

# Odoo Community Based Implementation in a Textile Manufacturing Company

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**Abstract:** Some textile manufacturing companies in Indonesia still use spreadsheets to record business transactions. This outdated practice, lacking an integrated information system, results in incomplete data recording and discrepancies between different sections. Additionally, the subcontracting process, which involves sending semi-finished goods to vendors for finishing, often leads to unrecorded stock movements. Similarly, unit cost calculations are delayed by the manual data recapitulation process, which is time-consuming and prone to human error, affecting the accuracy and timeliness of the company's profit and loss calculations. To address these issues, an analysis of the actual business processes and company needs was conducted through interviews. The conclusion was reached to implement an Enterprise Resource Planning or ERP system, specifically Odoo system, to help companies record business transactions and generate reports in an integrated, accurate, and real-time manner. The research produced several outputs, including the identification of company business requirements, the design of new business processes, and the configuration of Odoo. After the configuration, testing was carried out to assess whether the system successfully meets the company's needs and business processes. Additionally, the research addresses change management and the managerial impacts that need to be anticipated during the implementation of Odoo.

**Keywords:** ERP, Odoo, subcontract, textile manufacturing company.

## 1. Introduction

In a textile manufacturing company, the initial process is to purchase raw materials (yarn) from the vendors by the purchasing department, then process it into semi-finished goods product or we called as greige by the manufacturing department. Greige is a raw fabric that comes directly from the weaving machine and has not gone through the dyeing process, then greige will be sent to the subcontractor vendor to be dyed and colored or printed. Subcontractor will return the dyed fabric to the company, and then will enter the fabric sales process which starts with the customer placing an order that will be followed up by the sales department.

This complex process is supposed to be handled by an automated computerized system to record all its activities, processes, and transactions. However, many textile manufacturing companies still rely on manual recording or use spreadsheets to track ongoing business transactions [1]. This situation generates some problems that potentially resulting in

missed opportunities and increased operational risks. First, data recording is not integrated between parts, some of the problems that arise are the first, namely, data is not recorded and there are differences in data between sections.

Second, the difficulty in monitoring stock. Non-integrated information management has a huge impact on stock monitoring, which sometimes has data differences between the warehouse and production departments. This is influenced by the production process at the subcontractor vendor to carry out the dyeing process. Often the recording done when shipping greige, is not done consistently. Likewise, recording when receiving results in errors in quantity writing when making PO.

When the calculation is done, the dyed fabric has a loss difference of 10.76% or Rp. 655,902,349.39 per year. Looking at these calculations, it can be concluded that after deducting the acceptable depreciation assumption, which is 5%, there are still 5.76% of dyed fabrics received that are missing in the middle of the subcontracting process. This shows that the company has difficulty in monitoring stock.

Third, the difficulty in calculating unit costs. This is because the process of calculating the cost of purchasing raw materials, textile manufacturing costs, and subcontract costs is still carried out by each section manually. This then affects the calculation of the company's profit and loss because the calculation will take longer and is prone to human error such as being mistaken when calculating the price of finished goods.

Enterprise Resource Planning (ERP) in the supply chain, particularly the implementation of Odoo, may significantly enhance company performance within various industries. For instance, in the furniture industry, Odoo can integrate suppliers, the company, and customers effectively, fostering better coordination and operational efficiency [2]. Similarly, in the coffee industry, the use of Odoo has demonstrated improvements in managing the supply chain, streamlining processes from production to customer delivery [3]. Moreover, information systems enhanced by Odoo are shown to optimize overall workflow and data management within organizations [4], while in human resource departments, Odoo's capabilities can streamline processes such as payroll, recruitment, and employee management [5]. However, despite these advantages, it is noteworthy that research on Odoo implementation within the manufacturing sector, particularly in the textile industry, remains scarce. According to [6], the textile industry faces

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major challenges.

Supply chain and production processes are complex, influenced by factors like lean methodology integration, product complexity, and their impact on performance. Supply chain complexity arises from managing diverse products, global networks, and shifting market demands. Lean practices, aimed at reducing waste and optimizing efficiency, face challenges when supply chains are complex, hindering expected performance improvements and complicating decision-making [7].

