

Evaluation of Enterprise Resource Planning System Based on SAP Module of Material Management Procurement Function in PT. Kimia Farma Tbk



S. Hartono, C. G. K. Saputra, N. Sari

Abstract: The purpose of this study is to evaluate and analyze solutions for problems that identified in the Enterprise Resource Planning SAP based on system Material Management Module on Procurement Function in PT. Kimia Farma Tbk. The evaluation method is fit gap analysis Architectural Approach based on FURPS System Requirement model. The Procurement processes included in this study are Create Purchase Requisition, Create Request for Quotation, Maintain Quotation, Create Purchase Order, Create Goods Receipt and Create Service Entry Sheet. The results in this study are presented as a recommendation to fix the problem based on the evaluation result.

Index Terms: Evaluation, Enterprise Resource Planning, Procurement, SAP, Fit Gap Analysis, FURPS, Architectural Approach.

I. INTRODUCTION

In connection with the growth of the economy in Indonesia from time to time, many factors influence economic growth. The factor in the spotlight is the increasing pharmaceutical industry.

The Ministry of Industry noted that the pharmaceutical industry, chemical drug products and traditional medicines grew by 6.85 percent and contributed 0.48 percent in 2017. The investment value had also increased by 35.65 percent.

In accordance with these statistics, the Minister of Industry, Airlangga Hartarto, stated that pharmaceutical industries and materials are one of the priority sectors that are prioritized because they act as the main drivers of the national economy in the future (2018). Based on the development of the pharmaceutical sector, it is certainly in line with the development of information system, of course, pharmaceutical business people follow these developments by implementing information systems on their respective organizations in hopes of getting more positive results.

Especially at PT. Kimia Farma which is the largest BUMN in the pharmaceutical sector in Indonesia (kimiafarma.com), and ranks 6th in Indonesia in the pharmaceutical sector in 2017.

In general, information systems used by companies including PT. Kimia Farma uses Enterprise Resource Planning or what will be called ERP. According to Badewi (2018), with the appropriate development of the company's capability in the system, ERP can increase effectiveness and efficiency from sources with a very large impact.

This is also supported by Sprakman (2012) who said that ERP supports more effective and efficient performance, especially in the accounting field.

ERP itself consists of various brands from well-known companies like Oracle, Microsoft Dynamics, Sage, SAP, and others. Based on general knowledge, many consider SAP to be the best ERP currently available. That is because SAP claims that SAP can integrate and coordinate business processes from various fields in the company, which can benefit the company. (Heinzelmann, 2017)

But that does not mean that the implementation of SAP is an easy matter and immediately visible results. Various obstacles such as changes, and also rejection from the user often occur in the SAP implementation process. What is said by (Heinzelmann, 2017), that SAP in accounting is a complex matter, where the outcome is not seen directly. Special language differences and adjustments to SAP's German logic-based business processes also trigger a number of changes and emergence of resistance in organizations. The suggested solution is a continuous evaluation of business processes, standards, configuration of SAP systems for companies. It is recommended to get the appropriate outcome, namely effectiveness and efficiency.

ERP has many modules that have their own functions for the company. Like Financial, Human Capital Management, Material Management, and others. For procurement functions, ERP provides modules that are included in the material management module where each function in material management has different benefits. By improving the Procurement process itself, can help companies to achieve company goals (Doree, 2016).

PT. Kimia Farma has had ERP and has implemented it since 2016 in various modules specifically for the Material Management module. This certainly triggers changes and resistance from the company. The outcome of the ERP objective itself has not been seen in real terms, and many problems have occurred including the gap or gap between the User Requirement and the system that is running.

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Based on the pre-research that has been done, the users of sub-module procurement also support the system to be evaluated intended to improve the quality of the existing system.

Therefore, the idea arose that a study should be conducted that aims to evaluate the fixed asset management accounting information system in PT. Kimia Farma Tbk.

