The Implementation of ERP Systems using ASAP Methodology

(Case study: OpenERP 9.0 Application on Sales & Distribution Module at PT. XYZ)

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Abstract— **PT. XYZ is a company that moves in glue manufacturing. The business activities includes purchases of raw materials, manufacturing process, and finished goods sales. The company implemented OpenERP which focused on Purchase and sales modules to integrate their business processes. OpenERP implementation uses Accelerated SAP (ASAP) methodology. Initial stages in the ASAP method are preparing schedules, purposes, and scope. Followed by, collecting data through interviews and observations. Then analyze business processes and problems, as well as the user requirements using difference table analysis. From the analysis, the consultant identified the problems that exist. After getting the requirement, conducted stages of planning new business processes or Blueprint. The Blueprint contains the system running now (as-is) and the design of the system that will be applied (to-be) which will be used in the realization stage to perform configuration, customization, data migration and testing interfaces. The next stage is the final preparation, where consultants will conduct final testing, create a user manual and conduct user training. Once this step is done, the implementation of the system will go live towards the stage and the system has been confirmed free of bugs and user needs are met.**

Keywords— *ERP, OpenERP, integration, ASAP, Enterprise Systems*

I.   INTRODUCTION

World wide market share of ERP from 2013 – 2014 show positive movement with the giants IT company that still lead world – wide market share, for example SAP (24%), Oracle (12%), Sage (6%), Incor(6%), Microsoft (5%), Kronos(2%), etc that contains 45% of overall [2]. The study shows that until today, the market share of ERP has thrived 3.8% higher than 2012 with estimation of $25.4 trillion transaction value.

With the facts above, it can't be denied that Enterprise Resource Planning (ERP) system is not a foreign matter and even become one of the most crucial thing that must be own by company for integrating all parts and business process in the company. But the practice in Indonesia, not all companies is using ERP system because the high cost and complexity. Those factors made middle to lower companies decide that they can't use ERP system

The decision to implement an ERP system represents a significant investment of firm resources. ERP systems, sold by vendors such as SAP AG and Oracle Corporation, on average, cost $15 million and implementations take, on average, 21 months to complete [1]

It is true that the implementation of ERP systems always seems expensive, but when we look closely, actually there are many vendors that offer solutions to those problems. One of the solutions to overcome this problem is the ERP system that is open source Software (OSS).

Serrano and Sarriegi state that applying OSS are greater for ERPs than other software for three main reason: Increased adaptability, Decreased reliance on a single supplier, reduced Costs.[5]

One of ERP OSS is OpenERP or Odoo (new name of OpenERP). OpenERP is a management system that provides more than 4000 applications to support the business needs of the company. Currently, OpenERP has been available in 18 languages and has partners and contributors from all over the world. More than 1,500 developers have participated in the development of Open ERP system.

OpenERP is a management system that is not only used by big companies, but also used by small companies and independent. OpenERP can also be applied to a wide variety of sectors, such as trade, textile, agricultural, and other. These differences illustrate the degree of flexibility OpenERP very high. OpenERP is built using a modular architecture and technology - technology that is open source, but still pay attention to the quality of the resulting product.

PT. XYZ implement OpenERP for Sales and Distribution module that is used to make the purchase of raw materials from suppliers, as well as sales of finished goods to client.

II.   METHODOLOGY

The data collection techniques consist of: (1) Interviews, conducted by asking questions to the interested parties in this study. (2) Observation, the authors did direct observation on business process at client's company.

The implementation using ASAP, phases in ASAP methodology: [4]

Fig. 1. Figure 1. ASAP Methodology

1. **Project Preparation**

   Project preparation includes making the project organization structure, project schedule, implementation strategies that will be used, making of project team and the division of tasks, create detailed action plan, determine technical requirements, identify the model runs, as well as modeling and analysis of project needs.

2. **Business Blueprint**

   Stages which includes reviewing, identifying and designing business processes that are running and then do modeling for business processes that are expected to run in the future.