Quality control and compliance in supply chains ensure products meet required standards. Maintaining quality in complex supply chains requires robust systems for monitoring and enforcing compliance across multiple tiers. Tracing products through intricate supply chains is challenging, as one component's failure can compromise the entire system. Comprehensive and adaptable quality management systems are essential to mitigate these risks [8].

Inventory management and traceability are vital in complex supply chains. Tracking products through every stage is crucial for quality and compliance, while effective inventory management helps balance supply and demand, reducing stockouts or overproduction. Technologies like blockchain and IoT enhance traceability and transparency, essential for recalls and meeting consumer expectations [9].

In textile manufacturing companies there is also a subcontract process, but there are significant differences. The raw materials and products produced through the subcontract process are certain, so they can directly make POs (Purchase Orders) to subcontractor vendors according to the amount of raw materials sent and the number of products to be received. Whereas in textile manufacturing companies, the fabric dyeing process has a different color mixture for each type of fabric and color. The more color mixtures used, the less fabric can be produced because the capacity of the dyeing machine is a combination of the number of color mixtures and the number of fabrics to be dyed. This causes, in each dyeing process, the amount of greige and dyed fabric can be different. fabric manufacturing companies need to send greige first then PO making will be done after getting information from subcontractor vendors.

Based on the subcontract process that will be passed at the textile manufacturing company, there will be a need to create a new form to record how much greige will be sent to the subcontractor vendor, then continued with the creation of a dyeing PO (Purchase Order) which will be connected to the

previous greige delivery process. The PO will be used for the dyeing billing process and the receipt of dyed fabrics. The companies also want to know the amount of cost for dyed fabrics, the cost is a combination of greige production costs or greige purchase costs and the dyeing process at subcontractor vendors.

Based on the interview with the owner, the company has decided to implement Odoo as their ERP system. Odoo offers both enterprise and open-source community based, with the key difference being that Odoo Enterprise provides full access to all features and modules but requires an annual subscription fee [10]. This research supports the choice of Odoo Enterprise, suggesting that it is the most suitable option for companies seeking a comprehensive ERP solution.

A comparative analysis of Odoo and some other ERP system further reinforces this decision, revealing that Odoo excels in functionality, technical capabilities, and economic advantages. While it may have limitations in certain specialized sectors like coal mining, Odoo's strong performance across multiple evaluation criteria, coupled with its integrated database that enhances data control and streamlines processes, positions it as a top ERP choice for companies, particularly those in manufacturing [11]. Table 1 is a comparison of ERP that have been made by the author in previous studies [12].

The system request focuses on overcoming data differences between divisions and integrating this data into all divisions. This integration aims to generate financial transaction reports, monitor the supply of goods to subcontractor vendors more efficiently, and design system configurations for products with several variations.

The business requirements include the need to record transactions such as sales, purchases, and inventory, and to integrate these transactions across all divisions. Additionally, there is a need to generate financial transaction reports, facilitate the procurement of raw materials to subcontractor vendors, and record all product variants.

The value of this system lies in reducing operational costs, particularly by minimizing manual data processing and discrepancies in stock, whether in the form of raw materials or finished goods. Furthermore, the system will simplify the recording of financial reports and the monitoring of goods supplied to subcontractor vendors, ultimately making the sales and purchases of varied products more effective and efficient.

## 2. Methodology

This research aims to implement Odoo in a textile

Table 1  
ERP Comparison

No.	Criteria	Odoo	ERP Next	Adempiere	Dolibarr
1	Pay license fee	Free	Free	Free	Free
2	Server installation	Easy	Medium		Easy
3	Local computer (premise) or cloud installation for client	Both	Cloud		On-Premise
4	Trainer certification	No	No	No	No
5	Configuration complexity	Medium			
6	Transaction processing complexity	Easy	Easy	Medium	
7	Modul completeness	Medium	Low	Medium	Low
8	Easy to find software documentation	Easy to find	Only in their website		
9	Easy to modify the source code	Easy	Easy	Difficult	Medium
10	Software user size	Small to medium			

manufacturing company, to help optimize their production process. The stages of this research consist of several systematic steps. First, planning to determine the needs of the system, organize the current business process, and see the feasibility. Second, analysis to create the proposed business process. Third, design to configure each module used. Fourth, implementation to test the design that has been done. Finally, through design and implementation, it can be seen that the implementation of Odoo is needed for the company.

