

Review and Case Study Enterprise Resource Planning in Injection Molding Company

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Abstract Implementation of Enterprise Resource Planning (ERP) being realized and become as an essential matter to resolve communication issue incurred in Injection Moulding Company. The basic impact given by communication issue was manufacturer would not able to achieve the targeted production. To overcome the case, it is required the ERP program to be performed in accordance with ERP ideal concept so that the production activity of injection machine would be operated in optimum stage. The fundamental of ERP implementation are lying on business process. The implementation of ERP is requiring full supporting of top management to ensure its working as well the support of all employees from all level escorting the ERP to be carried in proper way and practice. It is also noticed, in order to achieve the maximum objective against the implementation of ERP, it is required controlling on ERP implementation has to be reviewed once in 3 months.

Keywords ERP, communication, business process

Introduction

Many companies use Enterprise Resource Planning (ERP) to improve information flow and efficiency of the process. In the past, ERP is only used by large companies, but is now starting to be used in small and medium enterprises [10-12]. Companies that are in financial problems, began using the ERP system to solve the problems of manufacturing management. Very little research on this case, its become a very useful learning [6-10-15-17]. Enterprise Resource Planning (ERP) is how to manage the company's resources by using information technology [17]. The ERP technology use hardware and software equipment. This technology integrate the data information on each area of business process resulting in fast decision-making because it provides financial analysis, sales reports, report of production and inventory on time [5-17]. If companies implement and use ERP systems are correct it will be achieved the target company, so there is no waste or waste caused by production delays, waiting time or another. Currently, as a manufacturing company that produces automotive accessories, The Company often getting problems with communication between departments so that the resulting waste in high production costs, and the company's targets are not achieved.

Other issue is waste, such as production delays, manpower, inventory, time to waiting. Labor wastage occurs because the labor that had already to work and can not produce the products according to the number of production targets have been defined, because the product is still half-finished due to lack any of the supporting material. The support material is not ready when needed. To be able to pursue the delivery time, the labor work again on additional time. This gives rise to additional labor costs. Inventory wastage occurs because the products are not yet complete or still half finished, will be first stored in a warehouse, which led warehouse space becomes narrower. Waiting time wastage caused by the machine is waiting for production. While waiting for the machines becomes has not economic value.

The problems caused by there are not information when needed production materials is ready to run production. Production planning system still can not resolve these problems because they still use manual systems with Microsoft Excel program, and system inventory and production reports are already using the SAP system but not yet integrated with production planning systems according to the concept of ERP.



The main objective to be achieved is to overcome problems caused by the production of segmented information and is not integrated between sections in accordance with the concept of ERP, so that the information can not be obtained in real time.

Literature Review

ERP system is a program of integrated applications for enterprise, management and supervision [2-8]. ERP technology is designed to overcome the fragmentation of information across a company's business and to integrate internal and external information on the company [4-10-16]. Because there are differences in the use of ERP is used by the supplier and the customer, it happens incompatibility issues. To resolve these problems, then developed a system of Extended Enterprise (or ERP II). ERP II can be operationalized by using Extended Enterprise Application (EEA) and Enterprise Application Integration (EAI). This program was developed to integrate different ERP systems in the supply chain [10-11].

Companies should not rely on ERP to manage supply chain [8]. ERP systems have a rigid design and inflexible to incompatibility [8-10-14]. Other systems or other technologies such as Radio Frequency Identification (RFID), Mobile Technology, Wireless Technology, Intelligent agent -based knowledge management system and so can help repair orders, parts and products that can be known problems in the supply chain [9-10], These things can reduce the problem of incompatibility so that the flow of orders and product quality can be achieved (more accurate). MRP and ERP predecessors namely Manufacturing Resource Planning (MRP II) is still very popular in small and medium industries [10-11]. MRP and MRP II still the main choice in production planning in a manufacturing company. For the purposes of the business is expected to be an integrated program for supplier and customer (Supplier Relationship Management / SRM and Customer Relationship Management / CRM) system in the supply chain (supply chain). [1-10]. Some companies combine these systems to provide the best performance in logistics and supply chain management (Supply Chain Management / SCM)[10].