3. **Realization**

   Includes configuration of the system and receive a confirmation, changes to the basic ERP system so that the system could be a solution in accordance with the testing done interfaces, as well as the integrity of the transition program will be arranged.

4. **Final Preparation**

   Cover the final preparations on the project and reviewing the project plan. At this stage, system administration and user training, final testing, implementing all the modifications and changes as well as transferring data from the old to the new system will be carried out.

5. **Go live and Support**

   Go live is the starting point for the implementation of the system, would be a review on the new system run, fix errors, preparing plans and schedules to support the activities of the cover on the project.

III.   RESULT & STEP OF IMPLEMENTATION

A. Overview Business Process
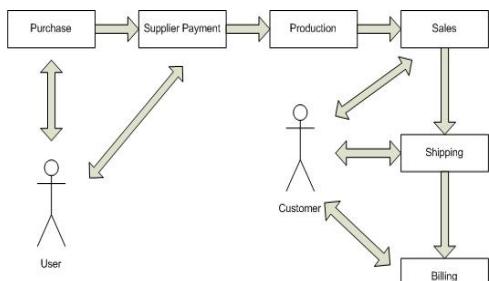
Fig. 2. Overview of As-is Business Process

Based on the above picture, the business processes that are running on the client company (PT.XYZ) can be described as follows:

1. **Purchase**

   The initial process begins by the request of user for the price of raw material to suppliers via telephone. If the user agrees with the offerings provided by the supplier, the next step is to make a purchase order and send it to the supplier. After the purchase order is received and approved by the supplier, then invoice will be created and billed to the company.

2. **Supplier Payment**

   User will receive an invoice sent by the supplier, and then make a payment to the supplier in accordance with the price listed on the invoice. There are two types of supplier in this case, first, user need to pay first before the goods can be delivered and the second, user doesn't necessarily need to pay first but the payment could be done after goods are being delivered and within a certain time of period. Generally, the second type of supplier is the most common one.

3. **Production**

   This is the stage where the product will be manufactured in accordance with the quantity of each raw material, packaged, and then stored into the warehouse for subsequent sale to the customer. Production process at PT. XYZ is executed every day.

4. **Sales**

   Generally, customers will place an order by phone. Most of the time, prices are being offered first to the customer via direct meeting or quotation. And based on the quotation that is being approved by the customer, each time the customer place an order, sales team will make a sales order and will be continued to the next phase which is delivery of goods.

5. **Shipping**

   The goods that will be shipped, will be packed and sent to the customer along with the copy of the sales order and delivery order document. Generally, the delivery of goods will be executed one day after the order date. If there is a failure in the delivery, the delivery will be done directly at the next day.

6. **Billing**

   The final stage of the processes is where customers make payments in accordance with the prices listed in the Sales Order. After payment is made, the customer will inform to the user that the payment has been made, usually confirmed by telephone. Users then will create invoice and sent it to the customer, as a proof that the payment has been made.

B. Project Preparation

Implementation begins with the preparation and planning of the project implementation. Few things that need to be done in first phase are:

i. Determining Goals

Goals are the indicators used to evaluate the implementation of the company performed. Goals to be achieved are:

a. Applying best practices from OpenERP system as optimal as possible to improve the effectiveness and efficiency of the management of existing data.

b. Improve the control of the business processes conducted.

c. The company can easily entry data and generate reports on the system.

ii. Determining the schedule

The purpose of the determination of the schedule to allocate time execution on stages of implementation. Thus, the use of time becomes more effective and efficient. At this stage, the company is not performing the steps in accordance with the schedule set. This is due to the differences of opinion occur on the client side, causing confusion in determining certain things, such as the format of the print-out invoices, *kontrabon*, and others.

iii. Creating a project team composition

The project team that is built consisting of two parties, which is from the researcher and the client. Representatives from each team will be reconciled to conduct focus group discussions and kick off meeting.

iv. Project Kick-off

This is the final stage of project preparation, in which the company will sign the agreement as a sign to start the project progressed.