### 3. Result and Discussion

#### A. Planning

In this first stage, a plan for the Odoo implementation was defined and then adjusted to the needs and requests of the textile manufacturing company.

##### 1) System Request

A System Request was prepared to determine the objectives, needs, and benefits of the Odoo implementation. Table 2 show the system request defined for this company.

##### 2) Feasibility Analysis

Table 3 define the stage of the analysis is conducted to assess the company's readiness from organizational, technological, and economic perspectives.

##### 3) Actual Business Process

Actual business processes are business processes that are currently running in the company. This business process is obtained from the results of interviews with the owner and manager. The business processes of companies can be seen in Figures 1 and 2.

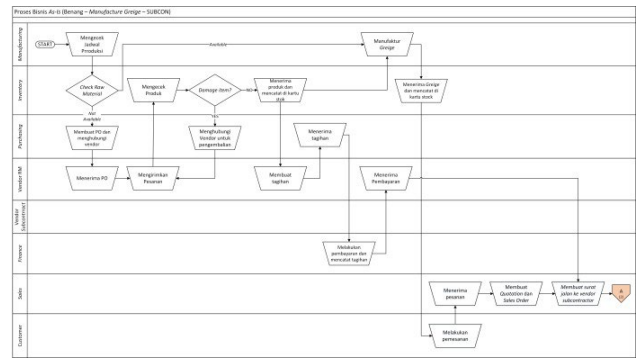


Fig. 1. Actual business process (1)

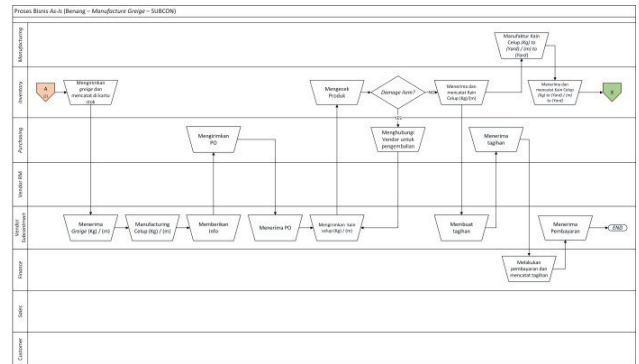


Fig. 2. Actual business process (2)

#### B. Planning

At this stage, the proposed business process (to be) is made. The proposed business process that has been made will be a reference for configuration. Table 3 define all the business requirement that is also compare the as-is process and the to-be process. The proposed business process (to be) can be seen in Figures 3 and 4.

Table 2  
System request

Business Needs	<ol style="list-style-type: none"> <li>1. Addressing data discrepancies between divisions and integrating them across all divisions.</li> <li>2. Generating financial transaction reports.</li> <li>3. Simplifying the monitoring of supply to subcontractor vendors.</li> <li>4. Designing a system configuration for products with multiple variations.</li> </ol>
Business Requirements	<ol style="list-style-type: none"> <li>1. Recording transactions, including sales, purchases, and inventory, and integrating them across all divisions.</li> <li>2. Creating financial transaction reports.</li> <li>3. Procuring raw materials from subcontractor vendors.</li> <li>4. Recording all product variants.</li> </ol>
Business Value	<ol style="list-style-type: none"> <li>1. Reducing operational costs, such as minimizing manual data processing costs.</li> <li>2. Minimizing stock discrepancies, whether in Raw Material or Finished Goods form.</li> <li>3. Simplifying financial report documentation.</li> <li>4. Easing the monitoring of supply to subcontractor vendors.</li> <li>5. Making the sale or purchase of varied products more effective and efficient.</li> </ol>