The division of business processes within the company as a basis for the ERP implementation are described in Table 1.1.

Tabel 1.1: Operasional Function in business process

Functional area of operation	Marketing & Sales	Supply Chain Management	Accounting & Finance	Human Resources
Business Function	Marketing of product	Purchasing goods and raw materials	Financial accounting of payments from customers and to suppliers	Recruiting and hiring
	Taking Sales Orders	Receiving goods and raw materials	Cost allocation and control	Training
	Customer Support	Transportation and logistics	Planning and budgeting	Payroll
	Customer Relationship Management	Scheduling production runs	Cash-flow management	Benefits
	Sales Forecasting	Manufacturing goods		Government compliance
	Advertising	Plant maintenance		

Source: *Concepts in enterprise resource planning*. Cengage Learning 13].

ERP Implementation in Marketing & Sales consists of product marketing, sales order processing, customer support, customer relationship management, sales forecasting and advertising. Implementation of integrated information system will provide improvements in terms of avoiding and minimizing errors in the input data, providing accurate information and real time, including all transactions that occur in the sales order can be



traced and monitored via invoice, packing list, RMA / Return Merchandise Authorization and the payment process. Integrated information system SAP ERP will make the process sustainable and integrated through a sequence of related functions electronically beginning of the process of responding to customer inquiry with sales quotations (pricing), orders, checking on product availability (checking the availability of the product), checking on customer credit limits (checks the customer's credit limit), delivery arrangement (delivery setting), invoicing process (billing) until the payment collection (collection of payments) [13].

Implementation of ERP in the Supply Chain Management (SCM) is a great tool to make the implementation process of production planning, because SCM integrates with Planning Production, Purchasing, Material Management / Warehousing, Quality Management, and Sales & Accounting. For better planning of SCM, companies can integrate ERP with Supplier and Customer. The sections in SCM include: (i). Product Development Division has the task to conduct market research, designing new products, involving suppliers in the design of new products. (ii). Purchasing Section has the task of selecting suppliers to evaluate supplier performance, make the purchase of raw materials and components, monitors the supply risk, foster and maintain relationships with suppliers.(iii). The Planning and Control has the task of demand planning, demand forecasting, capacity planning, production planning and inventory. (iv) The Production Department which has the task of execution of production and quality control. (v). Distribution section which has the task of planning the distribution network, delivery scheduling, finding and maintaining relationships with the company delivery services, monitor service level at each distribution center. (vi). Plant maintenance section has the task of guaranteeing a production facility ready to produce products according to the targets set [13]. The basic function of the parts of SCM above must be included in the ERP modules, so that the function of SCM in ERP integration can be realized. The relationship between the ERP system with the performance of SCM is great effect that helps companies in the form of sharing information with suppliers or other companies. After receiving orders from customers, suppliers will automatically receive information on availability of raw material, so immediately fill the shortage of raw materials is based on information received [3-10].

Implementation of ERP in the Accounting & Finance consist offinancial accounting and managerial accounting. Function of financial accounting are : (i). Document all financial transactions that affect the company's financial condition. (ii) Using the document to make a report to the company / external agency. (iii). The financial statements must follow rules set by the institution. Function of managerial accounting are : (i) determine the costs and profits of the company's activities. (ii). Providing detailed information that will be used managers to make the right decision to make a budget and determine profit.(iii). The information is used to oversee all daily activities and develop long-term plans. The costs in the accounting transactions recorded in the company's business covers the cost of: (i). Sales & Distribution. (ii). Material Management (iii). Financial Accounting (iv). Controlling (v). Human Resources (vi). Asset Management. All data must integrated with all the relevant sections. The benefits from the use of an integrated ERP system are : (i) any financial statement will be able to determine the credit limit that can be given to the customer. (ii). Companies can configure a number of options credit check. (iii). automatic process data is available in a real time. [13].

