

**IMPLEMENTATION OF ODOO BASED ON ENTERPRISE
RESOURCE PLANNING SYSTEM WITH SALES AND
PURCHASING MODULE USING RAPID APPLICATION
DEVELOPMENT**

UNDERGRADUATE THESIS

**Submitted to the International Undergraduate Program in Industrial Engineering
in Partial Fulfilment of Requirement for the Degree of Sarjana Teknik at the
Faculty of Industrial Technology
Universitas Islam Indonesia**



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2024**

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For the sake of Allah Subhanahu Wata'alaa, I admit this work is the result of my own work except for the excerpts and summaries from which I have explained the source. If in the future, it turns out that my confession is proven to be untrue and violates the legal regulations in the paper and intellectual property rights, then I am willing to get a diploma that I have received to be withdrawn by the Universitas Islam Indonesia.

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**IMPLEMENTATION OF ODOO BASED ON ENTERPRISE RESOURCE
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Supervisor,

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Ir. Muhammad Ridwan Andi Purnomo, S.T., M.Sc., Ph.D., IPM

EXAMINERS' APPROVAL PAGE

IMPLEMENTATION OF ODOO BASED ON ENTERPRISE RESOURCE PLANNING SYSTEM WITH SALES AND PURCHASING MODULE USING RAPID APPLICATION DEVELOPMENT

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DEDICATION PAGE

I dedicate this labor-intensive undergraduate thesis to my family, especially to My Father Ibarin Barek, Galih Maghribi, Dhatu Candrasari, Ghea Maudia, and Shila Mahira. Also my first partner Rayhan Gymnastiar.

To all of my closest friends who constantly exchange joy and sorrow with one another.

Furthermore, without the help of my supervisor Ir. Muhammad Ridwan Andi Purnomo, S.T., M.Sc., Ph.D., IP, I could not have finished this thesis.

MOTTO

“A person who never made a mistake never tried anything new.”

- Albert Einstein -

“A pessimist sees difficulty in every opportunity, but an optimist sees opportunity in every difficulty.”

- Ali bin Abi Thalib -

PREFACE

Bismillahirrahmanirrahim

Assalamu'alaikum Warahmatullahi Wabarakatuh

Alhamdulillah, all praise is due to Allah SWT, the Richest, with all His secrets. Gratitude is endlessly extended to Allah SWT because of His mercy and grace. The writer completed an internship report titled "**Implementation of Odoo Based On Enterprise Resource Planning System with Sales and Purchasing Module Using Rapid Application Development**" (Case Study: SMEs Dikaoske)". The author conveys the true Murabbi of the Prophet Muhammad SAW, who has brought humans from darkness to a realm full of knowledge. This Undergraduate Thesis was completed by the author thanks to the help and support both morally and materially from various parties. For that, with all my heart, the author expresses his gratitude and appreciation to:

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7. The author's beloved family, my father, (almh) mother, brother, and sister who always give encouragement and prayers for the writer.

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9. Rayhan Gymnastiar Hadinata is the first partner who always provides help and support every time.

Thus, in writing this undergraduate thesis report, the author is fully aware that in preparing this thesis report there are still shortcomings so criticism and suggestions from various parties are really needed so that the author can improve this undergraduate thesis. Finally, I hope that this practical work report can provide benefits for readers. Thank you.

Wassalamu'alaikum Warahmatullahi Wabarakatuh

ABSTRACT

Small and medium enterprises (SMEs) often face problems when implementing enterprise resource planning (ERP) systems due to limited resources and the need for agile and cost-effective solutions. This paper explores the implementation of Odoo, an open-source ERP software, within the context of SMEs, focusing on integrating sales and purchasing modules using the Rapid Application Development (RAD) methodology. The research begins by providing an overview of the ERP landscape, highlighting SMEs' specific needs and constraints. It then introduces the Odoo platform and its key features, emphasizing its suitability for SME environments. The paper delves into integrating the sales and purchasing modules within the Odoo ERP framework, addressing the unique challenges and considerations encountered in this process. The paper's core discusses the implementation of Odoo using the RAD approach, which emphasizes rapid prototyping, iterative development, and active user involvement. This methodology aligns well with the dynamic nature of SME operations and their need for flexible and responsive software solutions. The study outlines the steps involved in the RAD-based Odoo implementation, including requirements gathering, system design, rapid prototyping, and iterative refinement. The paper presents a detailed case study showcasing the implementation of the Odoo ERP system with integrated sales and purchasing modules in a real-world SME scenario. The case study provides insights into the challenges encountered, the strategies to overcome them, and the measurable benefits of improved operational efficiency, enhanced decision-making, and increased customer satisfaction. Finally, the paper discusses the implications of the Odoo ERP implementation using the RAD approach within the SME context. It highlights the potential for increased agility, reduced time-to-market, and enhanced user experience, as well as the scalability and adaptability of the Odoo platform to meet the evolving needs of SMEs.

Keywords: Odoo, ERP, SMEs, RAD, Blueprint, BPMN

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CHAPTER I

INTRODUCTION

1.1 Background

Al-Mashari claims that one of the most inventive advancements in information technology (IT) of the 1990s was the use of ERP systems (Firdaus, S. K., Puspitasari, W., & Lubis, M., 2019). ERP systems benefits, which include enhanced planning and decision-making within the organization, more efficient planning and information sharing, seamless coordination across business units leading to increased efficiency, and faster customer response times, are the driving force behind their widespread adoption. ERP systems are defined as commercial software systems that integrate and automate most or all of a company's business processes.

According to R. Al Aziz, F. Amalia, and A. Hendra Brata, the use of integrated ERP-based information systems greatly helps business operations, which results in lower operating costs and helps leaders make decisions. (Purwanto, H. P., & Raharja, A. A. R. A., 2019). It produces better business relationships.

Small and medium-sized enterprises (SMEs) are determined by the number of employees. The term small and medium-sized enterprises is intended to distinguish enterprises with a relatively small amount of capital and staff from larger organizations. SMEs occupy a very important position in our national economy. They have played a major role in global economic and social development.

Small and medium-sized enterprises (SMEs) in Indonesia have the opportunity to contribute to the Gross Domestic Product of USD 140 billion or about Rs 2.052 trillion by 2030 (Tayibnapis & Wuryaningsih, 2021). The challenges and problems faced by Micro, Small, and Medium Enterprises in Indonesia are multifaceted and require a comprehensive approach. Government efforts to lift SMES have been highlighted, but specific challenges such as those related to infrastructure and the need for economic development (Ansetti, 2021) have also been identified.

Dikaoske is one of the SMEs that moves in the sector of the convection industry. SMEs Dikaoske was founded on March 3, 2020, and is located in Barongan Agung, Jetis, Bantul District, Yogyakarta Special District. Small Medium Enterprise provides clothing services such as shirts, jackets, work uniforms, bags, and so on. Dikaoske also accepts template services for t-shirts, shirts, jackets, and hoodies from small party numbers to large party numbers. Make-to-

order (MTO) is a manufacturing strategy employed by manufacturers to offer personalized items. Under this approach, production begins immediately upon receiving an order (Yue, 2019). The number of employees in this small and medium-sized enterprise is four for *sablon* and five for sewing. Dikaoske is a small and medium-sized enterprise whose entire business processes are still recorded manually. Starting with the ordering process, the purchase of raw materials, and production, until the payment is still recorded and done manually. Then the admin who received the message also switched or didn't use one door so sometimes there was a miscommunication. Then many consumers demand that the production process be faster but at a minimum price. This has resulted in numerous problems found in the production process and customer service such as delays in ordering, loss of ordering notes, then miscommunication between employees.

With this, SME owners face challenges in data and information management as orders increase and their business grows. Therefore, the presence of integrated information systems such as Enterprise Resource Planning can improve existing business systems into computerized systems. For the preparedness of its implementation, SMES has supporting infrastructure, such as laptops and computers that can help in its entire business process.

The research focuses on the implementation of ERP systems using Odoo Software in a Small and Medium Enterprise called Dikaoske. Starting from the implementation planning phase 5 to the testing phase of the system to the user. Rapid Application Development (RAD) is a linear sequential software development process model that emphasizes very short development cycles (Umar, K.G., Saturday, J., & Sukur, R.S., 2022). This RAD model is a “high-speed” adaptation of a linearly sequential model in which rapid development is achieved using a component-based construction approach. If the need is well understood, the RAD process allows the development team to create an “integral functional system” in a very short period of time, about 60 to 90 days. (E. Ali, 2019). Rapid Application Development (RAD) is a method used to understand an object by engaging directly with an object. The reason for choosing this method is that it aims to develop applications quickly so that developers can easily do iterations and software updates without having to start over. This approach allows the developer team to proactively respond to user feedback and to ensure that the end results are more focused on quality and fit the end user’s needs by prioritizing speed and flexibility.

1.2 Problem Formulation

Based on the background that is already explained and structured, the problem formulation for this undergraduate research is obtained as shown below:

1. What are the stages in implementing an Odoo-based ERP system in the sales and purchasing module?
2. How can the implementation of an ERP system based on the Odoo sales and purchasing module meet the expectations of small and medium enterprises?
3. What are the results of the user acceptance test regarding the use of the Odoo ERP system for users?
4. What is the feedback from Dikaoske Small Medium Enterprise (SME) regarding the results of implementing the Odoo ERP system?

1.3 Research Objective

Based on the problem formulation that has already been determined, the research objective that needs to be achieved from this undergraduate research is described as shown below:

1. Can implement ERP systems with Odoo software on Sales and Purchasing Modules in Dikaoske Small Medium Enterprise (SME).
2. Understand how to configure ERP systems with Odoo Software on Sales and Purchasing Modules in Dikaoske Small Medium Enterprise (SME).
3. Conduct user acceptability testing for Dikaoske's Odoo ERP system users as part of system testing.
4. Complete the stages of reflection and learning to get feedback and answers from the SMEs regarding the outcomes of the Odoo ERP system implementation.

1.4 Benefits of Research

The benefits obtained by various parties involved in this research are as follows:

1. Benefits for Small Medium Enterprise (SME)
 - a. SMEs can automate business processes and have a database in the form of an integrated information system.
 - b. SMEs can increase the accuracy of information for business performance evaluation needs.
2. Benefit for Researcher

- a. Researcher can implement ERP science directly in case studies of real problems.
- b. Increase analytical capabilities for business processes in more depth.
- 3. Benefit for Collage
 - a. Can be a reference for further research related to ERP system implementation.
 - b. As an additional reference related to the development of the industrial world in Indonesia.

1.5 Research Limitations

The problem limitations of this research are as follows:

1. The research was conducted on Dikaoske SMEs.
2. The research carried out is limited to system implementation and configuration, this research does not carry out system development from scratch, only utilizes systems that have been built and adapts them to the cases studied.
3. The software used in this research is ERP Odoo.
4. The module implemented in the ERP System this time is the sales and purchasing module.

1.6 Systematic Research

The research is structured into several chapters, and each chapter will be described as follows:

CHAPTER I INTRODUCTION

Explain in detail the background of the problem, the formula of the issue, the purpose, the limitations, to the benefits of research. So, the framework in research can be clearly defined.

CHAPTER II LITERATURE REVIEW

Explain the basic concepts of science developed in this research. These basic concepts are used as scientific principles in conducting research. The study of literature also contains references to similar research that has been conducted before as a measure of innovation of research.

CHAPTER III RESEARCH METHODOLOGY

Give a framework of the stages of the research to be carried out. The research methodology will describe research objects, data collection, research flow, data used to how to perform analysis in research.

CHAPTER IV DATA PROCESSING AND RESEARCH RESULTS or SYSTEM DEVELOPMENT

This chapter presents the data collected during the research. The data is then processed using certain methods and approaches to produce tables, charts, or graphs that can be analyzed to obtain the results described in the next chapter.

CHAPTER V DISCUSSION or SYSTEM TESTING AND DISCUSSION

Describe the results of the analysis of the data carried out in detail and clearly. The results and the explanation respond to the purposes of the research.

CHAPTER VI CONCLUSIONS AND RECOMMENDATIONS

Displays the findings of the research and makes recommendations to the parties involved in the research as well as for other research in the future.