Table 3  
Feasibility analysis

Organizational Feasibility	<ol style="list-style-type: none"> <li>1. Human Resources (HR): Sufficient staff, including 6 operators.</li> <li>2. Educational Levels: Managers hold a bachelor's degree, while staff have educational backgrounds ranging from high school to diploma (D3).</li> <li>3. Technological Proficiency: Staff are proficient in using Microsoft Excel.</li> <li>4. Implementation Support: User manuals and training sessions will be provided.</li> </ol>
Technology Feasibility	<ol style="list-style-type: none"> <li>1. Available Equipment: Currently, there are 3 computers and 1 laptop available.</li> <li>2. Hardware Requirements: Additional hardware needed includes 4 computers for staff.</li> <li>3. Software Requirements: Necessary software includes operating systems, processors, memory, and compatible browsers.</li> </ol>
Economic Feasibility	<ol style="list-style-type: none"> <li>1. Capital Expenditure (CAPEX): Costs associated with capital investments.</li> <li>2. Operational Expenditure (OPEX): Ongoing operational costs.</li> <li>3. Training Costs: Expenses related to staff training.</li> </ol>

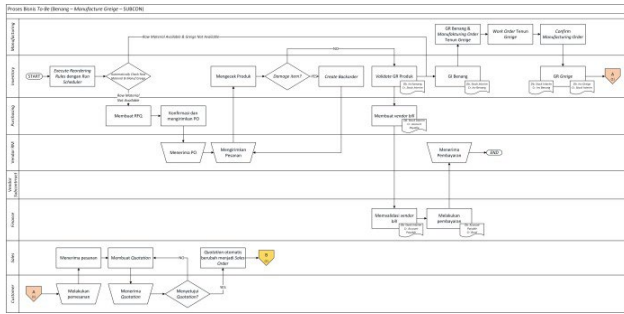


Fig. 3. Proposed business process (1)

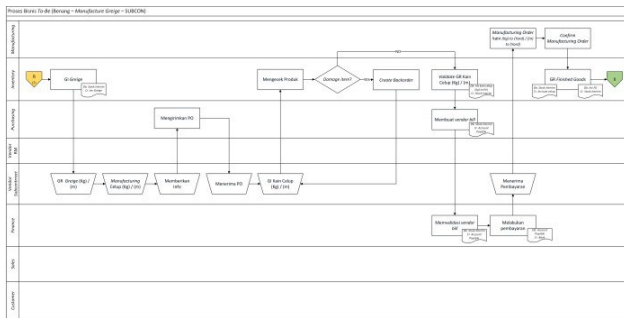


Fig. 4. Proposed business process (2)

C. Design

1) Master Data Requirement

Master data requirements are analyzed based on the main data needed in the system and are related to the business requirements previously discussed. Master data created will include chart of account, vendor master, vendor pricelist, customer master, sales pricelist, product master, product category, product variant and attributes, reordering rules and bill of materials.

2) Basic Configuration

There are several Odoo basic configurations including Locations, Routes, and Unit of Measure Categories. In general, the data configuration in Odoo is already available directly, but it can be added if special additions are needed depending on the company's business process.

3) Form for Subcontracting Process

A new form for the subcontracting process was created using Odoo Studio to link the delivery of semi-finished goods to subcontractor vendors with the creation of RFQs and purchase orders. The configuration is to create a "Related PO" on the Supply subcontract form shown in figure.

