ERP ANALYSIS AND IMPLEMENTATION MODULE OF SALE AND DISTRIBUTION BY TINYERP
CASE STUDY: PT. SARANA TEKNIK INDUSTRI

1Hardiono
2Dewi Agushinta R
3Dharma Tintri

1,2Information System Department, 3Accounting Department
Gunadarma University
hz18345@yahoo.com, {dewiar,dharmate}@staff.gunadarma.ac.id

ABSTRACT

These days many companies use the information system of Enterprise Resource Planning (ERP) to increase company's performance. ERP is data integration, process and planning of resource usage from an organization into one single system. The system gives the benefit as good system integration, quickening data access, optimal exploitation of resource from company and good operation management. System ERP can be developed by methods like developing itself or using a vendor.

One example is peripatetic company in machine distribution, i.e. PT. Sarana Teknik Industri. The problem faced by this company is data integration; control the supply and forecasting the amount of the sale of the product. With this problem, the company requires a system enabling to create data integration and process, inventory control and analysis of the product. Here, the role of the ERP’s system is required in order to overcome the problem.

Based on this problem, this paper focuses on the cause of the problem, figure of ERP’s system to overcome the problem, and system implementation of ERP by using TinyERP software and to check the module integrity.

With the implementation of software TinyERP, data integrity and process, inventory control system which is integrated by between centers with the branch and analysis of the product at PT Sarana Teknik Industri can be created.

Keywords: Information System, ERP, analysis, design, implementation, TinyERP

INTRODUCTION

PT. Sarana Teknik Industri was built in November 1991 at Danau Sunter Utara. This company has 2 branches, i.e. one is in Cikarang and the other is in Surabaya. The company deals with distribution of industry’s tools, such as electric motor, gear motor, clutch, control system, coupling, chains, conveyors chain, conveyors belt, bearing, pump. In his operational activity, PT. Sarana Teknik Industri uses software sigma accounting which was made in 1995. Its accounting software was developed by using VB 6 language programmer and DBMS MS Access. The use of the software has some weaknesses, i.e. the modules that we need in this situation is incomplete yet. The sales module available is more compatible for handling management problem such as making Delivery Orders (DO), quotation and other documents which is still used manually.

By increasing broadness of scope of company business, for example making more branches will result in new problem at this system, such as...
of controlling of supply and implementing ERP.

For the last three years, especially after the opening of branch in Surabaya, the company started to have the increase of sale. However, if seen from the percentage of the increase of earnings, company suffers from degradation of percentage of the earnings. Another problem faced by company at present is the submission of sale report from office branch which often takes more time, so that it hampers the company in strategic decision making. These various symptoms resulted from symptom problem that is the old system employed needed more time to join the data between the head office and the branch office. The second problem is controlling the amount of stock which is still conducted manually, so that it often results in the running out of stock at branch. The third problem is that the system cannot depict the inventory level and analyze the sale and purchasing of the product. Problems which have been explained are resulted from disability of software used in handling operational activity of the company. Based on this problem, we design a system as the solution to the problems. ERP system is a new system to be applied at PT. Sarana Teknik Industri. In this paper, we utilize the TinyERP for the system implementation of ERP at PT. Sarana Teknik Industri. We chose the TinyERP because it represents the software package of ERP being able to be applied at various business areas covering manufacture, commerce, distribution, and service.

ERP CONCEPT

ERP is a concept for planning and managing resource organization, so it can be used optimally to produce more values for all parts and for whom having concern on that organization [8]. ERP consists of three words, i.e. enterprise, resource, and planning. Enterprise is a company or an organization which describes business situation in common, in one corporate entity, in many measurement/size, start from small business like café and up to giant business like telecommunications’ company. Resource can be company’s asset consisting of finances, human resources, consumers, suppliers, orders, technology and strategy as well. Planning is a strategy or plan that will be applied by the companies to reach out their targets [13]. The advantages that they can get by using ERP’s system because ERP offers integrated system in a company, enables management to manage operation, helps to carry on the implementation of supplier management with their multiple capability.