BIBLIOGRAPHY

APPENDIX

CHAPTER II

LITERATURE REVIEW

2.1 Theoretical Basis

Below is a literary study used as a reference to this study:

2.1.1 Enterprise Resource Planning

ERP (Enterprise Resource Planning) solutions have been increasingly popular among businesses in the last ten to fifteen years as a means of streamlining corporate operations, consolidating IT infrastructure, and enhancing overall productivity. One type of information system architecture that can help businesses automate and integrate their core business processes is called enterprise resource planning, or ERP (Bhamangol, P., Nandavadekar, D., & Khilari, P., 2020).

An ERP system is a set of standardized, understandable, and productive business procedures. Planning for production, buying, inventory control, marketing, sales, finance, and human resources should be included. ERP systems synchronize, integrate, and combine information or data with every company function. ERP installation requires the usage of both hardware and software. Database integration is a critical component of Enterprise Resource Planning (ERP) that facilitates data processing and distribution among various business units (Laulita, N.B., Yulfiswandi, Ana, Agustino, M., Rusiana, N., & Lim, V.E., 2022).

According to ElFarmawi et al. (2019), businesses that use ERP have the ability to increase innovation and quality of performance. This primarily impacts company performance, with increased accuracy of information between departments, faster customer response, and aids in decision-making and effective use of resources. In addition, ERP will increase business efficiency by reducing costs such as monitoring and maintenance.

2.1.2 Small Medium Enterprise

SMEs stand for Small and Medium-sized Enterprises. It is a phrase used to define businesses depending on their size, often referring to enterprises that are smaller in scale compared to major corporations or international organizations. Small and medium-sized firms, are an important component of the global economy, playing a significant role in economic and social growth (Oteniya, 2019). They are particularly essential in Indonesia, where they contribute to economic growth, employment, poverty reduction, and increased investment (Reswita, 2021).

According to Act No. 20 of 2008 which reads: “A company classified as SME is a small company owned and managed by someone or owned by a small group of people with a certain amount of wealth and income.”

Table 2.1 SME Criteria & Major Enterprise Based on Assets and Revenue

Enterprise Size	Criteria	
	Asset	Turnover
Micro Enterprise	Maximum Rp50 million	Maximum Rp300 million
Small Enterprise	> Rp50 million - Rp500 million	> Rp300 juta - Rp2,5 million
Medium Enterprise	> Rp500 million - Rp10 billion	> Rp2,5 miliar - Rp50 billion
Large Enterprise	> Rp10 billion	> Rp50 billion

2.1.3 Odoo Open Source

Odoo is an open-source application that runs on a process business that exists in the company. This open-source application was formerly known as OpenERP but in 2012 changed its name to Odoo. The modules that are available on this application are also very many. However, this study only uses two modules namely Sales and Purchasing that exist in one of the module categories. Below are some modules that exist in Odoo version 14 (Arisg., 2021):

1. Category of Sales

Below are the important modules in the Sales category.:

a. Sales Module

This module is used in the management of sales information as well as control over orders and deliveries. One example is a role in making quotations up with invoices.

b. Customer Relationship Management (CRM) Module

This module works on tracking from prospective leads to closing. It is then used to analyze the company's interaction with customers.

c. Point of Sales (POS) Module

These POS modules relate to direct sales that are often used in dining houses or stores.

2. Category of Inventory

Below are the modules in the Inventory category:

a. Inventory Module

This module deals with stock management, logistics activities, supplier management, inventory, as well as shipping data. The Inventory module is more to function to set up on the warehouse section.

b. Purchase Module

The purchase module serves as a module related to the vendor or supplier of the product. This module relates to purchase orders or orders of purchase, auctions, and agreements to monitor and track invoices received from vendors or suppliers.

As explained above, all categories have several modules, in this study the Sales Module exists in the Sales Category, and the Purchasing Module exists in the Inventory Category.

2.1.4 Rapid Application Development

Rapid Application Development is a software process model that prioritizes short development cycles. The Rapid Application Development (RAD) method has organized steps, allowing software development to be carried out in a short time by emphasizing fast cycles (Fauzi, A., et al. 2023). This allows the results of the software being developed to be known without waiting a long time. The following are the stages of Rapid Application Development:

1. Planning

a. Business Modeling

The purpose of this phase is to identify the flow of information in a software development project. This includes monitoring the business processes that use the information, identifying the people who use it, determining who processes it, and determining the type of information that is generated.

b. Data Modeling

At this stage, the data modeling required for the project is prioritized. Once the required data object is identified, the attributes or characteristics of each data object are determined. Relationships between data objects are also defined.

2. Analysis

a. Process Modeling

This phase involves recreating the flow of information generated from the data modeling phase. This flow must meet the requirements for running a specified business operation. At this stage, the process used to add, modify, delete, or retrieve a particular data object is also defined.

3. Design

a. Application Deployment

At this stage, Rapid Application Development (RAD) can use existing program components or create new components that can be reused. In addition, software construction can be accelerated with the help of frameworks and aids.

4. Implementation

a. Testing and Turnover

In the final phase, the new components that have been developed are thoroughly tested. After the testing is completed, the software components can be used and used by the user.

2.2 Literature Review

This research uses references from previous research with similar topics to analyze and support upcoming research discussions. Below is a literary study that the researchers used as a reference.

Table 2.2 Inductive Literature Study

Title	Researcher and Year	Method	Industry Sector	Discussion
Enterprise Resource Planning System Implementation with Purchase Management Module in Lembaga Amil Zakat Nasional	Firdaus, S. K., Puspitasari, W., & Lubis, M. (2019).	Quickstart Method, GAP Analysis	Social Institutions	The purchasing goods process can now be done effectively. Data and information can be presented in an accurate and real-time manner. The purchasing department can request the purchase of goods that are integrated with the purchasing department by using the reordering rules menu. The purchasing department can monitor the status of goods receipt carried out by the purchasing department. The purchasing department can make a payment bill that shows how the goods have been received.
Odoo ERP with Business Intelligence Tool for A Small-Medium Enterprise	Wu, J. Y., & Chen, L. T. (2020).	Cross-Functional Flowchart, Critical Business Processes	Small Medium Enterprise (manufacturer)	This study used a scenario case to evaluate business processes and proposed and implemented several modules of the Odoo ERP system (Odoo 9th community edition). The outcomes of the implementation showed that the manufacturer under study could use the Odoo ERP system, and that real-time information could be obtained by the firm via the management dashboards and reports that were made.

Table 2.2 Inductive Literature Study

Title	Researcher and Year	Method	Industry Sector	Discussion
Business Process Analysis and Implementation of Odoo ERP in Sales, Purchasing and Accounting Systems (Case Study: CV Mitra Perkasa)	Aditya, A., & Hadi Santuso, Y. E. (2022).	Using a CV conceptual framework approach		CV. Mitra Perkasa run three main business processes namely sales, services, and purchases that are implemented into the Odoo ERP system. which has been adapted to the business processes of the company, based on the constraints experienced when managing the company's data. After testing the system with a series of business process demo scenarios and improvements, the Odoo ERP system has been adapted to the current business process conditions and can be accepted by CV. Mitra Perkasa. External to this research is the implementation that replaces most of the records on the excel file on the business process Previously and can help support business processes related to sales, purchases and accounting of the company.
Implementasi Sistem ERP Proses Penjualan Pada Restaurant di De	Kurnia, D., Budiono, A., & Witjaksono, R. W. (2021).	Rapid Application Development (RAD)	Restaurant (Food and Beverage)	The results of the proposal business process planning are in line with the need analysis of the restaurant sales process. The built-in Odoo-based sales ERP system can integrate sales processes with production, procurement, and finance.

Table 2.2 Inductive Literature Study

Title	Researcher and Year	Method	Industry Sector	Discussion
Braga Hotel dengan Metode Rapid Application Development (RAD) Berbasis Odoo				Using the Odoo-based sales system, it can create a reporting process that is recorded in the system and integrated with the financial and production parts.
The Implementation of Enterprise Resource Planning (ERP) in The United Arab Emirates: A Case of Musanada Corporation	Alsharari, N. (2022).	Qualitative Approach, Stakeholder	Corporate	Based on research results, the ERP system the employee the task in a short time and spend time in the correct way, and all the operations of the company are easier.
Implementasi Enterprise	Hermaliani, E. H., Solichatun,	Wawancara, observasi	Company (PT)	By using the Odoo application, especially on the Sales, Purchasing, and Inventory modules, companies can reduce

Table 2.2 Inductive Literature Study

Title	Researcher and Year	Method	Industry Sector	Discussion
Resource Planning Modul Purchasing, Sales Dan Inventory Menggunakan Odoo	S., Elmyawan, N. F., Arfandi, M. I., & Oktapiansyah, Y. (2023).	langsung		problems and simplify the work related to sales recording. This is because all processes use technology and information systems, which makes all data and processing automatically stored and integrated. Moreover, the prediction process in the Inventory module can help companies determine when sales will be made.
Implementasi Sistem (Enterprise Resource Planning) Menggunakan odoo versi 14 (Studi Pada Proses Pengadaan Barang di PT. RM)	Maulana, R., Heryana, N., & Voutama, A. (2022).	Pendekatan Kualitatif, Wawancara	Company (PT)	The result of this research is to transform the procurement records that are still traditional and not integrated into more modern and integrated. ERP and Odoo systems used in this research.
Implementation of Enterprise	A Terminanto, R Hidayat, & A	Rapid Applicatio	Company (PT)	Data storage between divisions can be integrated with Odoo. Implementation of Odoo increases the quotation business

Table 2.2 Inductive Literature Study

Title	Researcher and Year	Method	Industry Sector	Discussion
Resource Planning using Odoo Module Sales and CRM (Case Study: PT. Ecosains Hayati)	N Hidayanto. (2017).	Development (RAD), User Acceptance Test (UAT)		process in the sales division by 63% in terms of activity and 50% in terms of actors involved in the business process. Odoo was customised on 26 of the 41 module menus used (63%), so the module meets the needs of the sales division PT Ecosains Hayati.
Implementasi Aplikasi Enterprise Resource Planning Odoo Modul Sales Menggunakan Metode Rapid Application Development di UD. Permatasari	Mutiara, R., Prasetyo, Y. A., & azani, M. (2017).	Rapid Application Development (RAD)	Usaha Dagang (UD atau perseorangan)	Stock management will be more efficient and efficient by configuring the Odoo sales module according to the needs of the Jade UD sales. The data displayed in the report, such as the sales value report, will be more accurate.
Sales and Warehouse	Hardjono, C., Darwiyanto,	Flowchart, Entity	CV, bidang furniture	Brada can use Odoo to build and implement ERP. CV. Brada is compatible with Open Source ERP because the cost of

Table 2.2 Inductive Literature Study

Title	Researcher and Year	Method	Industry Sector	Discussion
Management ERP (Enterprise Resource Planning) Modul Design and Implementation in CV. Brada.	E., & Wisudiawan, G. (2017).	Relationship Diagram (ERD)		purchasing licensed applications can be reduced. Odoo's sales and warehouse management modules can be easily customized to suit CV needs.

The table above shows several main differences between the research to be conducted and previous research. The research entitled "*Odoo ERP with Business Intelligence Tool for A Small-Medium Enterprise*" by Wu, J. Y., & Chen, L. T. (2020) shows that researchers have successfully implemented the Odoo series 9 ERP system with modules namely accounting and finance, sales management, purchase management, inventory management, MRP and dashboard modules. According to the implementation findings, the manufacturer under study may use the Odoo ERP system and the real-time information they need can be obtained through the management dashboards and reports that have been produced. Routing management will be used in future work to accomplish "work in process management."

Other research conducted by Kurnia, D., Budiono, A., & Witjaksono, R. W. (2021) explains the problems in One of the problems with VHP is that the application is still desktop-based. to become dependent on expensive Windows license prices. After that, the PMS used was still made by other vendors outside the hotel's IT. Restaurants still use a semi-manual concept in running the VHP system in every business process. As a result, the related divisions have not been integrated with each other. Similar to the sales department, this section is not integrated with the warehouse and production departments, so if you want to change the quantity you have on hand in the system menu, you have to request it manually from the kitchen. Based on needs analysis, the current system which is done manually is designed to be processed via the Odoo system. Furthermore, an Odoo-based sales ERP system can integrate the sales process with finance, production, and procurement. Apart from that, the reporting system has also been integrated.