Table 4  
Business requirement

No.	Business Requirement
1	<b>Integrated and Real-time Inventory Movement Report</b> <ul style="list-style-type: none"> <li>As-Is: Recording is done separately between the accounting division and inventory.</li> <li>To-Be: Every logistics module must be integrated with each other.</li> </ul>
2	<b>Financial Report Based on Logistics Transactions</b> <ul style="list-style-type: none"> <li>As-Is: All transaction reports are done using Microsoft Excel, and the accounting division still needs to perform manual calculations and cross-checks.</li> <li>To-Be: Every financial account related to logistics transactions needs to be recorded in the database and integrated with the accounting journal.</li> </ul>
3	<b>Record and Store All Product Data and Integrate with Other Modules</b> <ul style="list-style-type: none"> <li>As-Is: Product data is recorded manually by each division, resulting in a lack of integration between divisions.</li> <li>To-Be: Product data is recorded and stored in the database in real-time.</li> </ul>
4	<b>Record Minimum and Maximum Stock Levels for Make-to-Stock Products</b> <ul style="list-style-type: none"> <li>As-Is: There is no recording of minimum and maximum stock levels in the warehouse.</li> <li>To-Be: Use reordering rules to trigger the creation of RFQ (Request for Quotation) or manufacturing orders when running the scheduler.</li> </ul>
5	<b>Record and Store Vendor Data and Pricelist in the Database</b> <ul style="list-style-type: none"> <li>As-Is: Vendor data is recorded in the purchasing division's books and is also separated from the receivables books in the accounting division.</li> <li>To-Be: All vendor data and pricelist is recorded and stored in the database.</li> </ul>
6	<b>Record Vendor Bills and Make Payments Based on Received Products</b> <ul style="list-style-type: none"> <li>As-Is: Invoice checking from vendors is done manually, then the finance division pays according to the invoice.</li> <li>To-Be: Vendor bill recording is integrated with inbound delivery.</li> </ul>
7	<b>Record and Store Customer Data in the Database</b> <ul style="list-style-type: none"> <li>As-Is: Customer data is currently recorded in Microsoft Excel.</li> <li>To-Be: Customer data is recorded and stored in the database.</li> </ul>
8	<b>Record and Store Product Price Lists in the Database</b> <ul style="list-style-type: none"> <li>As-Is: Divisions other than the finance division do not know information other than the public pricelist.</li> <li>To-Be: Record and store the product pricelist in the database.</li> </ul>
9	<b>Forward Order Information to the Inventory/Manufacturing/Purchase Divisions</b> <ul style="list-style-type: none"> <li>As-Is: Customer order information is recorded in the book and then manually forwarded.</li> <li>To-Be: Order information is already integrated with the inventory, manufacturing, and purchase divisions.</li> </ul>
10	<b>Record and Store Bill of Materials in the Database</b> <ul style="list-style-type: none"> <li>As-Is: Quantities and components are recorded in books</li> <li>To-Be: Bill of Material is recorded and stored in the database.</li> </ul>
11	<b>Record the Quantity of Products to Be Sent to Subcontractor Vendors and Create a Purchase Order with the Appropriate Quantity Based on Information from the Subcontractor Vendor</b> <ul style="list-style-type: none"> <li>As-Is: It is necessary to contact the subcontractor vendor first when creating a purchase order, and sometimes no record is made when sending greige.</li> <li>To-Be: Configure subcontracting in the inventory and purchase modules by creating a custom form.</li> </ul>

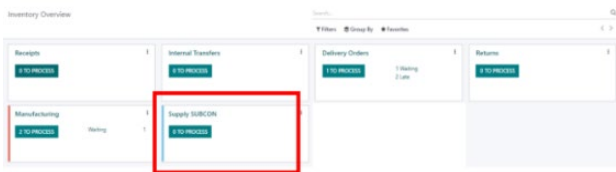


Fig. 5. Screenshot Odoo supply to sub contraction

4) Reports

There are several reports can be shown in Odoo to help the owner monitor the company performance. Figures 6 and 7 provides a detailed screenshot of the Odoo Finance and Manufacturing module view, showcasing the interface and various options available for managing the manufacturing process, including bill of materials and scheduling features, which are integral to the system's functionality.

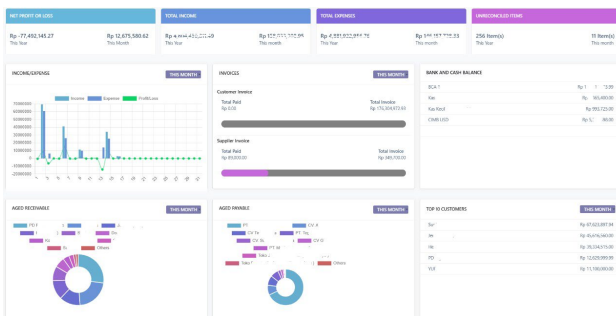


Fig. 6. Screenshot Odoo finance reporting (1)

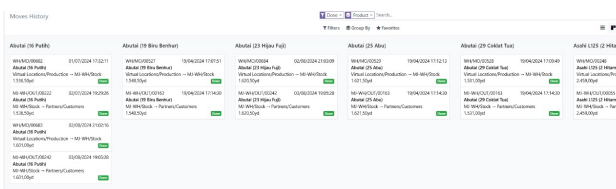


Fig. 7. Screenshot Odoo manufacturing (2)

5) Segregation of Duty

Segregation of duty is one of the steps to separate the responsibilities or authority as well as the access limits of the workers involved with the aim that business processes can be carried out regularly. The division of responsibilities is divided into segregation of duty for transaction, segregation of duty for master data, and segregation of duty for report. In addition, there are four main functions, namely create, read, update, and delete.