In conducting the project preparation, the consultant team also performed an analysis of the needs of license and hardware devices that required by the company. So that, helping the company in preparing the necessary budget.

C. Business Blueprint

Business Blueprint is a document that contains the needs of the companies which explains the implementation scope, flow of the business process, and the requirements that are needed [4]. In this phase, the project team will map out and document the business processes that are running on the company (as-is) with flowchart that will describe the process and the actors involved in the system in detail. In flowchart, symbols are necessary in order to describe the activities that occur in business processes, one example of the symbol is an arrow which connects the existing activities [3]. The flowcharts that are made will give more details and insights on the problem or constraint that might exist in the existing business process. Here is an example of a business process documentation (as-is):
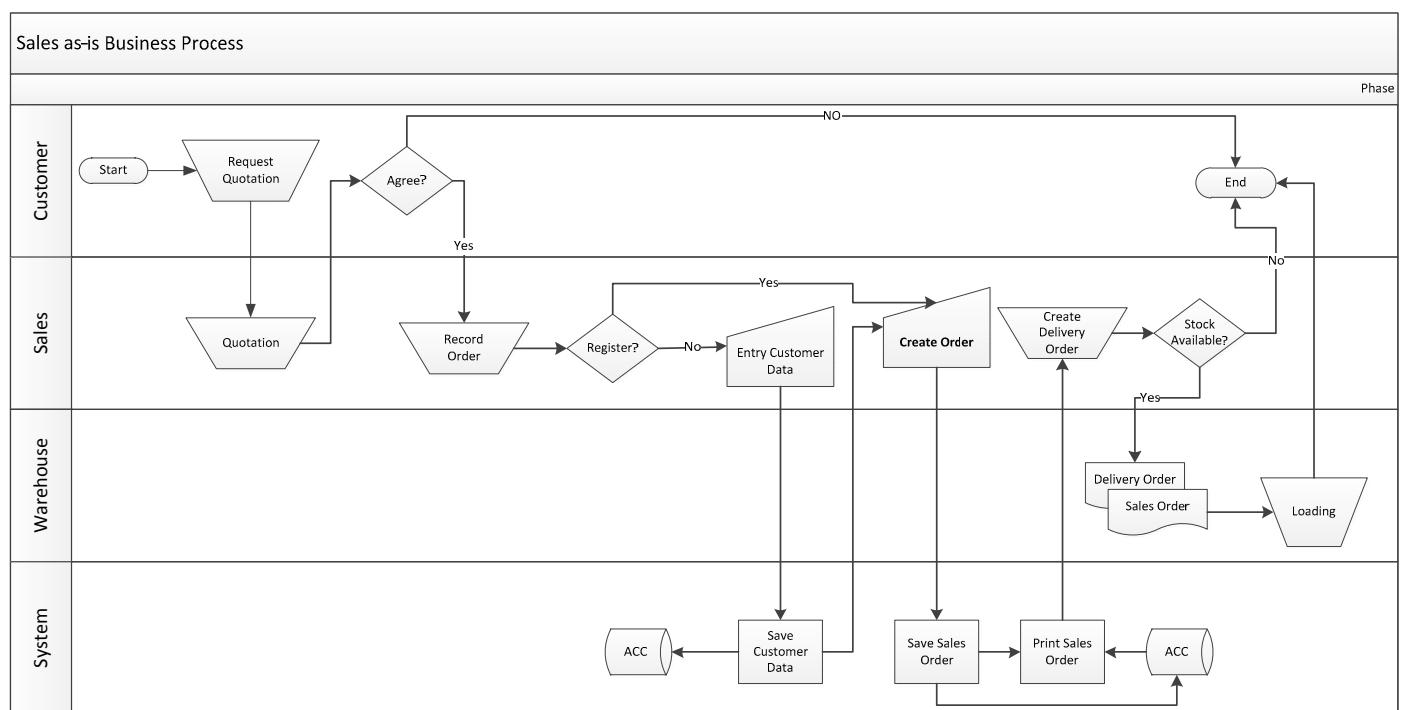

Fig. 3. As-is Flowchart of Sales Process in PT. XYZ

After doing the documentation of business processes that are running (as-is), project team will conduct an analysis to identify the gap between the current system that is running and the future system which will be responsible to fulfill all the business and user requirements. An example of analysis that has been done:

TABLE I. TABLE ANALYSIS OF DIFFERENCES IN THE PROCESS OF SALES

Differences	Current System	Future System
Generate *kontra bon*	Current system is not support to generate *kontrabon.*	Future system can be more flexible customization in making *kontrabon* documents that can meet the needs of PT. XYZ.