ERP Implementation in Human Resources consist of: (i). Time Management which time management can support the planning, control, and management processes of HRM. (ii). Payroll processing is a program in terms of system employees salary payment. (iii) Travel Management which contains the employee business travel process. (iv) Training & Development Management, which contains the program of training and skills development followed by each employee. A good information system allows all relevant information for employees that can be accessed at any time, for example, can be taken in a matter of seconds. Human resource module within the ERP provides a means to: (a). Manage roles and responsibilities of the organization.(b). Defining (c). Personal information of employees, (d). Tasks related to time management, payroll, and employee training. ERP Organization and Staffing Plan has a tool that can be used to define: (a). Company's management structure. (b). The position in the organizational structure. [13].

ERP modules in the above should be integrated with other parts of the ERP modules like SCM, Accounting & Finance, Marketing & Sales. The participation of top management in the implementation of ERP is absolutely indispensable in maintaining and controlling the implementation of the ERP system in order to successfully



achieve the goal of target. Top management must have a work schedule that is directional in controlling the implementation of ERP.

Research Methodology

The research methodology describes the steps in this study. These steps will be explained from baseline until the research is completed. Starting from preliminary surveys and literature studies, and observations. The data obtained from company reports, expense reports and use of resources, both labor and materials. Literature became the basis for a review of the methods, frameworks, guidelines, problems and issues associated with ERP. From the reviews related to the ERP implementation was created corrective action according to the concept of ERP ideal condition.

Discussion

This analyze predetermined parameter ERP will be controlled in accordance with the existing concepts such as business process, and top management involvement and participation for ERP activities, to achieve ideal implementation of ERP. Further assessment of the actual conditions present of ERP in factory compared with the ideal conditions of ERP concept. Matrix research shows ERP ideal parameter comparison to actual conditions in the factory in accordance with table 1.1. In this matrix indicated also the results of numerical assessment (scoring) of such comparisons. Scoring digits represent the level of the kindness (good score) and weakness (poor score) of each parameter is further shown in a graph to position these parameters. Scoring lowest parameter represents the weakest in its implementation so that it will be a top priority that must be carried out repairs by the company. Conditions scoring follow the rules as follows: number 1, if the company did not have a ERP program; number 2 if the company already has a ERP program but needed supervision in its implementation; figure 3 if the company already has a ERP program and its implementation is not necessary supervision and implementation is not perfect; number 4 if the company is able to use the ERP program to meet production targets and / or objectives of the company and its performance close to perfection; figure 5 if the ERP program has become an example of a standard for other companies. Here are observations ERP implementation program and remedial action should be taken to the implementation of ERP implementation at the Injection Molding Karawang Company, according to table 1.2

Table 1.2: Implementation of ERP in injection Molding Company

No.	Description	Current Conditions in Injection Molding Karawang Plant	Score 1-5	Action Plan for ERP
A	Marketing & Sales			
1	Marketing of Product			
	Create marketing of product module	Marketing programs have not been conducted with ERP system	1	Marketing of product module is immediately activated to support the marketing process
2	Taking Sales Order			
	Create Taking sales order module	Process sales orders have been done in the SAP ERP module	3	Taking sales order module be integrated with the others business process module



3	Customer Support			
	After sales service module	After sales service module is not available. Still using manual system	1	After sales service module is immediately activated to support the marketing process
4	Customer Relationship Management (CRM)			
	CRM module consist of : customer data based, profit analysis, contact management tool, marketing campaign management	CRM is not available. Still using manual system.	1	CRM module is immediately activated to support the marketing process
5	Sales Forecasting			
	Forecasting sales module	Preparation of forecasting module has not been activated. Still using manual systems	1	Sales forecasting module is immediately activated to support the sales process
6	Advertising			
	Advertising module	Advertisng module is not available Still using manual system.	1	Advertising module is immediately activated to support the marketing and sales process
B	Supply Chain Management (SCM)			
1	Purchasing goods & raw material			
	Purchasing goods & raw material module	Purchasing goods & raw material module available, but have not been integrated with the ERP supplier	3	Purchasing system module integration with suppliers and other modules
2	Receiving goods & raw material			
	Receiving goods & raw material module	Receiving goods & raw material module available, but have not been integrated with the ERP supplier and other modules	3	Receiving goods & raw material module integration with suppliers and other modules