In the explanation above, each study has different indicators. As explained in the two paragraphs above, namely using the Cross-Functional Flowchart and Critical Business Processes methods. The other research used the Rapid Application Development method. This method is the same as the research that will be used currently but the object is different. In the second research, the object was a restaurant in a hotel or included in the food and beverages category, but in this research, the focus was on the service object, namely convection. Then the indicators or complexity of the object are also very different. The flow of business processes, production, employees, and facilities at each of these objects is also different. The uniqueness of this research is that it can be used as a comparison to the studies above because it focuses on SMEs operating in the service sector, especially convection.

CHAPTER III RESEARCH METHOD

3.1 Research Objective

The research objectives are being carried out at the Dikaoske SMEs in Bantul. Then the objects will include the human resources, organizations, goods, and products that will be studied.

3.2 Research Flowchart

In the research carried out, there is a research stream in the implementation of this ERP system. The research stream is designed to explain the initial to final stages of a research series. As for the flow of research, you can see in Figure 3.1 using the flowchart diagram:

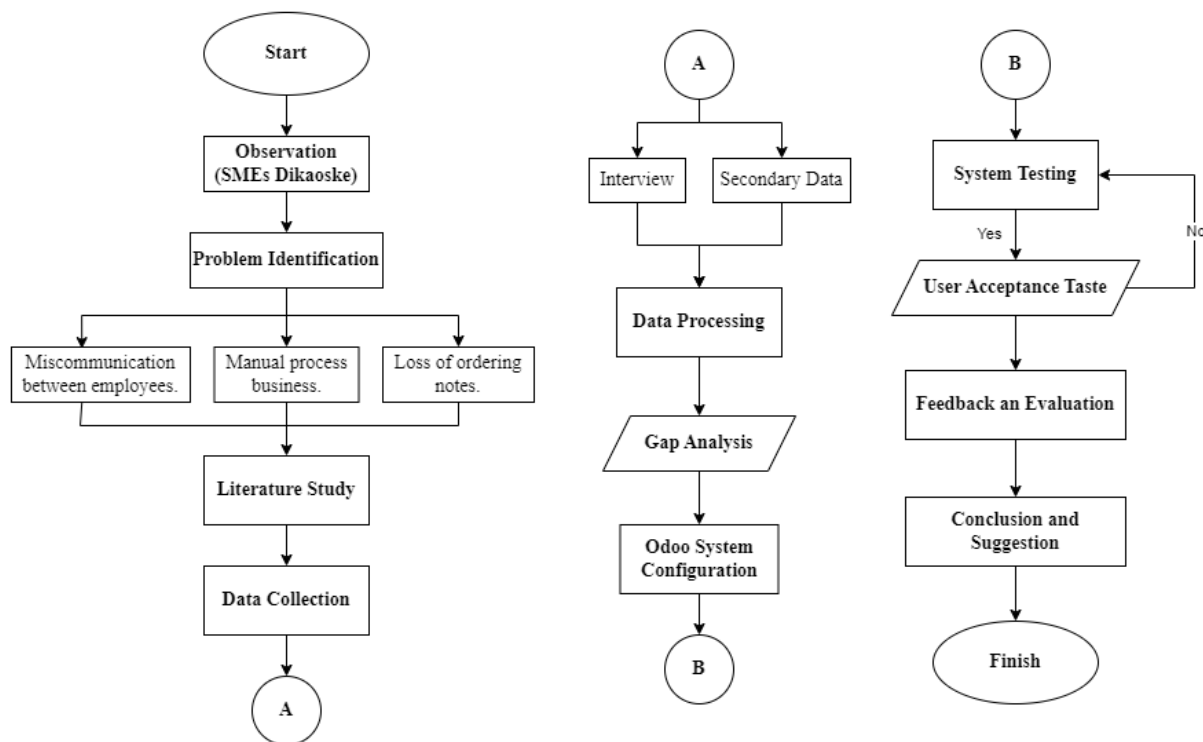


Figure 3. 1 Research Flowchart

Here's a description or explanation of the flow of research on the flowchart diagram above:

a. Start

It starts with determining the topic and also the title of what will be raised in this research.

b. Observation

Observation is done by means of observation directly related to the flow of business processes as well as operational activities on the research object. In this case, observation is carried out on SMEs Dikaoske which is made as the object of research.

c. Problem Identification

The problem with this SME is all the records that exist. Dikaoske's production system is made-to-order. The production process begins with the customers ordering according to their preference then the SMEs notes on the message book. Then this ordering process is also not just through one door, anyone can receive a configured order so sometimes it results in two jobs that the owner must make sure to the customer. Then the production process, such as the raw material purchasing that still recorded manually so that these SMEs perform over-purchasing, in which the stock is still available yet the materials are still re-purchased. The next production process until the product reaches the hands of the customer is also conducted manually. This leads to problems in the production and customer service processes such as delays in ordering, loss of order notes, production and order inconsistencies, or communication issues between divisions. Thus, SME owners face difficulties in managing data and information along with increased orders and SME business growth.

d. Literature Study

This chapter begins with an introduction that shows how important methodology is to overcome research differences. After that, the research design is discussed. It gives an overview of the approaches chosen and why they were chosen based on the research objectives. There is an explanation of sampling methods, target populations, inclusion and exclusion requirements, and methods used. In this chapter, an explanation of data analysis techniques is given, with particular emphasis on the processes used to clean, organize, and analyze the data collected. If you draw a line, the literature study is divided into two parts: inductive and deductive studies. Finally, this chapter ends with a summary that emphasizes the relationship between the chosen methodology and the research question. This paves the way for the next chapters in the study of literature.

e. Data Collection

For the study of this literature, data collection requires methods to gather complete and relevant information. Interviews and document analysis are the primary sources of data.

The interview guides, created based on the relevant research objectives and literature, allow for in-depth discussion and exploration of various perspectives. For analysis, the interview was recorded with the consent of the participants and transcribed word by word. In addition to the interview, a thorough examination of the document includes all the information about the product; the list of sales transactions; the raw material information list; the purchase transaction list to vendors; and customer and vendor data. To gain a better understanding of the research topic, the analysis of this document complements and processes the interview data. During the data collection process, ethical considerations are considered to maintain the confidentiality of participants, consent, and the protection of sensitive information.

f. Data Processing

In this study, the data processing process also involves the creation of a blueprint document, which contains a plan for the changes made. It starts by comparing the as-is condition and the to-be condition with the business process before and after implementation. To explain the business processes that will run in the Odoo ERP system, in this section there is also a business process analysis, which is depicted with the Business Process Model & Notation diagram (BPMN). Then the steps that exist in the RAD method will also be used in this process to make it easier to proceed on the system or its configuration.

g. Configuration

On this configuration, the researchers can proceed to the Odoo system. After obtaining an overview of the design of the system through the blueprint, the data processing is continued with the configuration process of Odoo systems directly. This process begins with SME data master input, which includes product information, customer data, vendor data, and the recording of sales and purchases to vendors.

h. System Testing

Finish configuring the Odoo ERP system by entering the entire master data and then performing a test to see if the system running smoothly. This test will be carried out directly by the employee at the SMEs or called by the user. After that, a User Acceptance Test (UAT) is carried out.

i. Feedback and Evaluation

In the feedback and evaluation phase, SMEs give impressions of messages and suggestions in accordance with the system and the documents that the researchers give to the effort. The documents concerned are user guide documents as well as RAD method flow with blueprints. Then after getting the feedback, the researchers can make an evaluation taken from the results of the implementation of the Odoo ERP System that they have done.

j. Conclusion and Suggestion

In this section, the researchers can answer the questions on the problem formulation in Chapter 1 and adjust whether they have already answered the objectives. In addition, researchers will also give suggestions to be able to reflect on further research.

k. Finish

This research has been done in all its stages so it can be declared completed.

3.3 Data Collection

3.3.1 Primary Data

Data that comes directly from the source or respondent is called primary data. It can be obtained through various means, such as observations, observations, interviews, and questionnaires. The primary data from this research on the implementation of ERP systems is the current business procedures used and the requirements of SMEs Dikaoske for ERP systems. This data is collected through interviews with relevant company owners so that the data are collected and collected according to needs and not out of coverage. The data includes business processes from SMEs Dikaoske, product data owned by SMEs, the entire recording of sales and purchase transactions, then customer information, and the last one is vendor information where SMEs purchased raw materials.

3.3.2 Secondary Data

Secondary data in this research is used as a reference for the implementation of Odoo ERP systems using the Rapid Application Development (RAD) method. In other words, secondary data is primary data collected and processed by the various parties involved in the research. Some of these secondary data sources include journals, proceedings, and scientific articles.

CHAPTER IV

DATA COLLECTION, DATA PROCESSING, AND SYSTEM TESTING

4.1 Company Profile

Dikaoske is a small and thriving business in the service sector, operating within the conventional industry in Bantul, Yogyakarta Special District. Established on March 3, 2020, the company is owned by a young entrepreneur and has grown from just two employees to a team of 10, including several partners. Below is an overview of the current organizational structure of SMEs:

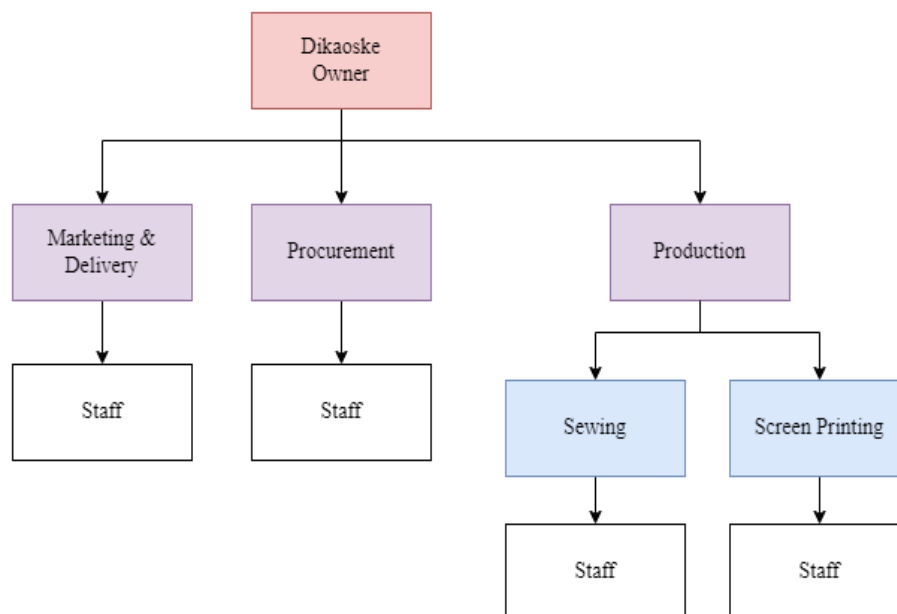


Figure 4.1 Organization Structure

The analysis of the enterprise's structure reveals that it falls into the category of small businesses. The company's revenue and assets are relatively modest. According to interviews with the SME owners, the gross income ranges from 10-15 million rupees per month, classifying the SMEs as a small business.

Dikaoske is a small enterprise facing its share of challenges and constraints. Over time, these obstacles have been mounting, particularly in managing order records, stock inventory, and financial transactions.

4.2 Specific of Case Study

Research that centers on current events requires significant time to oversee the events being studied and address "how" or "why" as primary research inquiries, utilizing case study research methods. This section outlines the challenges faced by small and medium enterprises, along with the development of solutions in the form of blueprints containing information about current business processes and an analysis of changes in the sales and purchasing processes, given the focus of this research on the Sales Module and Purchasing Module.

SMEs Dikaoske is a company in the convention industry that provides services. This SME follows a make-to-order business process where customers initiate orders. Operationally, SMEs Dikaoske generates revenue through service orders or sales transactions. Operating costs include expenses for raw materials, employee salaries, regular maintenance, electricity, and other related expenses. However, the main challenge for SMEs Dikaoske lies in its transactional activities. All operational records are maintained manually, making obtaining precise, accurate, and real-time operational information difficult.

Additionally, manual record-keeping has led to inefficiencies and accessibility issues. The SME owners have also noted frequent errors in customer order documentation, leading to the need for rework or replacements. Incorrect purchases have also impacted the procurement of raw materials, often due to miscommunication between employees and SME owners. The disorderly record-keeping further complicates tracking actual net income. To address these issues, a data collection process was carried out through a direct interview with the owners at the Dikaoske production site.