D. Implementation

At the Implementation stage, testing will be carried out, change management and the managerial impact of system changes will be explained.

1) Testing

Testing is divided into two parts, namely unit testing and

integration testing. There are fourteen-unit testing is done to check the process of creating master data.

Meanwhile, four integration testing is carried out to check the interaction between modules whether they can work together properly or not in accordance with the requirements of the company. The integration process testing shown in table 4.

2) Change Management

1. Unfreezing

In this step, the owner will socialize to employees that there will be a system change, namely switching to using Odoo. Through this step, the owner will also state the reasons for the change in business processes and the use of Odoo by also explaining the problems faced and the consequences that are detrimental to the company.

Furthermore, the owner will educate employees about the benefits and needs that can be met, such as reducing the level of data input errors and missed quantities, more integrated processes and reports that can be done in real time.

2. Changing

The implementation process is carried out by collecting infrastructure needs, user manuals, adding SOPs as in Figures 21 and 22, educating new business processes and training for each employee involved.

The training itself will be conducted for two weeks after working hours and all employees involved must follow and no one is missed. At this stage, the authority for employees who will use Odoo is also determined in the form of Segregation of Duty so that each employee in their division knows their respective authority in operating Odoo. After that, the manager of each division will monitor their staff when operating Odoo.

3. Refreezing

The owner can provide rewards for employees who have been willing to accept and make changes to the system to motivate employees to continue to develop. In addition, this stage also evaluates the Odoo that has been operated and the results of the training that has been carried out. The owner and managers will ensure that the system is running well and everyone involved can run the system well. The evaluation later can be done when the ERP system already stable. If there are difficulties, the owner or manager can communicate with the consultant. There is support maintenance that will be done every month and troubleshooting can be done when finding problems with the Odoo implementation.

3) Managerial Impact

1. The owner and manager will be briefed first together with the consultant, after which all employees involved will be given training.
2. There is a division of responsibilities for each division and employee in the Segregation of Duty.
3. The need for additional SOPs for the process of sending raw fabrics and receiving dyed fabrics for the

Table 5  
Integration testing

No.	Testing Description
1	Purchase raw material then manufacturing semi-finished goods to finished goods subcontracting process and lastly selling to customer.
2	Purchase semi-finished goods then finished goods subcontracting process and lastly selling to customer.
3	Purchase finished goods and then selling to customer.
4	Return process from customer



subcontracting process.

4. User manual will be given to all people involved and affected by system changes including the owner of the textile manufacturing company.
5. Additional costs are required to support the Odoo implementation process.
6. All data supporting the company's business processes must be transferred to the Odoo system, either by importing Excel files or entering the data manually
7. There are changes in the business process, especially when recording the entry and exit of stock and making POs for the subcontracting process.
8. Each division will be connected to each other in the Odoo system.

#### 4. Conclusion

Based on several stages that have been carried out previously, several conclusions can be drawn that also refer to the formulation of the problem as well as the objectives of this research, including the following:

1. Business requirement in a textile manufacturing company has been successfully identified based on the results of needs analysis, actual business process analysis and interviews with the owner. There are 11 Business Requirements that have been identified and written in the Business Requirements sub chapter.
2. The Odoo community-based will be used by the textile manufacturing company Odoo 16 because the company needs some easy configuration process and forms in the subcontracting process. This can be done by providing custom addons to the system.
3. The proposed business process, designed to meet the needs of the textile manufacturing company, has been successfully developed based on the business requirements. Following this, the Odoo configuration has been successfully integrated, as confirmed by testing.

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