

BUILDING GREEN ENTERPRISE RESOURCE PLANNING SYSTEM ON SALES MANAGEMENT MODULE FOR THE LEATHER TANNING INDUSTRY

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Abstract. There are several companies in Garut that are involved in the leather tanning industry. The tannery industry now produces finished leather that are produced from the skin of sheep, goats and cattle. The companies involved have big interests in the country and improve the economy in Indonesia. Public awareness is increasing towards the environment and the existence of international standardization in the form of environmentally friendly certification for an industry has an influence on companies in the leather industry that do not yet have certification. One of them is companies that pay more attention to the environmental aspects of activities that are carried out, to meet international standards and can obtain certificates to improve the quality of the company and be able to compete with foreign industries. Activities related to the leather industry are related to chemicals and produce hazardous waste to the environment. Currently to monitor the company's supply chain management such as recording customer data, the process of receiving orders from customers, the process of checking inventory, is still done manually and not all processes use the system. This can cause problems such as data that is not real time, and the business processes of each part of the company are not integrated and not monitored properly. These problems can be minimized by using a system that can monitor and integrate business processes with environmentally friendly standards. This study discusses system development in the sales department and is carried out by applying the green sales management concept based on Enterprise Resource Planning (ERP). The main objective of this concept is about an information system in monitoring the activities of selling goods to customers that are approved on environmentally friendly aspects. The implementation of the green sales management system starts from project preparation, business blueprint, realization, and final preparation without being aired.

Keywords: Enterprise Resource Planning (ERP), Green Sales Management, Open Source Application, Environmentally Friendly, Leather Tanning Industry

1. INTRODUCTION

The leather tanning industry is one of the industries in Indonesia. The leather tanning industry is an industry that processes raw leather into ready-to-use leather such as gloves and various leather crafts. Materials commonly used usually come from the skin of cows, goats and sheep. In the leather tanning industry in Indonesia, it can be categorized into two categories, Large and Medium Industries. Most of the leather tanning industry is in Garut, West Java, Indonesia. The development of the skin itself in Indonesia has been very rapidly developing.

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In the years 1970 - 1990 began to emerge leather industry centers such as in Garut, Magetan and Madiun. The growth of the factory also grew rapidly in the same year in the range of 200-500 factories had begun to emerge.

The leather industry shows positive performance. The Industry Research and Development Agency (BPPI) of the Ministry of Industry explained that towards the end of 2017, investment in this sector had reached Rp. 7.62 trillion and could be said to quadruple compared to last year. In addition, Indonesia managed to occupy the fifth position as a world exporter after China, India, Vietnam and Brazil with its market share in the international market reaching 4.4% in the leather industry.

When viewed from all the processes that exist in the leather tanning industry, these processes now have standardized products and systems that are environmentally friendly, which requires a habit to create an environmentally friendly industry to compete with other foreign industries. Some companies that are included in the large category currently do not have certification for industries that are environmentally friendly. This certification assesses the processes carried out by the company to see environmentally friendly aspects. It is very important for companies that are in the leather tanning industry to pay more attention to processes that have environmentally friendly aspects in order to compete with foreign industries.

At present it is important for every company to form an environmentally friendly industry. This is because there is an emphasis on legislation, namely Law Number 3 Year 2014 in Article 30 where industries must utilize natural resources efficiently, be environmentally friendly and become an excuse to form an environmentally friendly industry. Problems that occur in the leather tanning industry, most are some processes that are still done manually, and do not have a system for monitoring, automation and integration with several business processes in the company. In a company's sales management, there is no system that can integrate with other parts of the company. This causes the processing of company data does not occur in real time and causes delays in some activities within the company. To achieve international standardization, the system must be able to monitor the company's business processes to be environmentally friendly.

Judging from the problems above, there are several ways to create a system that can integrate company business processes by implementing an Enterprise Resource Planning (ERP) system. ERP is a system that can integrate all company business processes by using a database in one place. This solution is adapted to ISO 14000 where ISO 14000 is a description of the standards that have been developed on global and environmental issues, with the existence of KPI (Key Performance Indicators) in the application to control processes in the company in order to pay more attention to environmental aspects. This is so that the achievement of environmentally friendly standardization in the company's business processes that are mutually integrated using an ERP system can be achieved. This integration can be seen from business processes that are interconnected in the application, for example in the processes in the procurement, inventory, and production section.