II. RESEARCH METHOD

At the writing and preparation of this paper, the author uses several research methodologies, i.e.:

1. Data Collection Methods

a. Study of literature

Collecting the data needed in the research carried out by the author by analyzing the related documents obtained from the object of research.

b. Interview

Gather information by conducting interviews directly with competent parties and related to the object of research to understand more deeply about the object being examined by the author.

c. Observation

Conduct observations directly into the field, in this case the company is the object of research to gather information about the business processes that are being carried out by the company.

d. Questionnaire

Distributing questionnaires to 11 users and the results were tested for validity, reliability and descriptive analysis.

2. Evaluation Method

Evaluation methods are carried out using Gap Analysis with an architectural approach (Yang, 2013). Following are the evaluation steps that are carried out:

a. Mapping capabilities for operational activities

b. Mapping operational activities to system functions.

c. Mapping system functions to the system.

d. Mapping capabilities to the system

By collecting requirements using FURPS made by Hawlett-Packard (1999), refined by Eeles (2014) and Rodriguez (2014), here are the purpose of FURPS:

- Functionality
- Usability
- Reliability
- Performance
- Supportability

III. EVALUATION RESULT

After distributing questionnaires based on FURPS requirements, so the results are poured on the matrix at each operational activity. Following is the table concerned:

Table 1. Result of FURPS System Requirement Questionnaires (in %)

	PR	RFQ	MQ	PO	GR	SES
Functionality	90,00	86,67	87,50	91,93	91,67	81,25
Business Rules	86,67	93,33	83,33	96,88	83,33	83,33
Process	93,33	86,67	100,00	95,83	100,00	83,33
Capacities	93,33	86,67	83,33	91,67	100,00	75,00
Security	86,67	80,00	83,33	83,33	83,33	83,33
Usability	75,56	80,00	73,67	80,50	72,22	77,78

		0	1	6	2	8
User Interface	86,67	80,00	75,00	91,67	83,33	83,33
Ease of Use	80,00	93,33	87,50	91,67	83,33	83,33
Material of Training	60,00	66,67	58,33	58,33	50,00	66,67
Reliability	73,33	70,00	77,50	73,96	83,33	83,33
Recovery Method	86,67	80,00	80,00	79,17	83,33	83,33
Availability	80,00	80,00	83,33	91,67	83,33	83,33
Accuracy	66,67	60,00	66,67	62,50	83,33	83,33
Frequency of Failures	60,00	60,00	66,67	62,50	83,33	83,33
Performance	73,33	68,33	70,83	71,88	70,83	79,17
Response Time	66,67	60,00	66,67	62,50	66,67	66,67
Startup Time	73,33	60,00	66,67	75,00	66,67	83,33
Shutdown Time	73,33	80,00	75,00	75,00	66,67	83,33
Availability	80,00	73,33	75,00	75,00	83,33	83,33
Supportability	76,67	73,33	62,50	64,58	66,67	75,00
Configurability	73,33	66,67	58,33	66,67	50,00	66,67
Servicability	80,00%	80,00	66,67	62,50	83,33	83,33

Notes:

- **Green** (66,8% - 100%) means the existing System Requirements are good and are in accordance with user satisfaction.
- **Yellow** (33,4% - 66,7%) means the existing System Requirements are still not good and there are still problems with the system.
- **Red** (0% - 33,3%) means the existing System Requirements are not yet available and need to be made new on the system.

The table above is the result of a questionnaire for the FURPS System Requirement. The questionnaire that has been designed to find out the results of the FURPS is categorized into three, i.e. Green, Yellow, and Red which are defined according to the information above.

From the evaluation of the System Requirements above, it needs to be underlined in the sub-variable section of Material of Training, Accuracy, Frequency of Failure, Response Time, Startup Time, Shutdown Time, Configurability, and Servicability. Where in the subvariable there is still a process that experiences a partial gap in the System Requirement.

IV. RECOMMENDATION

The problem that arises is more or less the problem of training, the number of errors and bugs and the slow performance of the system. Therefore the recommendations given are as follows:

- Enhancement of Material of Training by adjusting the standard provided by SAP.
- In the evaluation results, there are still gaps in the Usability variable with sub-material Material of Training.