ERP’s system consists of a group of modules which support many functions and processes in a company. ERP’s modules are built to support this process by integrating data in every stage of process. Besides, ERP’s system, ideally, must be able to fulfill the support of main business process and their supporter’s business. ERP has seven main modules, i.e. finances, sale and distribution, production, human resources, maintenance of production’s tool, purchase, quality of management, and material management [1].

The Biggest problem in system implementation of ERP is integration, especially when solution has to be taken by some mergers of ERP’s modules from some vendors. Method of selecting ERP’s packages can be depicted in a framework dividing selection base on a few criteria according to function, flexibility, and customization [4]. System development of ERP is equal to system development other information, hence there are three especial critical
factors in project of information system, such as management support, involvement of consumer, and clear project target at ERP’ system. Design of ERP’s System has three especial approaches, i.e., usage of one intact software package, combination from some software packages of ERP and customization or made by self package of ERP software.

The top important matter in system implementation of ERP is the strategy used. There are five types of strategy in system implementation of ERP, i.e., Big Bang approach using concept of one day magic with the meaning entire old system is deactivated and entire process is removed by its operation to new system. Second, strategy is phased rollout by site applying the system in phases certain location. Third is phased rollout by module applies the system step by step pursuant to system module. The fourth strategy is mini Big Bang applies the concept of Big Bang but in smaller scope. And the last strategy is phased rollout by module and site combination between approach of phased rollout by site and phased rollout by module [1].

**RESEARCH METHOD**

The method used is System Development Life Cycle (SDLC). At the phase of problem identification, a review of related literature including information technology, ERP, information system management, UML, other TinyERP books and articles as well to support this study and a field study were conducted. A field study was conducted using an interview on the company’s overall management and operation. Besides, observation was also done to know the business process, document arrangement, and information technology employed by the company.

The data collected consisted of primary and secondly data. Primary data consisted of the list of product, sales transaction and purchase reported in 2005, 2006 and 2007. Secondary data collected was in the form of the history of the company’s growth, workflow of sale module, purchasing and distribution, and financial statement as well. At design phase, the result of the device was presented in the form of diagram UML. With this diagram, we could determine the action and step which must be taken at the next phase. At this phase, we drew conclusion concerning with the system to be employed. At the implementation phase, we determined the use of software package, made adjustment with system procedure and the system construction. During this phase, all plan engineers practice the business process applied because all hardware, software and network have been applied, hence only two matters which should be studied, i.e., the people and the procedure. At this phase, examination of the system was also done. System tested was to guarantee the integrity and function of every module. Having taken steps of system development, we continue the research by drawing conclusion. Pursuant to the result of the data and implementation and system examination, we drew conclusion about the cause of the problem and the solution as well as the result of new systems analysis to be applied at Sarana Teknik Industri, Ltd.

**SYSTEM ANALYSIS AND TINYERP IMPLEMENTATION**

After identifying problems at present, we continue with analyzing the cause of the problem. The results of the analysis are:

1. The system utilizes accountancy software to arrange and control the
operational activity company. This software is very suitable for the company without any branch. On the contrary, after the opening of branch, the software cannot work again efficiently because this software does not have the module program to import the data from branch office to the head office database. Besides, this software does not provide the facility to arrange the transfer of materials between branches. Hence, the weaknesses of this software is that the data is imported manually, so that the submission of the data from branch office and the arrangement of transfer of stock materials to other branches need more time. Consequently, the company needs more time to make the decision related to branch and the company as a whole.

2. This accountancy software is not equipped with module, so that controlling of the amount of supply is still conducted manually. Consequently, the company finds it difficult to control the amount of supply. This weakness emerges because the percentage of company earnings experiences degradation. Warehouse module is badly needed by the company to control the amount of supply at head office and the branch as well, so that it can lessen of running out of supply and improve the sale of at branch.