By designing systems with configuration and customization, the expected results are the integration of green sales management with green inventory, green production, and green reverse logistics using open source applications to overcome problems that exist in the leather tanning industry and to achieve environmentally friendly standards

2. THEORETICAL BASIS

2.1. Enterprise Resource Planning

ERP is a multi-module, business packaging application solution that enables organizations to integrate business processes and company performance, distribute general data, manage resources and provide access to actual information. ERP is a technique that combines and integrates business processes and company management as a point of view for the efficiency or effectiveness of company resources [1]. ERP functions to integrate the processes of creating company products or services, from ordering raw materials and production facilities to creating finished products that are ready to be offered to customers [2]. In addition, ERP also helps integrate data within the organization in a common platform [3].

2.2. Green Enterprise Resource Planning

ERP system, which are environmentally friendly and allow organizations to cut costs while benefitting the planet, are termed as Green ERP System [4]. “Green ERP” system concept is an initiative that is responsible for protecting the environment such as reducing carbon emissions and caring for the human environment on earth [5].

2.3. Green Supply Chain Management

Al-Mashari and Zairi [6] pointed out that a supply chain system can be re-engineered within and beyond the organizational scope by applying the ERP scheme to the existing system. The supply chain system has to comply with some constraints and this can be considered as the responsibility to the environment and customers [7]. As a result, manufacturers have to establish their green supply chain systems which have the capability to document all the environmental information in every stage of supply chain.

2.4. Green Sales Management

Green Sales Management is a method to minimize waste or pollution caused by manufacturing processes. Green Sales Management bases on a sustainable production system in producing a product. These industrial products have a life cycle, which starts from designing, manufacturing, distributing, utilizing and remaining products that have damage to the environment and health and consume natural resources to a minimum.

Industries that implement green manufacturing will have an environmentally friendly and economically efficient industrial performance [9].

The benefits obtained are to save costs incurred by the company. In addition the benefits obtained with green sales management are able to establish a good reputation for the community, provide more initial investment, improve green design manufacturing systems, develop innovative manufacturing systems [10] and the customer environment [8]. SAP ERP is integrated software, allowing information to be shared among functional fields. Each functional department requires information from other departments, which are made possible with an integrated system.

3. SYSTEM DEVELOPMENT METHOD

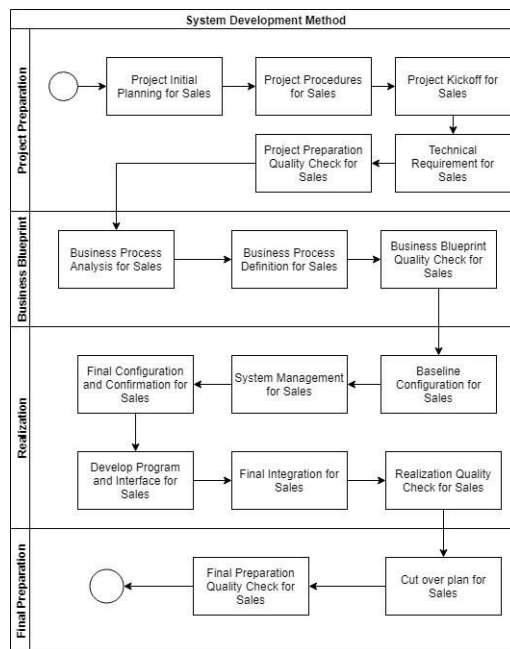


Fig 1. Systematic Development Method

4. DISCUSSION

The case in this study is designing the sales management system for sales business process in leather tanning industry because most of the leather tanning industries do not use and do not have a system that can monitor, automate, and integrate business process in the company.

4.1. Project Preparation

Project preparation is a process where the preparation is being done. The purpose of this study was to design a green warehouse system based on ERP and integrate it with green warehouse and green accounting using open source applications. There are user requirements for the designing of this application system:

- a. The system can do the quotation process to customers in real time in the presale activity process that complies with environmentally friendly standards.
- b. The system can confirm the quotations quickly in the presale activity process
- c. The system can immediately create a Sales Order document from the quotation results quickly so that the presale process can be carried out quickly
- d. The system can print an item supply report to get a report on the results of the item offer.
- e. The system can confirm the sale order process and integrate it with inventory.
- f. The system can print a sale order report to see the results of sales and green status on the sales concerned.
- g. The system can collect payments quickly after the sale order process is completed in accordance with environmentally friendly standards.
- h. The system can confirm the payment collection process if it has been paid by the customer.
- i. The sales management staff can input customer record with additional information named "customer behavior".

4.2. Business Blueprint

The business blueprint is the stage of analyzing GAP by identifying business processes carried out in the sales and proposing business processes by user requirements and has been adapted to the system. There are following GAP analysis:

1) Customer User Requirement:

The sales management staff can input customer record with additional information named "customer behavior" based on green standards on consumer behavior.