As stated by Nugraha (2017), the primary motive behind implementing SMES is consistently focused on optimizing the use of an ERP system. The output is derived from the SME business process within the same system, albeit with minor process variations. Nevertheless, specific unique business processes within the enterprise must be fully supported by standard ERP systems and necessitate customization. Before making customization decisions, a thorough gap analysis is conducted to assess specific processes in SMEs.

Once the company's needs for the ERP system have been identified and gap analysis has been carried out, the next step is to design the Functional Requirement Documents (FRD) or blueprint documents. These blueprint documents will encompass the

specifications and standard features of the Odoo ERP System tailored to SMEs Dikaoske, incorporating the features identified through the gap analysis. Once the blueprint is prepared, it will be sent to the company for review and feedback. Any feedback received will be used to make necessary revisions and adjustments to the blueprint, which will then be resubmitted to SMEs Dikaoske until mutual agreement is reached.

4.2.1 Data Collection

While implementing the ERP system, we directly interviewed the owner of Dikaoske to identify the business needs and processes. These interviews were conducted three times to ensure we obtained accurate and comprehensive information. The data and information gathered were effective in meeting our needs. However, as each small enterprise or SME has unique business processes, there were additional discussions beyond the initial preparations. Below are the questions we used as a guide to understand and identify the needs and business processes at SMEs Dikaoske:

Table 4. 1 Interview Question

No.	Interview Question
Topic: Profile of the SME	
1.	Explain a short profile and how the business process is on this SMEs?
2.	Included in what category or type of business SMEs Dikaoske?
3.	How's the production process in this SMEs?
4.	What product or service does this enterprise produce?
Topik: Process of Sales	
1.	How's the sales or ordering process going?
2.	Is there a discount for orders from customers? How's the process or the rules if any?
3.	Does Dikaoske have a dedicated department to deal with sales? If so, how's the process in detail?
4.	What happens when an order is cancelled, a product is returned, or an overorder is added? How's his wisdom?

No.	Interview Question
5.	What's the biggest obstacle to the sales process or the order from the customer to the customer?
6.	What are the terms of payment given by SMEs by the customer?
Topic: Process of Purchase	
1.	How's the process of purchasing raw materials or procurement to suppliers on this venture?
2.	What kind of product or service is purchased on this venture from a supplier?
3.	Does Dikaoske have a specialized department to deal with procurement or purchasing? If so, how's the process in detail?
4.	What happens when there is an inappropriate or defective material or material provided by the supplier? How's it going?
5.	What is the biggest obstacle to the process of procurement or purchasing from the supplier to the production site?
6.	Does the company use a purchase contract with a vendor? If so, how's the process?

The question above is based on an interview conducted by researchers with the owner of SME Dikaoske. They have determined that the Sales Module and the Purchasing Module are suitable modules for meeting the needs of SMEs Dikaoske in running its business processes, particularly in the sales and procurement processes. This includes an assessment of the modules and the user's needs related to the existing challenges in the enterprise:

1. Sales Module
 - a. Compiling and organizing product or sales service information.
 - b. Generating quotations instead of providing a price offer using the Odoo system.
 - c. Transforming the order note into a Sales Order document.
 - d. Utilizing the invoice to deliver the order invoice to the customer.

2. Purchase Module

- a. Creating and organizing the details of purchased raw materials.
- b. Generating quotations to offer raw materials to suppliers.
- c. Creating purchase orders to replace the recording on the purchase note.
- d. Generating vendor bills as payment invoices for the seller or buyer of raw materials.

4.2.2 Gap Analysis

Gap analysis is a significant technique to monitor and improve the services and performances in ongoing projects (Subzwari, D., & Ahmad, S.F. 2019). Upon analyzing these gaps, it was found that specific business processes at SMEs Dikaoske do not have certain features, which means they have yet to be executed using the current system. This determination is based on subjective judgment by the implementation team using qualitative data. Before concluding that the system has not executed a specific business process at SMEs, priority is given to cases that should be compatible with the Odoo ERP system, considering the resulting output. If the system has not executed the case or if the outputs differ from those expected, it is concluded that the system has not executed the business process case, thus creating a gap.

Upon completion of the justification process, the implementation team conducts a gap analysis to align the Odoo ERP system with the company's requirements. The analysis's outcome details the necessary system development processes to address any existing gaps. These results will be incorporated into the blueprint as part of the business case alongside the standard specifications of the Odoo ERP system. The evaluation of the gap level utilizes the term fit/gap.

1. Fit (F): Business processes are considered fit for implementation in the system but may require adjustments through configuration or configuration in the Odoo ERP system to accommodate SME Dikaoske's specific needs.
2. Partial Fit (P): The business process is considered partial fit when minor discrepancies exist between the ERP Odoo system and the specific cases in SMEs. For instance, it may be necessary to rename the data input column or transaction status to align with SMEs' business terms.
3. Gap (G): Business processes are considered to have gaps when specific processes or cases of SMEs Dikaoske still need to be implemented in the Odoo ERP system. Therefore, the system flow must be adjusted to address these gaps.

From this information, a gap analysis of the challenges faced by SMEs and the modules that will be implemented in the Odoo system, namely Sales and Purchase, will be conducted. Below is the Table 4.2, which reveals the details of the analysis:

Table 4. 2 Results of gap analysis between the Odoo ERP system and SME

No.	Module	Sub Process	Current Condition	Future Condition	Fit/ Gap		
					F	P	G
1.	Sales Module	Sales Order	Orders are recorded using books and order notes.	Order recording is done using Sales Orders in the Odoo ERP system.	v		
2.	Sales Module	Sales Order	The customer payment archiving process is carried out using payment notes.	Implementing invoices on the Odoo ERP platform which is integrated with Sales Orders.	v		
3.	Sales Module	Reporting	Adjusting printouts and reports of transactions in the Sales Module.	Complete the necessary information and design and arrange the layout of transaction documents and reports according to the needs of SMEs.	v		
4.	Purchase Module	Master Vendor	There are many related vendors to purchase raw materials.	Implement Vendor Master Data which contains RFQ		v	

No.	Module	Sub Process	Current Condition	Future Condition	Fit/ Gap
				(Request for Quotation) to record details related to raw materials.	F P G
5.	Purchase Module	Purchase Order	No separate recording of raw material purchases is carried out, only raw material purchase notes are kept.	Implementing on ERP Odoo, namely Purchase Order Document to record purchases of raw materials.	v
6.	Purchasing Module	Vendor Bill	Only keep the raw material purchase note as proof of payment that must be made to the seller.	Apply Vendor Bill to each payment invoice to the seller.	v

Table 4. above, presents a summary of the gap analysis results that have been performed:

Table 4.3 Summary of Gap Analysis

Modul	Fit	Partial Fit	Gap	Total
Sales	3	-	-	3
Purchase	2	1	-	3
Total				6

Based on the gap analysis, which is carried out by comparing current and future improvement conditions, it can be concluded that there are 6 cases representing each module implemented. In addition, there are also details of the development of the Odoo

ERP system to overcome the gaps. Out of 6 analyzed gaps, the sales module has three, and the Purchasing Module has three. The implementation of the Odoo ERP system will be done with a simple approach according to the subjective analysis of the implementation team and the urgency of the gaps towards the desired results. The next step is to customize the Odoo system.

4.3 Blueprint and Feedback

A blueprint is constituted of a series of profiles providing insights into the key inputs and outputs of a given industry in terms of materials and services (Cervo, H., Ferrasse, J., Descales, B., & Van Eetvelde, G. 2020). The blueprint design process involves several key activities, such as analyzing SMEs Dikaoske business process, conducting a standard analysis of the Odoo ERP system, planning the blueprint, and evaluating and collecting feedback. Additionally, for the draft document, the blueprint is segmented based on each implemented module and then verified with the user for feedback:

4.3.1 Analysis of Process Business

The business process discussed in this section involves the existing condition (current) and the improvement condition (improve). The current condition pertains to the state where the current business process operates in SMEs Dikaoske before implementing the ERP system or before the researcher makes any improvements.

4.3.2 Blueprint Sales

The sales process at SMEs Dikaoske follows a make-to-order system initiated by the customer. The Sales Module within the Odoo ERP System comprises four key components: master data, sales transactions, reports, and configuration. These components are interconnected and work together to create a comprehensive sales system. The master data holds essential information for the sales process; sales transactions encompass the entire sales activity, reports offer a range of sales-related reports, and configurations contain settings that support sales operations. Also, please provide me with the flowchart of the current condition diagram from SMEs Dikaoske:

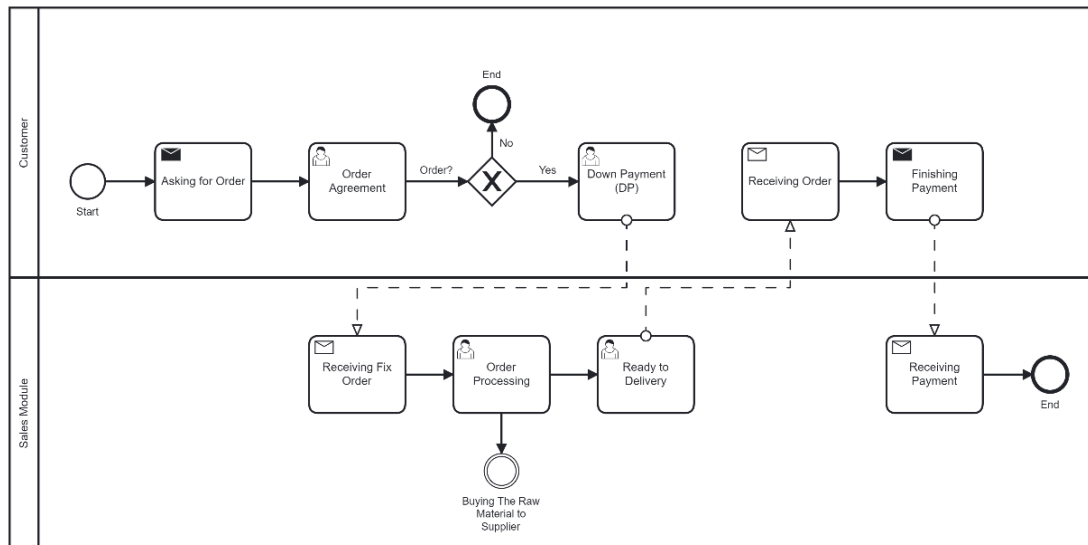


Figure 4.2 BPMN current

The business process in Figure 4.2 a current state that is currently running involves several steps. The initial phase begins when the customer contacts the sales department through the available contacts. If the customer decides to place an order, the next step is to confirm the order with the sales department and make a minimum % advance payment of 50%. After that, the order will be processed, and raw materials will be purchased if necessary. After the ordered product is finished processing, the product will be delivered to the customer, and the customer will pay the payment invoice after deducting the advance money previously paid. Once payment is received, the sales process at SMEs Dikaoske is considered completed. After explaining business processes in the as-is condition, the next step is to analyze business processes in the to-be condition at SMEs Dikaoske. In sales management, SMEs Dikaoske has one primary business process: the sale of goods. The sales process consists of three business subprocesses, namely quotation making, sales order making, and invoice making, which are described in the BPMN diagram as follows in Figure 4.3:

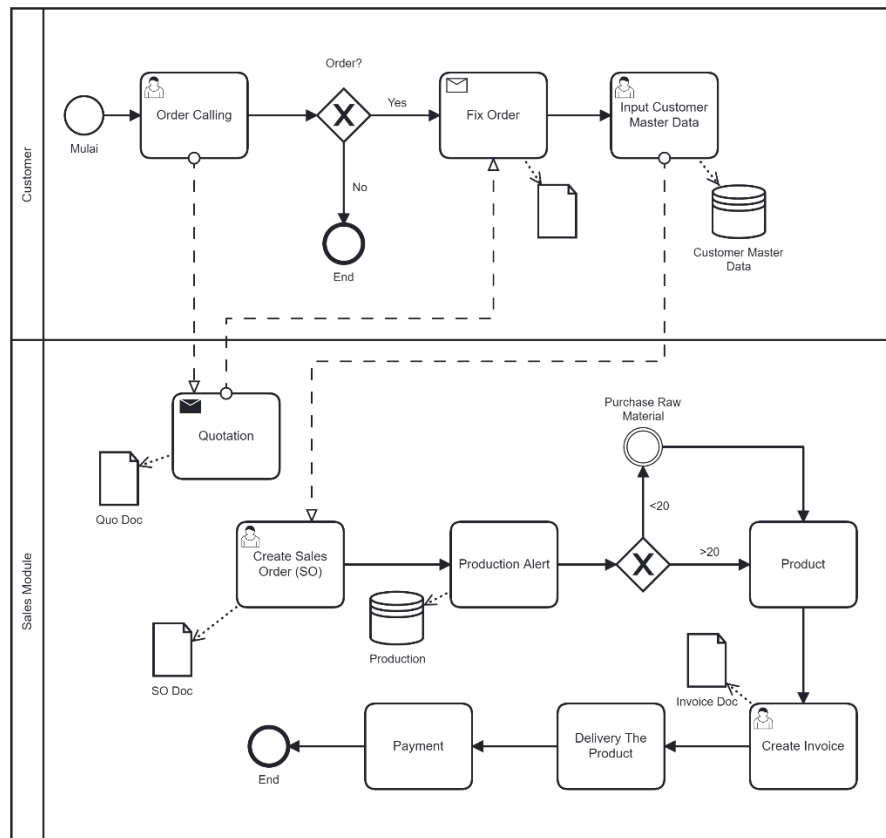


Figure 4. 3 BPMN improve

4.3.2.1 Master Data of Product

SMEs Dikaoske offers some services or products. However, this enterprise does not have a catalog that stores its services and products:

Name	T-shirt Size	Screen Printing Service Price					Estimation Time	Colour
		A3	A4	A5	A6	A7		
Cotton Combed 30s T-Shirt (using plastisol)	S-XL	80.000	75.000	70.000	65.000	60.000	1-2 Minggu	Maximum 4 Colour
	XXL	85.000	80.000	75.000	70.000	65.000		
	XXXL	90.000	85.000	80.000	75.000	70.000		
	>XXXL	95.000	90.000	85.000	80.000	75.000		
Cotton Combed 24s T-Shirt (using plastisol)	S-XL	87.000	82.000	77.000	72.000	67.000	1-2 Minggu	
	XXL	92.000	87.000	82.000	77.000	72.000		
	XXXL	97.000	92.000	87.000	82.000	77.000		
	>XXXL	102.000	97.000	92.000	87.000	82.000		
Premium T-Shirt (using plastisol)	S-XL	95.000	90.000	85.000	80.000	75.000	3-5 Hari	
	XXL	100.000	95.000	90.000	85.000	80.000		
	XXXL	105.000	100.000	95.000	90.000	85.000		
	>XXXL	110.000	105.000	100.000	95.000	90.000		
Noted:								
- Minimum order 12 pcs								
- Order more than 50 pcs free stiker + 2 pcs								

Figure 4.4 List of Service Products

The screenshot displays the Odoo Products interface. At the top, there is a navigation bar with tabs for Sales, Orders, To Invoice, Products, Reporting, and Configuration. Below this is a search bar with the text 'Can be Sold' and a search icon. The main area shows a grid of product master data. Each row represents a product, and each column represents a different size or variant. The products are categorized by size (A3, A4, A5, A6) and type (Cotton Combed, Premium T-Shirt). The prices are listed in Indonesian Rupiah (Rp).

Product	Price	Product	Price	Product	Price	Product	Price
☆ A3 Cotton Combed 24s >XXXXL	Price: Rp 102,000.00	☆ A3 Cotton Combed 24s S-XL	Price: Rp 87,000.00	☆ A3 Cotton Combed 24s XXL	Price: Rp 92,000.00	☆ A3 Cotton Combed 24s XXXL	Price: Rp 97,000.00
☆ A3 Cotton Combed 30s >XXXXL	Price: Rp 95,000.00	☆ A3 Cotton Combed 30s S-XL	Price: Rp 80,000.00	☆ A3 Cotton Combed 30s XXL	Price: Rp 85,000.00	☆ A3 Cotton Combed 30s XXXL	Price: Rp 90,000.00
☆ A3 Premium T-Shirt >XXXXL	Price: Rp 110,000.00	☆ A3 Premium T-Shirt S-XL	Price: Rp 95,000.00	☆ A3 Premium T-Shirt XXL	Price: Rp 100,000.00	☆ A3 Premium T-Shirt XXXL	Price: Rp 105,000.00
☆ A4 Cotton Combed 24s >XXXXL	Price: Rp 97,000.00	☆ A4 Cotton Combed 24s S-XL	Price: Rp 82,000.00	☆ A4 Cotton Combed 24s XXL	Price: Rp 87,000.00	☆ A4 Cotton Combed 24s XXXL	Price: Rp 92,000.00
☆ A4 Cotton Combed 30s >XXXXL	Price: Rp 90,000.00	☆ A4 Cotton Combed 30s S-XL	Price: Rp 75,000.00	☆ A4 Cotton Combed 30s XXL	Price: Rp 80,000.00	☆ A4 Cotton Combed 30s XXXL	Price: Rp 85,000.00
☆ A4 Premium T-Shirt >XXXXL	Price: Rp 105,000.00	☆ A4 Premium T-Shirt S-XL	Price: Rp 90,000.00	☆ A4 Premium T-Shirt XXL	Price: Rp 95,000.00	☆ A4 Premium T-Shirt XXXL	Price: Rp 100,000.00
☆ A5 Cotton Combed 24s >XXXXL	Price: Rp 92,000.00	☆ A5 Cotton Combed 24s S-XL	Price: Rp 77,000.00	☆ A5 Cotton Combed 24s XXL	Price: Rp 82,000.00	☆ A5 Cotton Combed 24s XXXL	Price: Rp 87,000.00
☆ A5 Cotton Combed 30s >XXXXL	Price: Rp 85,000.00	☆ A5 Cotton Combed 30s S-XL	Price: Rp 70,000.00	☆ A5 Cotton Combed 30s XXL	Price: Rp 75,000.00	☆ A5 Cotton Combed 30s XXXL	Price: Rp 80,000.00
☆ A5 Premium T-Shirt >XXXXL	Price: Rp 100,000.00	☆ A5 Premium T-Shirt S-XL	Price: Rp 85,000.00	☆ A5 Premium T-Shirt XXL	Price: Rp 90,000.00	☆ A5 Premium T-Shirt XXXL	Price: Rp 95,000.00
☆ A6 Cotton Combed 24s >XXXXL		☆ A6 Cotton Combed 24s S-XL		☆ A6 Cotton Combed 24s XXL		☆ A6 Cotton Combed 24s XXXL	

Figure 4.5 Master Data of Product

4.3.2.2 Process of Creating Quotation

The quotation process commences when a customer places an order for a product. The owner then records the customer's order details, including the customer's name, order date, transaction currency type, and the list of products ordered. Subsequently, the owner saves the temporary draft as a quotation. The saved quotation form can be printed and sent to the customer via email or manually to seek approval for the order's price. If price negotiation is necessary, the process continues until a price agreement is reached between the customer and SMEs Dikaoske.

4.3.2.3 Process of Creating Sales Order

After the customer agrees to the price with the price or order on the quotation, it will be validated as a Sales Order Document, and the document will be re-checked. Then, the validated Quotation Document will generate the Sales Order number, which can then be used for the invoice process. This Sales Order document will contain the orderer's name, date, product name, number of products, price per item, and total payment. This document is used as a substitute for the customer's note.

4.3.3 Blueprint Purchasing

The purchase module provided by the Odoo ERP System consists of three main components, namely master data, purchase transaction, and configuration. Each element

is interconnected and integrated, forming a comprehensive procurement system. The data master contains the essential data required for the acquisition process, the buy transaction covers the entire activity of the procurement transaction, and the configurations contain the settings that support the purchase operation.

The business process at SMEs Dikaoske involves one type of procurement of goods: the provision of raw materials for production needs based on orders from sales orders. Activities in the provision process include:

- a. Searching for raw materials from the Seller.
- b. Selecting the raw materials to be purchased.
- c. Negotiating prices.
- d. Accepting the purchased raw materials.
- e. Recording the purchase of raw materials.

The procurement business process at SMEs Dikaoske also includes the analysis of the as-is and to-be processes that are running. Here's a flowchart diagram that's happening now on SMEs Dikaoske:

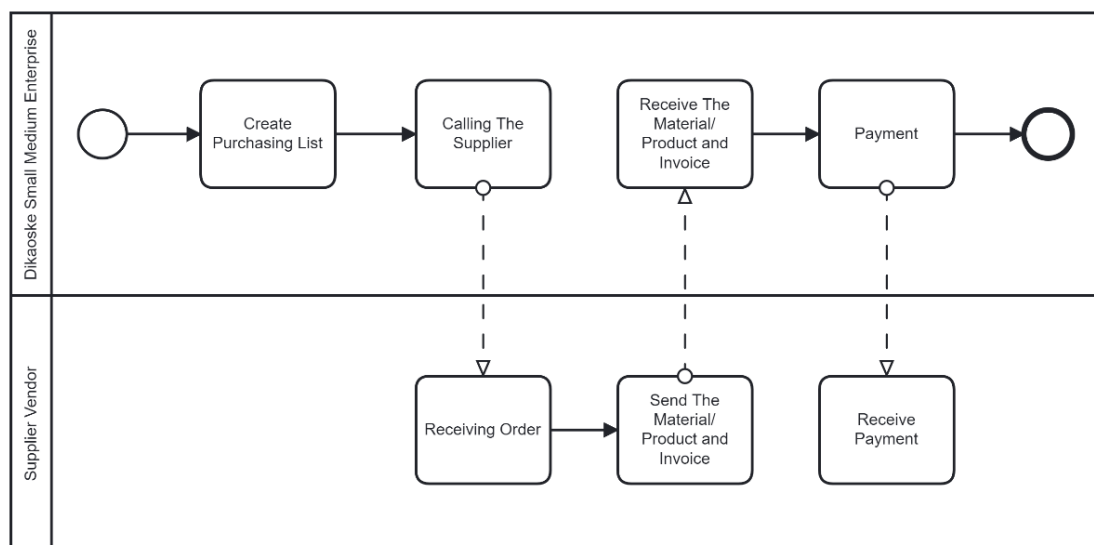


Figure 4.6 BPMN current

In the current business process in Figure 4.6 at SMEs Dikaoske, several stages are carried out, from creating a purchase list, communicating with vendors, receiving materials, processing orders, and billing to payment. The current process is relatively straightforward and lacks structured documentation due to the absence of an applied system for procurement activities in SMEs. The procurement of raw materials initiates with internal purchase requests. Vendors then send invoices and the ordered raw

materials, followed by the payment process. The plan for improving the procurement business process involves procedural changes and integration with the accounting module for structured purchasing recording. Figure 4.7 also prepared a flowchart of the proposed improvements for SME Dikaoske researchers:

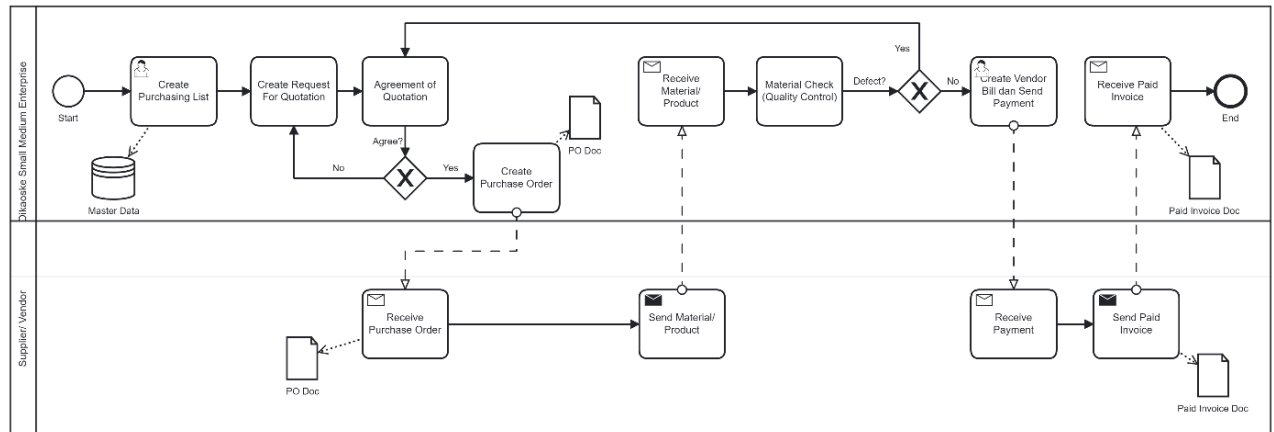


Figure 4.7 BPMN improve

4.3.3.1 Master Data of Raw Material and Vendor

This section contains information regarding all materials used in the procurement process and storage and stock value management at SMEs Dikaoske. The primary materials included in the purchasing module are utilized for the entire Odoo ERP system. Below is a list of materials and vendors accessible at SMEs Dikaoske:

Table 4.4 List of Raw Material

No	Material Code	Material Name
1	RMXX1	Alfasol (Tinta Sablon)
2	RMXX2	Bremol RN (Obat Afdruk)
3	RMXX3	Print Hvs A3
4	RMXX4	Screen Alumunium
5	RMXX5	Cotton Combad
6	RMXX6	Rakel Sablon
7	RMXX7	Premium Cotton

Table 4.5 List of Vendor

No	Vendor Code	Vendor Name
1	V00XA	Enos Store
2	V00XB	Wijaya Store

No	Vendor Code	Vendor Name
3	V00XC	Knitto Store
4	V00XD	Enol Store
5	V00XE	Central Print

4.3.3.2 Process of Creating Purchase Order

To initiate a purchase order (PO) at SMEs Dikaoske, the owner first identifies low stock levels of raw materials and proceeds to request a purchase from the chosen vendor. A quotation outlining the vendor's particulars, customer order date, transaction currency, and the specific product requested is then produced. This quotation is then sent to the vendor via email or manually to settle on the pricing. The negotiation process continues until both parties, the seller and SME Dikaoske, agree, at which point the quotation document is updated. Once finalized, the quotation document is certified as a purchase order document with a purchase order number. This purchase order document can then be used to create bills and invoices and to receive goods and raw materials.

4.4 Application Generation

In the Rapid Application Development method, the next stage is application generation, where the design of the Odoo ERP system begins to be created or configured. In the OPEN-ERP system configuration process, three main activities need to be done, including:

1. Installation and initial setup of the system.
2. Sales Module Configuration.
3. Purchasing Module Configuration

This series of activities is an important unit to ensure that the OPEN-ERP system can be used optimally.

4.4.1 General Configuration

This study uses Odoo version 17.2 Enterprise Edition, which can be accessed through the website. General configuration steps include creating an account on the Odoo database and installing selected modules. The configuration details are as follows:

1. Odoo Database

The first step is to create a new database named Dikaoske. At this stage, it is also necessary to input email, country of origin, and language used. For the Odoo system

implemented in SMEs, Dikaoske, Indonesia, was chosen as the country of origin, and English was used as the language in the system.

Figure 4.8 Register to ERP Odoo System

Figure 4.9 Database Confirmation by Email

2. Modules in the Odoo System

Odoo is an open-source ERP system that provides various modules that can be customized to the needs of the user's business and organization. In this implementation, two modules, Sales and Purchasing, were selected. These two modules were chosen according to the needs of the MSMEs described in the early part of the study.

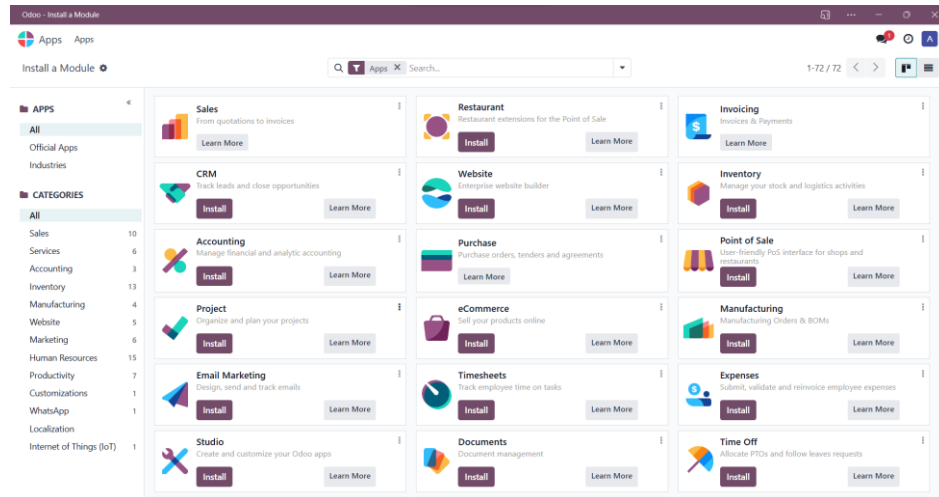


Figure 4.10 Installing the Module

4.4.2 Sales Module Configuration

A. Basic Configuration

The basic configuration of the sales module consists of several processes. Here are the processes:

1. Activation of product variants
2. Determination of unit of measurement (UoM)
3. Activation of product price discount column
4. Activation of down payment payment method

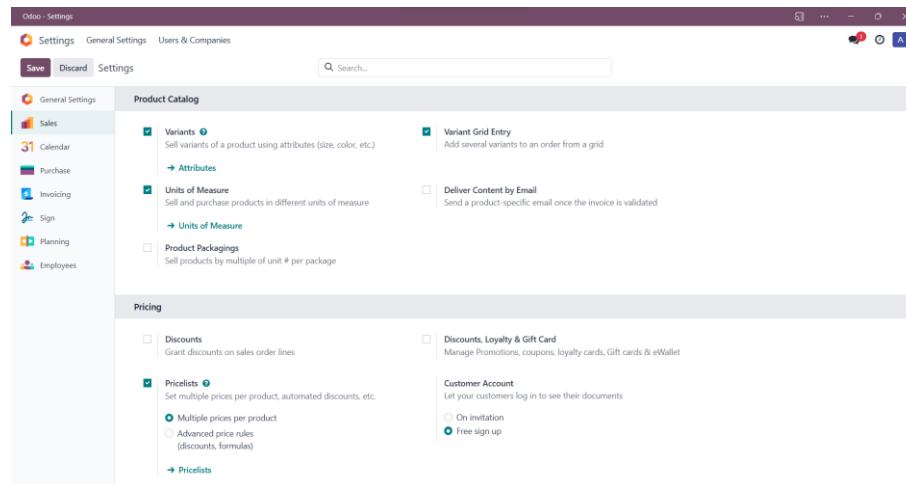


Figure 4.11 Setting of Sales Module

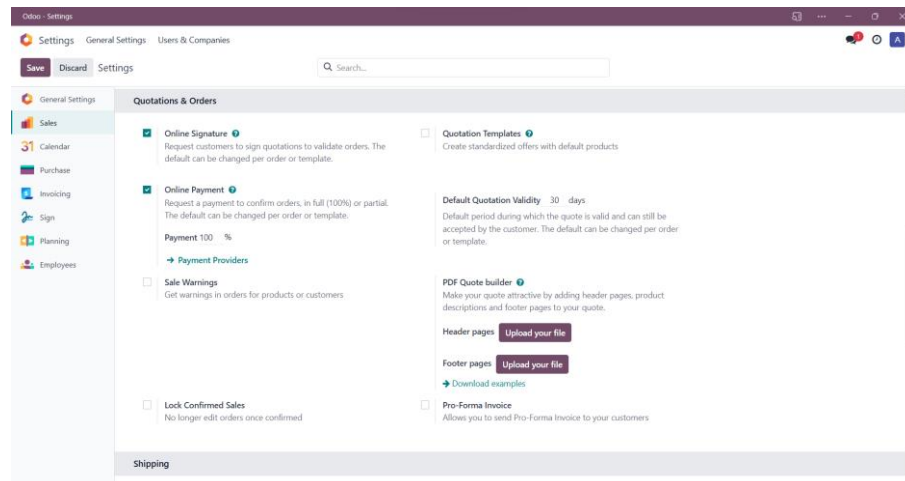


Figure 4. 12 Setting of Sales Module

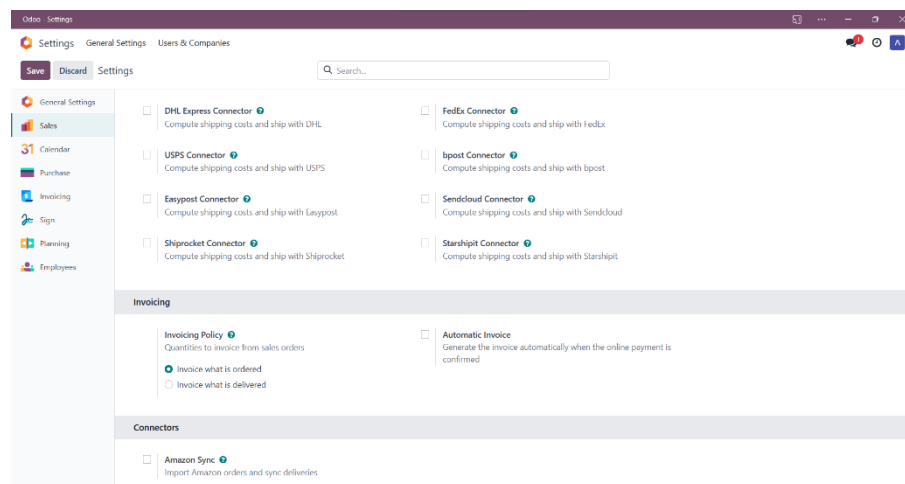


Figure 4.13 Setting of Sales Module

B. Product

In this step, products are entered into the system using the previously collected product master data list. The following is the product configuration that is carried out:

1. Name of Product
2. Price of Product
3. Attributes and Variants

Product Name: ☆ A3 Cotton Combed 30s S-XL

☒ Can be Sold ☐ Can be Purchased

General Information | Attributes & Variants | Sales

Product Type: Service
Invoicing Policy: Ordered quantities
Plan Services: ☐
Unit of Measure: Units
Purchase UoM: Units

Sales Price: Rp 80,000.00
Customer Taxes: 0% X
Cost: Rp 0.00 per Units
Product Category: All
Internal Reference
Barcode
Product Template Tags

INTERNAL NOTES
This note is only for internal purposes.

Figure 4. 14 Product Configuration

Product Name: ☆ A6 Premium T-Shirt S-XL

☒ Can be Sold ☐ Can be Purchased

General Information | Attributes & Variants | Sales

Product Type: Service
Invoicing Policy: Ordered quantities
Plan Services: ☐
Unit of Measure: Units
Purchase UoM: Units

Sales Price: Rp 80,000.00
Customer Taxes: 0% X
Cost: Rp 0.00 per Units
Product Category: All
Internal Reference
Barcode
Product Template Tags

INTERNAL NOTES
This note is only for internal purposes.