Generate tax invoice	Current system is not support to generate tax invoice.	Future system can be more flexible customization in making tax invoice documents that can meet the needs of PT. XYZ.

After conducting an analysis of the business processes and problems faced by the company, then the project team will design the flow of business processes that is being expected to run later (to-be). The design of the business process is based on the results from analysis that were conducted before and the user requirements that has been documented. The to-be business process is documented in the form of a flowchart. Here is one example of the design of business processes (to-be):
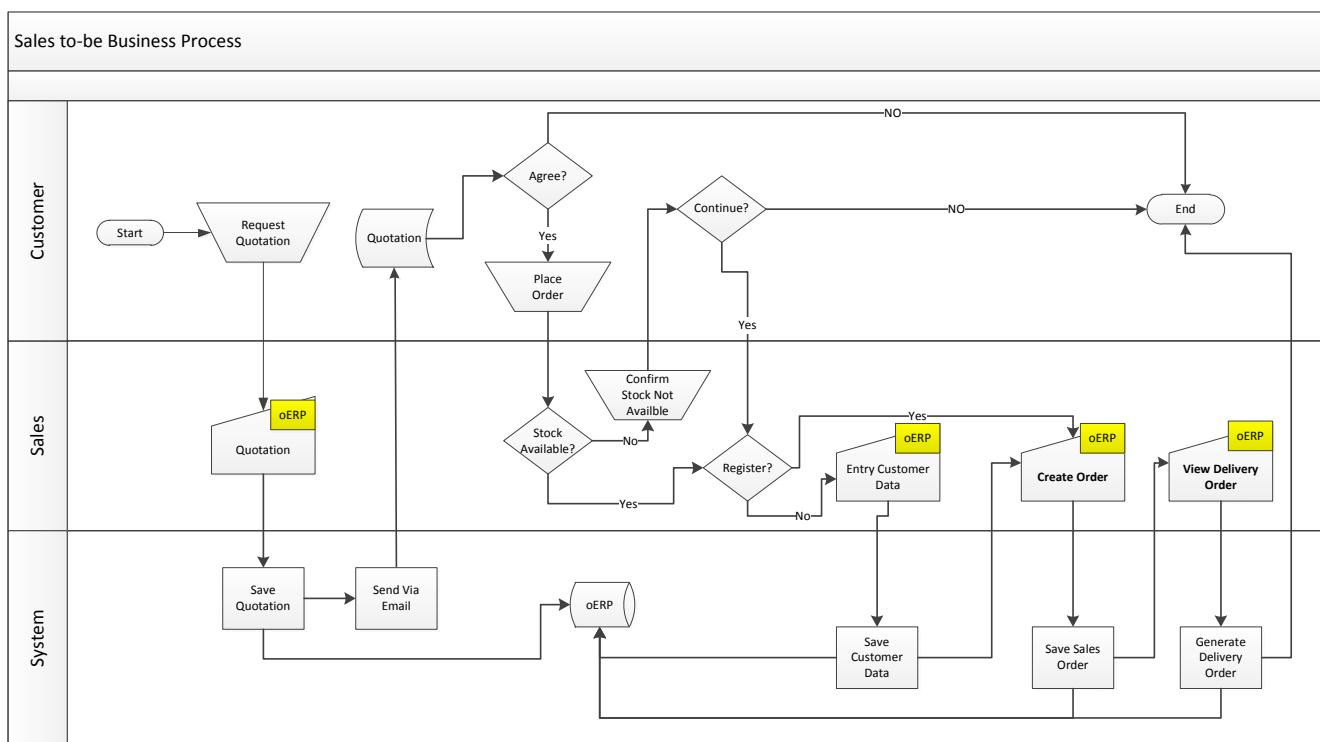

Fig. 4.   To-be Flowchart of Sales Process in PT. XYZ

D. Realization

After documentation of user requirement, as-is and to-be business process have been completed, the next step is configuration and customization of the system in order to fulfill the user requirements that have been identified before at business blueprint phase.