Existing Business Processes (As Is):

- The sales management do not have the particular record data named “customer behavior”

Proposed Business Processes (To Be):

- The existing process has not yet supported by system, so if using the system, this business process can be done with using the system and the sales staff can input customer data with green standards of consumer behavior

2) Quotation User Requirement:

The sales section can do the quotation process to customers in real time that complies environmentally friendly standards.

Existing Business Processes (As Is):

- The sales section still do the quotation process manually which is face-to-face with customer and still using paper to make the quotation.

Proposed Business Processes (To Be):

- With using the open source system, the sales section can do the process automatically and not using paper to make the quotation for customer by using a feature named "quotation".

3) Sales Order User Requirement:

The system can create sales order document from the quotation results quickly

Existing Business Processes (As Is):

- The sales section still make the document manually using excel

Proposed Business Processes (To Be):

- With integration using open source system, sales section can make the sales document automatically by validate from quotation document.

4) Billing User Requirement:

The sales section can automatically make the billing and send it to accounting section.

Existing Business Processes (As Is):

- The sales section still make the billing manually and send it manually to accounting section.

Proposed Business Processes (To Be):

- The sales section can make the billing automatically and can send the billing to accounting section automatically using the system.

4.3. Business Process

1) Quotation

The process start with the sales section sent the quotation to customer, and then the customer receive it, next the customer make the confirmation. If the quotation is done, sales section will validate the document and make it into sales order document.

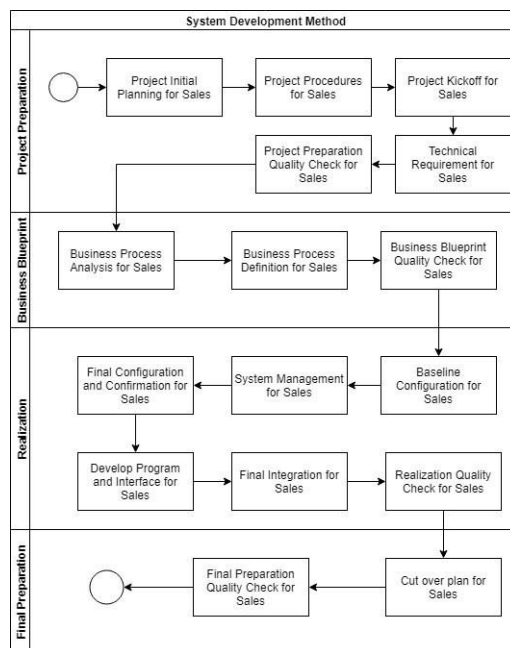


Fig 2. Business Process of Quotation

2) Sales Order

This process is done after quotation document is made. When the sales section validate the sales order, then it will sent to the warehouse section for availability checking. If the product is available, the warehouse section will notify and the sales section will confirm the delivery product.

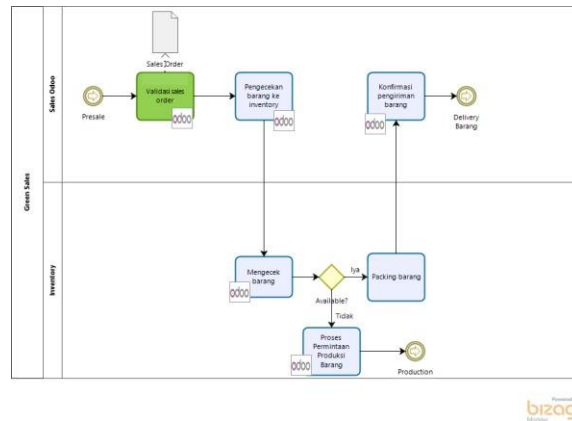


Fig 3. Business Process of Sales Order

3) Billing

After the sales process is done, the sales section can make the billing invoice. After the billing is made, sales section will sent it to accounting section and register payment. After the customer pay, accounting section will validate payment and the process is done.

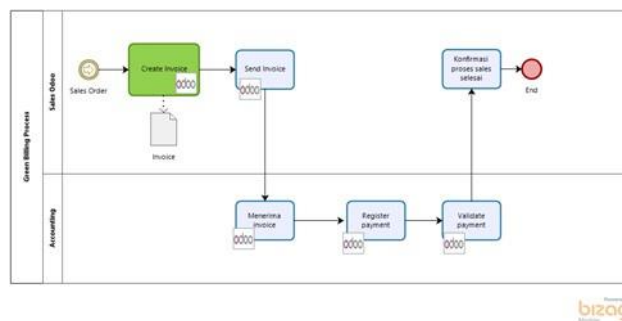


Fig 4. Business Process of Billing

5. RESULT

5.1. *Realization*

Realization is the phase of configuration and customization. The configuration is the installation process of sales modules, inventory, procurement, production, and accounting so they can be integrated with each other in carrying out business processes. Followed by customizing the sales order by adding field or page at the application which is KPI green for sales orders. The design for this ERP-based green sales management uses the open source application. The following field added is in Table. 1.