Figure 4.15 Product Configuration

Product Name	Price	Product Name	Price	Product Name	Price	Product Name	Price
☆ A3 Cotton Combed 24s >XXXXL	Price: Rp 102,000.00	☆ A3 Cotton Combed 24s S-XL	Price: Rp 87,000.00	☆ A3 Cotton Combed 24s XXL	Price: Rp 92,000.00	☆ A3 Cotton Combed 24s XXXL	Price: Rp 97,000.00
☆ A3 Cotton Combed 30s >XXXXL	Price: Rp 95,000.00	☆ A3 Cotton Combed 30s S-XL	Price: Rp 80,000.00	☆ A3 Cotton Combed 30s XXL	Price: Rp 85,000.00	☆ A3 Cotton Combed 30s XXXL	Price: Rp 90,000.00
☆ A3 Premium T-Shirt >XXXXL	Price: Rp 110,000.00	☆ A3 Premium T-Shirt S-XL	Price: Rp 95,000.00	☆ A3 Premium T-Shirt XXL	Price: Rp 100,000.00	☆ A3 Premium T-Shirt XXXL	Price: Rp 105,000.00
☆ A4 Cotton Combed 24s >XXXXL	Price: Rp 97,000.00	☆ A4 Cotton Combed 24s S-XL	Price: Rp 82,000.00	☆ A4 Cotton Combed 24s XXL	Price: Rp 87,000.00	☆ A4 Cotton Combed 24s XXXL	Price: Rp 92,000.00
☆ A4 Cotton Combed 30s >XXXXL	Price: Rp 90,000.00	☆ A4 Cotton Combed 30s S-XL	Price: Rp 75,000.00	☆ A4 Cotton Combed 30s XXL	Price: Rp 80,000.00	☆ A4 Cotton Combed 30s XXXL	Price: Rp 85,000.00
☆ A4 Premium T-Shirt >XXXXL	Price: Rp 105,000.00	☆ A4 Premium T-Shirt S-XL	Price: Rp 90,000.00	☆ A4 Premium T-Shirt XXL	Price: Rp 95,000.00	☆ A4 Premium T-Shirt XXXL	Price: Rp 100,000.00
☆ A5 Cotton Combed 24s >XXXXL	Price: Rp 92,000.00	☆ A5 Cotton Combed 24s S-XL	Price: Rp 77,000.00	☆ A5 Cotton Combed 24s XXL	Price: Rp 82,000.00	☆ A5 Cotton Combed 24s XXXL	Price: Rp 87,000.00
☆ A5 Cotton Combed 30s >XXXXL	Price: Rp 85,000.00	☆ A5 Cotton Combed 30s S-XL	Price: Rp 70,000.00	☆ A5 Cotton Combed 30s XXL	Price: Rp 75,000.00	☆ A5 Cotton Combed 30s XXXL	Price: Rp 80,000.00
☆ A5 Premium T-Shirt >XXXXL	Price: Rp 100,000.00	☆ A5 Premium T-Shirt S-XL	Price: Rp 85,000.00	☆ A5 Premium T-Shirt XXL	Price: Rp 90,000.00	☆ A5 Premium T-Shirt XXXL	Price: Rp 95,000.00
☆ A6 Cotton Combed 24s >XXXXL		☆ A6 Cotton Combed 24s S-XL		☆ A6 Cotton Combed 24s XXL		☆ A6 Cotton Combed 24s XXXL	

Figure 4. 16 Master Data of Product

C. Quotation and Ordering Product

At this stage, products are input into the system based on the list of product master data that has been collected previously. The following is the configuration carried out on the product:

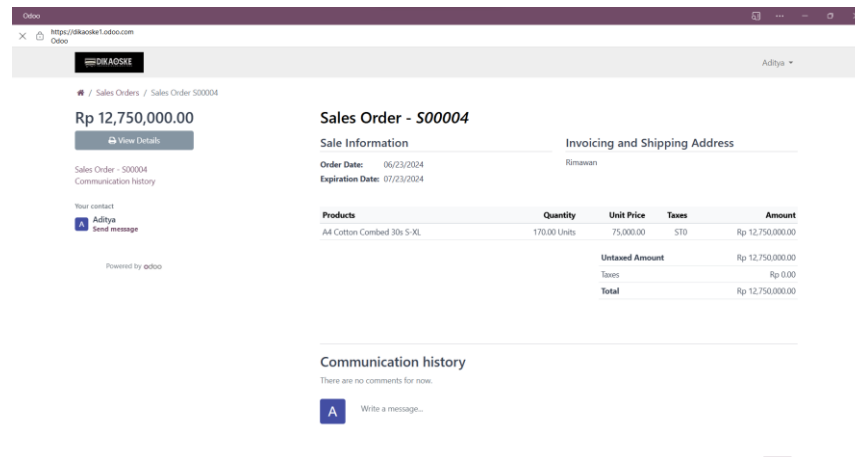


Figure 4.17 Sales Order Document Preview

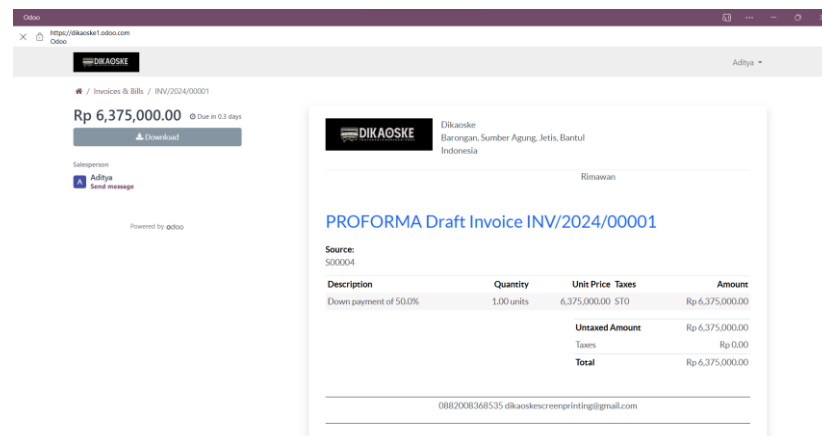


Figure 4.18 Invoice of Sales Order

4.4.3 Configuration of Purchase Module

A. Basic Configuration

In this Purchase Module configuration, several stages are carried out. The following are the stages:

1. Activate purchases for material product variants
2. Activate reminder features for transactions to vendors

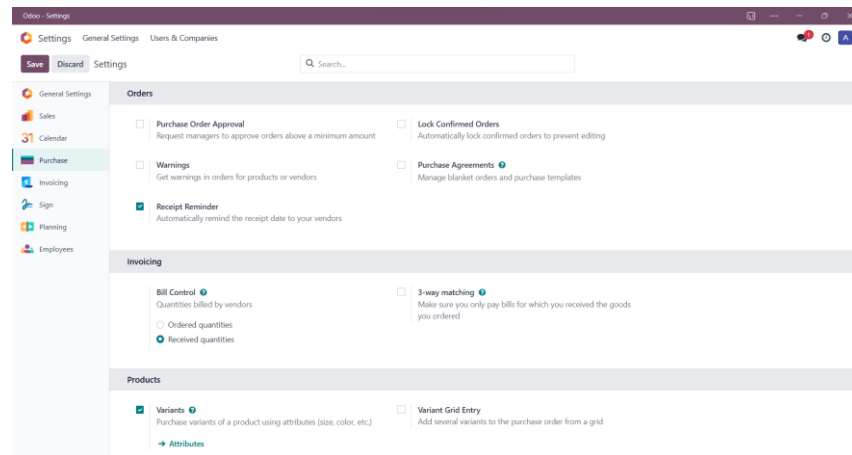


Figure 4.19 Setting of Purchase Module

B. Material

At this stage, the raw materials used by SMES for production are entered. These seven types of raw materials are registered into the Odoo system with various variant configurations and units.

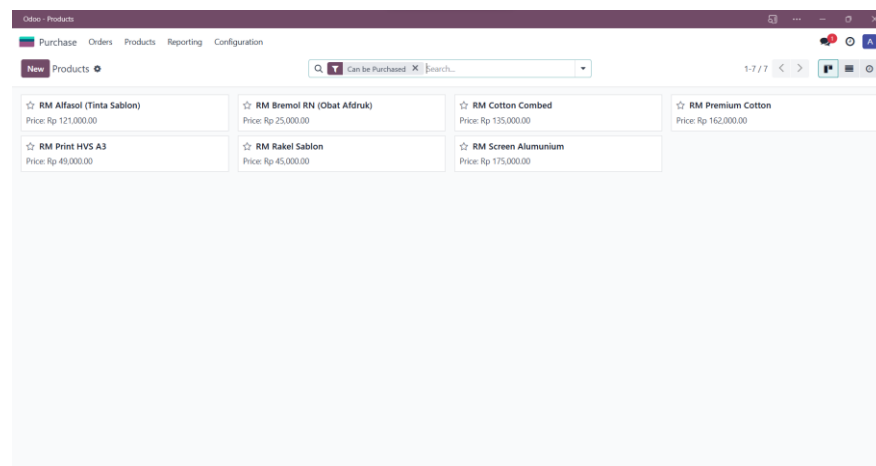


Figure 4.20 Material List

C. Vendor

Vendor is defined as master data in Odoo that contains information such as name, address, and bank account. Vendors are used to carry out purchasing, payment, and purchase volume processes. Good vendor data management is very important for the smooth running of business processes in companies that use the Odoo system. The following is the vendor master data in this SMES:

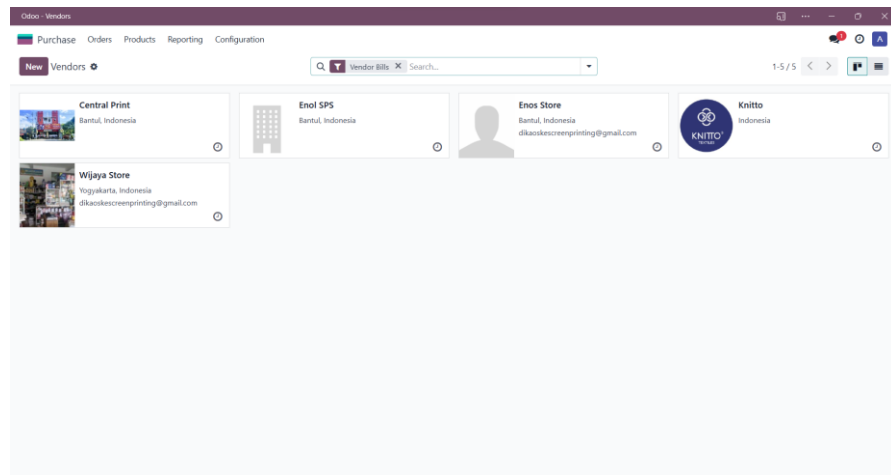


Figure 4.21 Master Data of Vendor

Request for quotation or RFQ is a stage in business when a buyer requests a quote from a seller, to obtain an attractive offer to be followed up on. In the RFQ configuration, the purchasing department can directly enter vendors and administrative documents, such as dates, and purchase information such as products, quantities, and subtotals.



Dikaoske
 Barongan, Sumber Agung, Jetis, Bantul
 Indonesia

Knitto

Jl. HOS Cokroaminoto No.162A
 JB 40117
 Indonesia
 ☎ +62 274 5017513

Request for Quotation P00006

Description	Expected Date	Qty
RM Cotton Combed	06/23/2024 20:21:15	10.00 kg
Black		
RM Cotton Combed	06/23/2024 20:21:15	10.00 kg
White		

Figure 4.22 Request for Quotation

Odoo - P00006

Purchase Orders Products Reporting Configuration

New Requests for Quotation P00006

Confirm Order Re-Send by Email Print RFQ Cancel RFQ RFQ Sent Purchase Order

Request for Quotation
☆ P00006

Vendor ? Knitto Order Deadline ? 06/23/2024 20:21:15
Vendor Reference ? Expected Arrival ? 06/23/2024 20:21:15
☐ Ask confirmation

Product	Description	Quantity	Uo...	Unit Price	Taxes	Tax excl.
RM Cotton Combed	RM Cotton Combed	10.00	kg	135,000.00	0%	Rp 1,350,000.00
Black						
RM Cotton Combed	RM Cotton Combed	10.00	kg	135,000.00	0%	Rp 1,350,000.00
White						

Add a product Add a section Add a note Catalog

Define your terms and conditions ...

Untaxed Amount: **Rp 2,700,000.00**
Taxes: Rp 0.00
Total: **Rp 2,700,000.00**

Figure 4. 23 Request for Quotation Form

D. Purchase Order

A purchase order (PO) is a formal document issued by a buyer to a seller to order specific goods or services. A PO lists details such as the products ordered, quantity, price, and agreed delivery date. This document serves as a purchase contract between the two parties and creates obligations between them. A PO is useful for organizing and tracking purchase transactions, as well as being a reference in the payment process.

Odoo - P00001

Purchase Orders Products Reporting Configuration

New P00001 / Draft Bill BILL/2024/06/0001 P00001 Vendor Bills

Send PO by Email Create Bill Cancel Lock RFQ RFQ Sent Purchase Order

Purchase Order
☆ P00001

Vendor ? Enol SPS Confirmation Date 06/23/2024 19:38:38
Vendor Reference ? Expected Arrival ? 06/23/2024 21:00:37
☐ Ask confirmation

Product	Description	Quantity	Received	Billed	Uo...	Unit Price	Taxes	Tax excl.
RM Bremol RN ...	RM Bremol RN (Cibat Aldruk)	1.00	1.00	1.00	Units	25,000.00	11%	Rp 25,000.00
RM Alfasol (Tin...	RM Alfasol (Tinta Sablon)	2.00	2.00	2.00	Units	121,000.00	11%	Rp 242,000.00
Black and White								

Add a product Add a section Add a note Catalog

Define your terms and conditions ...