Where the gap can be minimized by doing good user training. According to SAP's official website i.e. training.sap.com, to become familiar with the use of the SAP system in the Material Management module, it is necessary to take part in a training consisting of 5 days with the following material:

- a) Understand about *Subcontracting and Consignment Process*.
- b) Understand about *Goods Receipts, Goods Issues, Transfer Postings, and Special Inventory Processes*.
- c) Understand the basic of *Purchase Order, Goods Receipt, and Invoice*.
- d) Understand about *Organization Level and Setup Material, and Vendor Master Records*.
- e) Understand about *Requisitions* and all supplementary documents.
- f) Understand how to configure *Vendor Master, Material Master, and Organization Level*.
- g) Understand about the *Material Request Planning Parameters* in the application configuration.
- h) Understand *Invoice Blocks, Subsequent Debit/Credit, Tolerances, and Special Settings* will LIV.
- i) Understand tolerance will *Invoice and Unplanned Delivery Costs*.
- j) Understand the type of transfers, documents, and parameters from *Plant*.
- k) Understand the *Solution Manager, Netweaver Portal, and Enhancement Packs*.

After some people get the training, then there needs to be internal training from the company regarding the SAP system. Internal training must be followed by all people who use the SAP system in their respective parts.

2. Perform testing by adjusting ISO IEEE829 in the scope of *Material Management*.

IEEE829 TEST PLAN

a) Test Plan Identifier

MMPProCHO – 01

b) Introduction

In this *Testing*, it is intended to *test the functions of the system*. So that you can find *bugs or errors* that occur in the *Procurement submodule*.

c) Test Items

All the *Transaction Code (Create, Display, Change, Delete, Print)* associated with *Purchase Requisition, Request for Quotation, Maintain Quotation, Purchase Order, Goods Receipt, and Service Entry Sheet*.

d) Features to be tested

High Risk Item to be tested:

- *Create Purchase Requisition*
- *Display Purchase Requisition*
- *Print Purchase Requisition*
- *Create/Change Request for Quotation*
- *Print Request for Quotation*
- *Maintain Quotation*
- *Create/Change Purchase Order*
- *Print Purchase Order*

e) Features not to be tested.

- *Create Service Entry Sheet*
- *Display Service Entry Sheet*
- *Print Service Entry Sheet*

f) Approach

• **Team Formation**

The team must consist of existing Programmers from SAP consultants, as well as those responsible for SAP at PT. Kimia Farma Tbk. The number of people on the team is determined by the project leader led by the representative of PT. Kimia Farma Tbk.

• **Meeting**

The test team will meet every two weeks to evaluate progress to date and to identify trends in errors and problems as early as possible.

• **Testing Levels**

Testing must be carried out from all fields, from unit testing, integration and acceptance testing by End User (User Acceptance Test).

UNIT testing will be carried out by the developer and will be approved by the head of the development team. Proof of unit testing (test list, sample output, printed data, defective information) must be provided by the programmer to the team leader before unit testing will be received and forwarded to the person being tested. All unit test information will also be given to the person being tested.

SYSTEM / INTEGRATION Testing will be carried out by the test manager and the development team leader with assistance from each developer as needed. There are no specific test tools available for this project. The program will go into System Test / Integration after all critical defects have been fixed. A program may have up to two major defects as long as they do not inhibit program testing (I.E. there is work around for errors).

ACCEPTANCE of Testing will be carried out by the actual end user with the assistance of the testing manager and the development team leader. This test is given to End Users and observed the shortcomings and additional needs of the user.