Table 1. Added Field in Configuration and Customization

No	Field Name	Description
1.	Report Monitoring	Sales management uses a system to create reports.
2.	<i>Reuse Materials</i>	Material management that can be reused
3.	<i>Recycle Materials</i>	Material management that can be recycle
4.	AZO Certificate	Management material that has Azo certificate
5.	Dangerous Material	Material management that control material that is dangerous.
6.	Accuracy of recording customer data	Can control the accuracy of recording customer data to reduce the error of input data customer

5.2 Final Preparation

Final preparation is the result of customization for the sales module by entering data in application. Based on Table.1. the following is the results of customization for green status feature in the process of quotation or sales orders to show if the product has standard of green or not before it will be sent to the customers.

The screenshot shows a sales order form for SO016. It includes the following information:

- Customer:** Customer A. Dann, Jalan Telekomunikasi, Bandung +62 40266, Indonesia
- Confirmation Date:** Sat, 22 Jun 2019 09:39:26
- Payment Terms:** 30 Net Days
- Delivery Method:** (Not specified)
- Green Status Metrics:**
 - Azo Certificate: 20.00
 - Reusable Material: 20.00
 - Recycle Material: 20.00

Fig 5. Green Status in Form Sales Order

Based on the picture above, the Green Status aims to check the condition of the product or material by filling in the column on the KPI green that has been provided. This picture explain, that there are 20 products that has Azo Certificate, 20 materials that can be reusable and 20 material that can be recyclable. The following is the result of invoice customization that can display the green status that has been selected.

The screenshot shows an invoice for Order # SO009. It includes the following information:

- Order #:** SO009
- Date Ordered:** Tue, 18 Jun 2019 10:03:04
- Salesperson:** Binar Binari Ahya
- Payment Terms:** 30 Net Days

Description	Quantity	Unit Price	Taxes	Price
[100mm] Finish Goods Leather – Light Brown Sapi	15 Unit(s)	500,000.00	15.00%	Rp 7,500,000.00

Green Status	
- Product with Azo Certificate	15
- Recyclable Product	15
- Reusable Product	15

Fig 6 Invoice of Slaes Orders

Based on the invoice, system can automatically the summary of report for monitoring all of the transaction in one of process business. For example, report for sales orders. The following picture

below is the result of customization for sales orders report. The report aims to monitor how many sales orders done in a month or a year equipped with environmentally friendly status.

	+ Total				
	Reusable Material	Recycle Material	Total	Azo Certificate	Untaxed Amount
- Total	53.00	55.00	27,930,732.30	63.00	26,000,202.00
- May 2019	9.00	11.00	6,899,500.00	17.00	6,130,000.00
+ 20 May 2019	2.00	2.00	1,000,000.00	2.00	1,000,000.00
+ 23 May 2019	3.00	4.00	4,600,000.00	8.00	4,000,000.00
+ 26 May 2019	4.00	5.00	1,299,500.00	7.00	1,130,000.00
- June 2019	44.00	44.00	21,031,232.30	46.00	19,870,202.00
+ 17 Jun 2019	0.00	0.00	1,000,000.00	2.00	1,000,000.00
+ 18 Jun 2019	15.00	15.00	8,625,000.00	15.00	7,500,000.00
+ 19 Jun 2019	0.00	0.00	500,000.00	0.00	500,000.00
+ 20 Jun 2019	2.00	2.00	638,002.30	2.00	620,002.00
+ 22 Jun 2019	25.00	25.00	10,130,000.00	25.00	10,130,000.00
+ 25 Jun 2019	2.00	2.00	138,230.00	2.00	120,200.00

Fig 7. Report on Sales Orders

Based on the picture above, report for sales process based on KPI green “Recycle Material”, “Reusable Material” and “Azo Certificate”. This pivot report explain about the transactions that already done in 2019.

6. CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusions

With the result of the research, the following can be concluded:

1. In this study a Green Sales system was formed which was designed according to the needs of the company to meet green standardization as an environmentally friendly industry.
2. Can integrate sales management modules with other modules such as green inventory, green accounting, green reverse logistics.
3. There is an invoice in the process of quotation, sales orders, and billing. In the invoice there is a green status according to KPI green.
4. There is a report for quotation, sales order, and billing process which is included a green status according to KPI green.

6.2 Recommendations

Based on this study, it is recommended if there is further research on this industry, can make a suggestion to make an integration with reverse logistic module

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