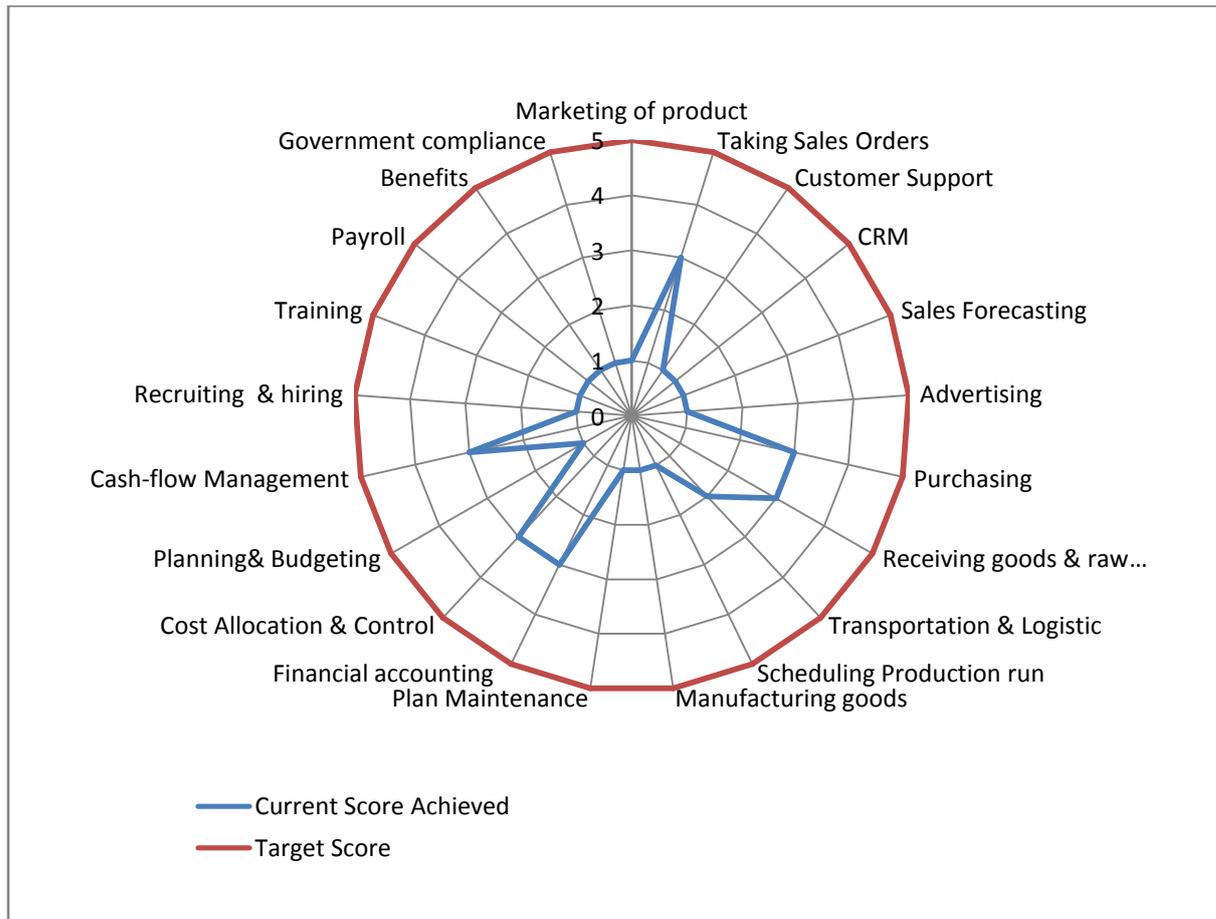


3	Transportation & Logistic			
	Transportation & logistic module	Transportation module is not available. Logistic module is available, but have not been integrated with other modules	2	Transportation module is immediately activated and integration with other modules
4	Scheduling Production Run			
	Scheduling Production Run module	The module is not available. Still using manual program	1	Scheduling Production Run module is immediately activated and integration with other modules
5	Manufacturing Goods			
	Manufacturing Goods module	The module is not available. Still using manual program	1	Manufacturing Goods module is immediately activated and integration with other modules
6	Plan Maintenance			
	Plan Maintenance module	CMMS module is not available. Still using manual program	1	CMMS module is immediately activated and integration with other modules
C	Accounting & Finance			
1	Financial accounting of payments from customers and to suppliers			
	Financial accounting of payments from customers and to suppliers	The module available but, have not been integrated with the other modules (CRM and suppliers)	3	The module is immediately integration with other modules
2	Cost allocation and control			
	Cost allocation and control module	The module available but have not been integrated with other modules	3	The module is immediately integration with other modules
3	Planning and budgeting			



	Planning and budgeting module	The modul have not available, and the budget still using manual program	1	The module is immediately activated and integration with other modules
4	Cash-flow management			
	Cash-flow management module	The module available but have not not been integrated with other modules	3	The module is immediately integration with other modules
D	Human Resources			
1	Recruiting and hiring			
	Recruiting and hiring module	The module have not available. Still using manual program.	1	The module is immediately activated and integration with other modules
2	Training			
	Training module	The module have not available	1	The module is immediately activated and integration with other modules
3	Payroll			
	Payroll module	The module have not available. Still using manual program	1	The module is immediately activated and integration with other modules
4	Benefits			
	Benefits module	The modul have not available.	1	The module is immediately activated and integration with other modules
5	Government compliance			