Configuration is a series of general settings, which the features have been provided by the system. For this case, the settings that have been set in the system, would be as follow:

a. *Sales*

- *Invoicing*

Is a section, which manage how an invoice document will be generated, either after delivery or before the delivery of goods. OpenERP systems provide two choices of settings, which are '*generate invoices based on the sales order lines*' and '*generate invoices after and based on delivery orders*'.

For PT. XYZ' case, second setting is being implemented since they would like to receive invoice based on the number of purchase order.

- *Customer Features*

Some settings that have been done in this section are:
  o The use of pricelist in order to organize the different prices of products.
  o The use of address setting which will show extra field (invoice address and delivery order address) in sales order and purchase order's interface.

- *Warehouse Features*

This setting is used to trigger the system to be automatically generating delivery order after sales order is confirmed.

- *Product Features*

This arrangement will allow the system to show discount field in sales order for each items that is contained in the table.

Fig. 5.   Discount Setting

- *Sale Features*

  Some of basic settings that are being implemented are:
  - o The use of multiple shops, which will allow the system to show shop field in the quotation and sales order's interface. This setting is in order to indicate which office is responsible to manage the transaction.
  - o The use of margin acts as supportive function, which helps the user to calculate the profit that is being generated by calculating the unit price and the cost price of the product.

Fig. 6.   Shop Setting

b. *Purchase*

- *Invoicing*

  This section is responsible to manage how an invoice will be generated at purchasing section. There are 3 options that are available in the systems which are: 'based on purchase order line', 'based on reception', and 'pre-generate draft invoice based on purchase order'. The method that is being used is the first option, which is 'based on purchase order lines'. This setting will allow system to generate invoice based on the purchase order and not based on delivery order.

- *Supplier Features*

  This setting will allow the use of pricelist at the systems, which will allow user to differentiate prices on supplier's product.

- *Purchase Order*
  - o The use of unit of measures for product which will allow the system to show product unit of measure's field at request for quotation and purchase order.
  - o The setting allows the system to auto-generate the product price based on price that always being used.
  - o Setting of level approval where approval is required when there is a purchase order that exceed the limit that has been set. In this case, PT. XYZ 5000 is the limit that is being set.

c. *Accounting & Finance*

- *Option*
  - o Setting of 'default company currency', which manages the default currency that is being used by company.
  - o Setting of decimal precision number. The precision that is set is two digits number after comma.

- *Features*

  - o Setting of field currency, which will allow the system to show currency field at invoice document.
  - o Setting of full accounting features which will give privilege to user to have full features on accounting such as chart of accounts, journal, etc.

- *Invoicing & Payments*
  - ▪ Customer
    - o Setting of default sale tax. This section will manage the default tax that will be used at each transaction that involved customer.
    - o Setting of customer payments features.
    - o Setting of customer payment follow-up, which allow user to be able to send notification to customer.
  - ▪ *Supplier*
    - o Setting of default sale tax at supplier. This section will manage the tax that is being used in each transaction that involved supplier.
    - o Setting of payment orders.

- *Bank & Cash*
  - o This section allow user to set footer of all the documents that is being generated.

d. *Warehouse*

- *Traceability*
  - o Setting of track serial number on products. This section facilitates the tracking of the movement of the internal product.
  - o Setting of serial number on logistic units. This section is useful in tracking the product in terms of delivery.

- *Accounting*
  - o This section allows the user to manage stock assessment by displaying inventory valuation. There are two types of inventory valuation on a system that are provided in a system, which is periodical and real time.