Untaxed Amount: **Rp 267,000.00**
Taxes: Rp 29,370.00
Total: **Rp 296,370.00**

Figure 4.24 Purchase Order

CHAPTER V

SYSTEM TESTING AND DISCUSSION

5.1 User Acceptance Test

In this section, we will delve into the outcomes of the Odoo System testing. Testing is crucial to guarantee that end users can seamlessly execute the assigned tasks using the new system. The testing process employs tailored business scenarios to ensure that the functionalities of the Odoo system meet the criteria set by small and medium enterprise (SME) owners and users. This method is invaluable for validating that the system's features, functions, and capabilities align with the specific requirements of the business.

The Odoo system test results indicate that SME Dikaoske owners have received all tested functions well and aligned with the business processes. All of the 13 trial scenarios conducted, encompassing sales and purchase modules, were successful. The following is a summary of the User Acceptance Test (UAT) results for the Odoo system at SMEs Dikaoske:

Table 5.1 User Acceptance Test

No	Process	Explanation
1	Test Name Input the sales product	Success
	Description Verification performs data input related to the product to be sold	
	Case Users entered 3 products Cotton Combed 30s with sizes namely S-XL, XXL, and XXXL with prices of Rs75,000, Rs80,000, Rs85,000 respectively.	
2	Test Name Conducting customer/ customer input	Success
	Description Perform new data input to register customers to the database	
	Case User enters new customer with input data as follows, Name: Rona, Address: Jl. Parangtritis,	

No	Process	Explanation
	Bantul, Phone Number: 082138220077, Email address: kuncoromhammad23@gmail.com.	
	Test Name Create a quotation document	
	Description Performing booking input through quotation document	
3	User enters the order through quotation document with the following input data:	Success
	Case Customer Name: Receiver, Pricelist: Public, Payment terms: Immediate Payment, Product: Cotton Combed 24s S-XL, Quantity: 50	
	Test Name Create a Sales Order document	
	Description Performing the order input through the Sales Order document (SO)	
4	User enters the order through the Sales Order (SO) document with the following input data:	Success
	Case Customer Name: Kuncoro, Pricelist: Public, Payment terms: Immediate Payment, Product: Cotton Combed 30s S-XL, XXL, XXXL Quantity: 100, 15, 5	
	Test Name Making input material or raw material of the product	
5	Description Perform new data input to register material to the database	Success
	Case User enters RM Bremol RN, RM Alfasol raw material products, as category can be purchased for Rs 20,000 and Rs 121,000.	
6	Test Name Input vendor master data	Success

No	Process	Explanation
	Description Perform new data input to register vendors to the database Case User enters new vendor with input data as follows: Category: Company Name: Knitto, Address: Jl. HOS Cokroaminoto No.162A, D.I. Yogyakarta.	
	Test Name Create Request for Quotation document Description Performing booking input through Request for Quotation document Case User enters a material purchase order through the Request for Quotation document with the following input data: Vendor Name: Knitto, Product: Cotton Combed 30s, Quantity: 10kg.	Success
	Test Name Create Purchase Order document Description Perform new data input to register customers to the database Case User enters a material purchase order through the Request for Quotation document with the following input data: Vendor name: Knitto, Product: Cotton Combed 30s, Quantity: 10kg	Success
	Test Name View material purchase analysis dashboard Description Opens the dashboard feature to view the transaction summary in the Odoo system Case User opens the reporting menu and selects the dashboard and filters the report by product	Success
10	Test Name View product sales analysis dashboard	Success

No	Process	Explanation
	Description	View material sales analysis dashboard
	Case	User opens the reporting menu and selects the dashboard and filters the report by product
11	Test Name	Create a payment document on the sale of the product
	Description	Perform new data input to register customers to the database
	Case	User enters payment on customer order input data as follows: Customer Name: Recipient, Product: Cotton Combed 24s S-XL, Quantity: 50
12	Test Name	Making billing documents on material purchases to vendors
	Description	User enters billing into the system to trigger the payment billing process
	Case	User enters billing on purchase order to vendor with the following input data: Receiver name, amount: Rs12,750,000
13	Test Name	Create a payment document on material purchase
	Description	Perform new data input to register customers to the database
	Case	User enters payment on purchase order to vendor with input data as follows: Category: Company Name: Knitto, Quantity: 10Kg Price: Rs1,350,000

5.2 Feedback and Evaluation

In this phase, the assessment of all parties involved in the Odoo implementation project activities will be outlined. The reflection process includes interviews conducted by the author with the owner of SME, Dikaoske. Additionally, the feedback results and any evaluations obtained during the project implementation will be presented.

5.2.1 Feedback

Below are the results of feedback on the blueprint showing that it reflects the criteria of completeness, style, and consistency:

Table 5.2 User Acceptance Test

No	Criteria	Question	Answer
1	Completeness	Does the Odoo System blueprint meet the expectations of SME owners?	Dikaoske, the owner of SMEs, said the Blueprint document was up to his expectations. The owner considered the order and content of the Blueprint document easy to understand.
2	Completeness	Does the blueprint cover the entire sales and procurement business process for SMEs?	In general, the Blueprint document already covers all the main business processes, such as product sales and raw material purchases. However, the Blueprint needs to be addressed in several aspects, namely the production process. In addition, the Blueprint does not include a point-of-sale system for retail sales. However, the owner only recommends adding these retail capabilities due to the constraints of the situation and poor stock turnover.

No	Criteria	Question	Answer
3	Consistency	Is the blueprint format provided easy for SME owners to understand?	Although the Blueprint format is easy to understand, SME owners feel that it looks stiff and less attractive, which quickly makes them bored. According to the SME owner, the blueprint document is relatively consistent regarding words and terms. However, the owner criticized the column format and graphs, which could have been better. This is because the explanation in the graph still needs to be clarified, making the owner feel less understanding.
4	Style	Does the content of the blueprint use words and terms consistently?	

5.2.2 Evaluation

The evaluation results of the user guide found that the guide can help users use or try the Odoo System. However, the company owner needs more time to comprehensively review the user guide document. The owner only looks at the guide when there is a problem using the system. The following is the evaluation:

Table 5.3 Evaluation of User Guide

No.	Question	Answer
1	Can the User Guide help or make it easier for users to use the Odoo system?	The owner feels helped by the presence of the User Guide. When the owner tries to use the Odoo System, the owner takes the time to look at the User Guide. By following the steps in the User Guide, the owner can complete the data entry process more efficiently.

No.	Question	Answer
2	Does the User Guide cover the entire business process scenario?	The owner feels that the scenarios in the User Guide already cover the business processes of the SMEs Dikaoske well.

This stage also explains the evaluation made for the entire project in implementing this Odoo system. This evaluation aims to learn so that future actions can better implement a similar Odoo ERP system. The following are the lessons that can be taken from the implementation of the Odoo ERP system at SMEs Dikaoske:

1. The blueprint document should be adapted for SMEs, making it easily understandable, flexible, and free of jargon that may be difficult for the general public to grasp, particularly for SMEs.
2. Successful implementation of the Odoo ERP system requires unwavering commitment from the organization's owner. This includes enhancing infrastructure and providing support facilities, such as reliable internet access, to facilitate its use.
3. Effective communication is essential for integrating data into the system. Data and information must be readily available for entry into the Odoo system. Since many SME organizations lack the necessary data and information, the implementer will require time to tailor the data in the field for seamless integration into the Odoo system.
4. In this scenario, only the owner is utilizing the system, but it is advisable to designate a new user specifically responsible for operating the Odoo system. The Odoo ERP system's complexity surpasses a single user's capabilities.
5. Training on the Odoo system demands significant time until the user becomes proficient in operating the system. This is important, considering the user may need more IT skills or familiarity with the Odoo ERP system.

CHAPTER VI

CONCLUSION

6.1 Conclusion

Based on the research objectives, the following conclusions were drawn:

1. Various activities were conducted to implement the Odoo ERP system with sales and purchasing modules at SMEs Dikaoske, including on-site interviews, gap analysis, system configuration, user acceptance tests, and evaluations. Using a comprehensive blueprint outlining system specifications and business case analysis, a standard Odoo ERP system was developed, accessible through web and mobile platforms. The Odoo system has been tailored to accommodate specific business requirements and seamlessly integrate sales and procurement processes with inventory management.
2. The general configuration involves creating new databases and selecting the necessary modules for the Odoo ERP system's implementation. The sales configuration module performs activities such as basic configuration, product management, quotation creation, and product ordering. Similarly, activities in the purchasing module configuration include basic configurations, material management, RFQ (Request for Quotation), vendor management, and PO (Purchase Order) manufacturing.
3. A high success rate was obtained Based on the user acceptance test tomorrow for ERP system users at SMEs Dikaoske. This shows users can understand and use Odoo's ERP systems according to the scenario.
4. Upon evaluating the feedback, it was determined that the configured Odoo ERP system met the expectations of SMEs Dikaoske's owner. The system effectively incorporated the business processes involved in sales and raw material procurement. Its implementation has eliminated manual recording in SMEs Dikaoske's operations and facilitates easier monitoring of the company's activities.

6.2 Suggestion

Based on the research that has been conducted, there are several suggestions regarding the implementation of the ERP system as well as further research related to the implementation of the ERP system, including:

1. A solid conceptual understanding of ERP systems and practical knowledge of the Odoo ERP system are required.
2. Further research should explore the Rapid Application Development method in more detail and explore the possibility of integrating it with other methods relevant to ERP system implementation.
3. Additionally, future research can focus on advancing ERP implementation by introducing new features, adapting business processes, or expanding system capabilities by adding modules to facilitate further growth for SME businesses.
4. It is essential to maintain effective coordination and communication with all stakeholders involved in ERP implementation projects, particularly in providing updates, identifying obstacles, adhering to timelines, and meeting targets for both internal and external stakeholders.

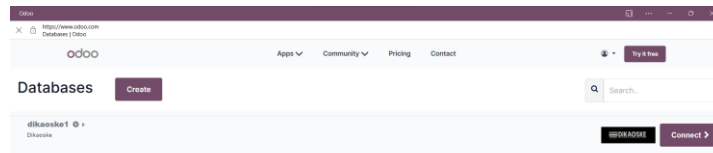
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APPENDIX



Appendix 1. Connect to System



Dikaoske
Barongan, Sumber Agung, Jetis, Bantul
Indonesia

Agung

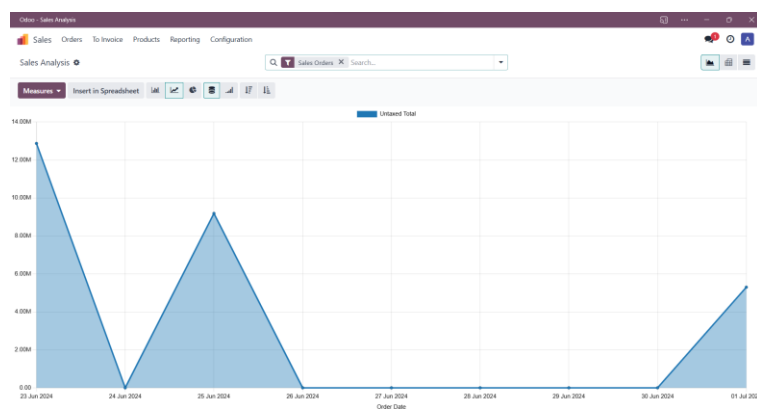
PROFORMA Draft Invoice

Source:
500007

Description	Quantity	Unit Price	Taxes	Amount
A4 Cotton Combed 30s S-XL	60.00 Units	75,000.00	STO	Rp 4,500,000.00
A4 Cotton Combed 30s XXL	10.00 Units	80,000.00	STO	Rp 800,000.00
Untaxed Amount				Rp 5,300,000.00
Taxes				Rp 0.00
Total				Rp 5,300,000.00

0882008368535 dikaoskescreenprinting@gmail.com

Appendix 2. Example of Invoice



Appendix 3. Example of Reporting