3. Forecasting and figure of the sales amount is badly needed to approximate materials to be sold in certain period and consumer which always give the materials. Because of this facility is not available yet so that forecasting and analyze the product still conducted in manually. The new system built will give various additional, which are:

1. The system provides facility to import and export the data. With this facility, the head office can input the data transaction from the branch office directly with the branch as well as to input the price list of materials.

2. The system provides the facility to make quotation, DO, PO, and other documents so that it can lessen time for making document. This matter will quicken the process of sale and purchasing.

3. The system provides the module of inventory control, so that the company can apply the rules when ordering return, minimum and maximum stock. This module will assist the company to prevent condition of lack and excess of stock.

4. The system provides a module being able to manage the transaction data using the system of inter-states commerce through the calculation facility of some currency and payment system involving some different currencies.

5. The system provides a module of sale support in the form of facility of product analyst with diagram mark with lines. With this module, the management can be assisted in determining policy and marketing strategy.

TinyERP provides the module like product module being able to arrange the category and industrial equipments input and also price arrangement, inventory control module to control the amount of supply at head office and the branch as well, purchase management’s module to arrange all purchasing activity, and sales management module to arrange all materials sale activity covering the making of quotation and invoice. With
this additional, we chose the system implementation of ERP by using software package TinyERP.

In three-layer architecture implementation, there should be controller component available in each layer. At layer of database server, we use the postgresQL. While at layer of application server, we use the TinyERP server and at layer client, we use the TinyERP client. The head office uses a database server. Database Server is connected by a router to network internet which connected the head office network with the branch office network. The head office uses two application servers to arrange each twelve dumb terminal, while the branch office only uses one functioning server as database and application server and ten dumb terminals.

Implementation system is a chapter of placing system to make it ready to operate. ERP system implementation was done with ready software package, TinyERP. The chapter of TinyERP implementation was the installation of PostgresQL, TinyERP server, TinyERP client, and the module adaptation is suitable with the company needs. In this implementation, we use computer for database server with the specification: Intel Pentium IV 2, 26 GHZ, RAM 512 MB, Harddisk 120 GB. The computer specification for application server is: Intel Pentium IV 3, 2 GHZ, RAM 1GB, Harddisk 40 GB. And the bandwidth is 60 MBps.

TESTING AND RESULT

We test the system through input data to the system and tests whether the process gives the valid and required output. Besides doing module integration testing, we also test the system facility. Testing was done to check whether the system was able to support the company in planning its activities. Test result on purchase activity, sale, and inventory control shows that the system has guaranteed data and module integration. This can be seen from the result of purchase order module will influence value at product module, the change at inventory module, “getting good” module will influence value on product module, result of sales order will influence value on product module, changing on inventory module, “sending good” module will influence value on product module and data import will influence value on branch inventory. Planning support facility test was conducted with checking whether the built ERP system is able to support company planning activity or not. These activities are sales analysis, product purchase and also inventory analysis.

Figure 1 shows the result of product analysis with TinyERP. The figure shows inventory chart of product for next seven days. From the figure, user can know the amount of supply to seven days ahead and amount of sale and product purchasing. It can be seen the supply only remains 3 units and the product has strong sale level that is 8 units in one transaction so that the product should have large safety stock.

Figure 1.
The product analyzes by TinyERP

Figure 2 shows inventory analysis result seven weeks lately. We can see that highest inventory was reached on week 22 and the company lost product stock on weeks 16 and 17. From the analysis result, user can figure out the cause of stock surplus and deficit.
CONCLUSION

Based on the analysis result, we can conclude that the reasons of degradation of earning percentage of PT. Sarana Industri are run out of stock problem, report presentation that is often overdue and module software used. The modules to overcome them are inventory, sales management, and purchase management implemented by TinyERP. All the system testing shows that this system has guaranteed integrity of each module and well planned support facility. From the testing result, the system can manage purchasing activity, sales, inventory control and data import export better. But then the system does not yet simplify the process, not real time inventory control, and not support sales and purchasing analysis as well. We categorized the success implementation into user class B. The ERP implementation with TinyERP can improve and solve the problems.

REFERENCES