- *Location & Warehouse*
  - ▪ *Logistic*
    - o This section correlated with warehouse module. This section will allow system to show destination warehouse field, which explains the destination of goods that are being shipped.
    - o Use of 'allow claim on deliveries', which allow users to create claim documents.
  - ▪ *Product*
    - o Use of decimal precision on weight on products so the number can have two digits after the comma.
    - o Use of unit of measures which allow system to set different unit of measures on each product.

e. *General Setting*

  This section manages the basic company data, such as:
  - o Basic data such as company name, address, phone number, company tagline, etc.
  - o Bank account that is being used
  - o Report footer configuration for each document that is generated.

f. Document format number

Each of documents that are generated from the OpenERP system has each unique format number. An example of this setting:

TABLE II.   DELIVERY ORDER DOCUMENT FORMAT NUMBER

Format	Description	
DO%(y)s%(m onth)sxxxx-IN/xxxxx-return	DO	Is the main code that indicates that the document is a Purchase Journal (Invoice)
	%(y)s	Is the year that is being taken from the calendar system. As an example, if year is 2014, then system will show 14 without 20.
	%(month)s	Is a month that is being taken from the calendar's system. As an example: October, then system will show 10.
	Padding : 4 (xxxx)	The system automatically adds four 0 after the code above. This section will increase each time the delivery order is generated.
	IN/	Is the main code that indicates that the document is an incoming shipment.
	Padding : 5	The system automatically adds five 0 after the code above. This section will increase each time the incoming shipments generated.
	return	Indicates that this is a delivery order that is used to send the product back.
notes:	Delivery order number generated will be in accordance with the last number of times the delivery order is made. While the number of incoming shipments shown is the number of documents in which the product of the document will be sent back.	

In addition to the basic configuration, customization is being executed at some documents format, the display of interface on the system and additional functions such as *kontrabon* and tax invoice.

The customization is being executed on each header documents that is generated by the system and on accounting reports except the trial balance report. Here is one example of the customization:
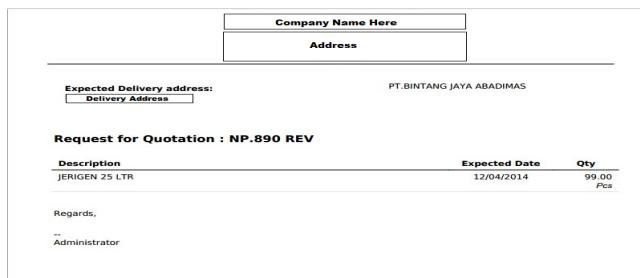
Fig. 7.   Document Header Setting on Request For Quotation

Another part of customization is a button of "print excel" which available in purchase order and sales order as well as dropdown discount and tax field, which allow user to choose type of tax, and discount that they want in the transaction.

IV. CONCLUSION

This study shows the steps of implementation that is being executed based on ASAP Methodology which focused on the first three phase which are project preparation, business blueprint and realization phase. Executing an implementation of ERP's system is impossible to do without some basic configuration and customization since each company is unique. Decision regarding ERP system adoption strongly affected by exogenous reasons. 38.2 percent of large companies ERP systems adoption imposed by the controlling company [6].

PIECES (Performance, Information, Economy, Control, Efficiency, and Services criteria analysis shown the SMEs require ERP with affordable price with can be concluded OSS ERP [7]

For this study, the customization and configuration that is being executed can be concluded as:

a. There are new functions which are *kontrabon* and tax invoice which the system originally doesn't support the functions.

b. Basic configurations are done in sales, purchase, accounting, warehouse and general setting features as well as setting each format document number.

c. Customization on document's header is executed on *quotation, sales order, purchase order, delivery order,* and *invoice.*

This study shows that OpenERP or currently well-known as Odoo can be used for Small Medium Enterprise that need to have an enterprise systems to support their daily activities.

Future study can be done by continuing the implementation progress with the Final Preparation phase and Go-Live and support phase.

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