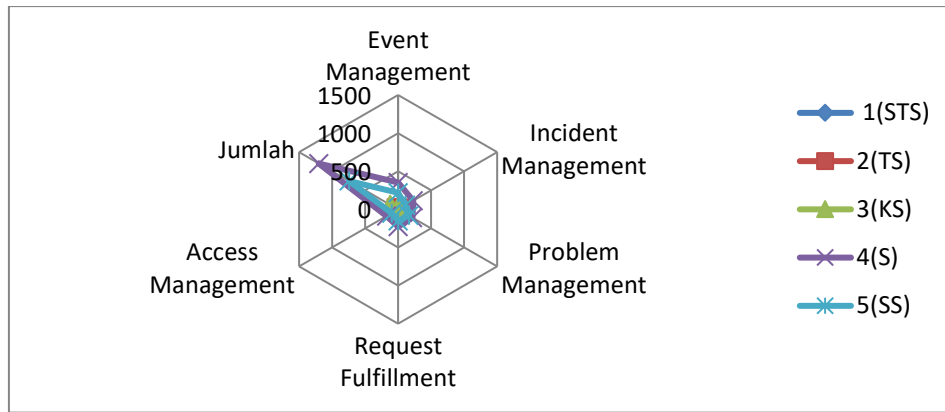


Figure 9. Likert Scale Graph

## 4 CONCLUSION

Based on the process audit conducted using IT-IL Version 3, the average *Maturity Level* obtained of 4.25 is at level 4 (*Managed and Measurable*) which means that it is currently defined as stable to be implemented at PT. JNE Express Kotabumi North Lampung. These results are obtained from the details on each process domain, as follows:

- In the results of the questionnaire calculation for the *Event Management* process domain (the basis for monitoring performance and service availability) an average of 4 (agree), namely the *Maturity Level* is currently at level 4 with a *Maturity value* of 4.3 (*Managed and Measurable*).
- In the results of the questionnaire calculation for *Incident Management* (returning problematic services to function as before), the average is 4 (agree), namely the *Maturity Level* is currently at level 4 with a *Maturity value* of 4.1 (*Managed and Measurable*).
- In the results of the questionnaire calculation for *Problem Management* (analyzing and solving the root cause of an incident), the average is 4 (agree), namely the *Maturity Level* is currently at level 4 with a *Maturity value* of 4.4 (*Managed and Measurable*).
- In the results of the questionnaire calculation for *Request Fulfillment* (the process of fulfilling IT service user requests) the average is 4 (agree), namely the *Maturity level* is currently at level 4 with a *Maturity value* of 4.3 (*Managed and Measurable*).
- In the results of the questionnaire calculation for *Access Management* (the process of managing user access rights to IT service systems) the average is 4 (agree), namely the *Maturity Level* is currently at level 4 with a *Maturity value* of 4.2 (*Managed and Measurable*).

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