• **Tools**

The tools used is EDI (Electronic Data Interchange). It is a testing software that supports to do testing for software, including SAP.

g)Item Pass/Fail Criteria

The test process will be completed after the initial set of distributors has successfully sent sales data set for a one-month period and new EDI data balances with old ZIP / FAX data received in parallel. When procurement staffs are satisfied that the data is correct, they are declared pass. Meanwhile, when procurement staff stated that there were still shortcomings, it was said to be a failure.

h)Suspension Criteria And Resumption Requirements

- Not yet ready consultant who is ready to do the *Testing*.
- Delay of EDI PC software. If there is a delay in the delivery or availability of a PC software package, the only major delay is in the trial. Unit Testing, Integration, and Systems can continue to use limited data until the PC software is ready for use. This will also add time to a lower test level because complete testing cannot be carried out without a reasonable amount of data. Data can only come from the actual transmission of the PC software package.

i) Test Deliverables

- Test plan document. Test cases.
- Test design specifications.
- Tools and their outputs.
- Simulators.

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- Static and dynamic generators.
- Error logs and execution logs.
- Problem reports and corrective actions.

j) Responsibilities

Table 2. Responsibilities

	TASK	Person
1	Unit Test	Consultant
2	Integration Test	Consultant
3	Acceptance Test	IT Support
4	Result Verification	General Manager IT Support

k) Staffing and Training Needs

It is preferred that there will be at least one (1) full-time tester assigned to the project for the system integration and project acceptance phases. This will require the assignment of part-time people at the beginning of the project to participate in reviews etc. About four months into the project they will be assigned full time. If a separate test person is not available, the project manager / test manager will take this role. To provide complete and precise testing, the following areas need to be addressed in terms of training:

- Developers and testers need to be trained about the basic operations of the EDI interface. Before the final acceptance of the project, operations staff will also need complete training on the EDI communication process.
- Procurement administration staff will need training on new screens and reports.
- At least one developer and operating staff member needs to be trained in the installation and control of the PC-based EDI distributor package. Distributor personnel must also be trained in PC-based packages and operational characteristics.

l) Schedule

Testing should be done as soon as possible. The longer the bugs occur, the quality of the data and information produced is increasingly not good. So from that the suggestions for scheduling are as follows:

- Unit Testing: September 1, 2018
- Integration Testing: October 1, 2018
- Acceptance Testing: November 1, 2018

m) Approvals

General Manager IT Support Division.

3. Enhancement of the quality hardware that adjusts to the amount of work that is available.

V. CONCLUSION

Based on the results of evaluations that have been carried out during the running of the thesis at the head office of PT. Kimia Farma Tbk, it can be concluded as follows:

1. After pre-researching on SAP users in the Material Management module in the Procurement function, it can be concluded that the users agree to improve the quality of the SAP system by evaluating the system.
2. After analyzing the process and technology questionnaire that was answered by SAP user respondents in the Material Management module Procurement function by testing the questionnaire instrument with validity test methods and reliability tests found that 17 statements of the questionnaire that had been distributed to the respondents were valid and reliable questionnaire is acceptable.

3. After doing evaluation using the Gap Analysis method in the use of the Material Management ERP system in the Procurement function, then found several variables that still have Partial Fit. The gaps found include:

a. *Usability*: In the *Usability* variable there are gaps in the *Material of Training* sub-variable. The gap is found in all activities in the function of procurement of goods and procurement of services.

b. *Reliability*: In the *Reliability* variable there are gaps in the *Accuracy* and *Frequency of Failures* sub-variable. The gap is found in

the *Create Purchase Requisition* activities, *Create Request for Quotation*, *Maintain Quotation* and *Create Purchase Order*.

c. *Performance*: In *Performance* variables there are gaps in the *Response Time*, *Startup Time* and *Shutdown Time* sub-variable. The *Response Time* gap is in all existing activities. While the gap in the *Startup Time* sub-variable is found in the *Create Request for Quotation* activity, *Maintain Quotation*, and *Create Goods Receipt*. While the gap *Shutdown Time* sub-variable is found in the *Requisition Create Purchase activity* and *Create Goods Receipt*.

d. *Supportability*: In the *Supportability* variable there are gaps in the *Configurability* and *Servicability* sub-variable. The *Configurability* gap is found in all activities except for the *Create Purchase Requisition* activity. While the gap in the *Servicability* sub-variable is found in the *Maintain Quotation* activity and *Create Purchase Order*.

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