	Government compliance module	The module have not available. Still using manual program	1	The module is immediately activated and integration with other modules





Graph 1.1: The value of the measurement parameter ERP program implementation

From the results of the implementation of ERP parameter measurements obtained above, a grades of 1 for Customer support, CRM, sales forecasting, advertising, Schedule Production Run, manufacturing goods, Plan maintenance, Planning & Budgeting, Recruiting & Hiring, Training, Payroll, Benefit, Government Compliance. With a value of 1 is then immediate action must be taken immediately to be done as the first priority in table 1.1 above. For the next action is a grade 2 obtained by transportation & logistic. Further action for grades 3 that taking sales order, purchasing goods & raw material, receiving Goods & raw material, financial accounting, cost allocation & control, cash flow management. With these guidelines created schedule implementation of ERP implementation of corrective actions in order of priority 1, 2, and 3 above. Once that is done by taking the value of control once every 3 months to do restoration for continuous improvement.

If the ERP implementation of corrective actions above is done continuously and constantly monitored the results for every 3 months, it will automatically bring increase the value of customer satisfaction. Interval time monitoring of results in the first year of implementation of ERP is done every 3 months. After the results of the first year to meet the target with the whole assessment parameters to get the value of 5, in the second year to do with interval 6 months. If at the time of taking the value back, determined to be impaired, the interval of time monitoring the implementation of ERP back to 3 months.

Conclusions and Suggestions

The conclusion from this research are: (i) the successful implementation of ERP involves the active involvement of all parties or all employees of the company, (ii) conduct training and education about ERP implementation in accordance matrix 'competencies, which raised awareness to implement ERP correctly and independently. (iii) the role of top management is crucial in the successful implementation of ERP in the company. Top



management must have a strong commitment to get involved, because it will lead to a culture and a strong motivation to all employees.

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