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Design of an Integrated Order Acceptance System in a Palm Oil Machine Component Company: Case Study

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Abstract

As demand increases, companies need information systems capable of providing accurate, real-time, and integrated data. However, observations show that ongoing business processes are still carried out manually, such as communicating orders via WhatsApp , manually recording purchase orders (POs), and creating invoices that are not centrally documented. This condition results in various problems, including lost PO documents, duplicate transaction notes, data desynchronization between departments, and delays in order processing. Research This aim for analyzing business processes moment this (as-is) and designing business processes more (to-be) proposals effective and efficient through implementation system Odoo-based Enterprise Resource Planning (ERP). The research method used is descriptive research with data collection techniques in the form of observation and interviews. Analysis was conducted to identify non-value-added activities and system requirements that are appropriate to the company's operational conditions. The results of the study indicate that manual processes cause an average of 11% data accuracy errors per year, reduce operational efficiency, and hinder coordination between departments. The proposed Odoo-based ERP system design is able to integrate sales, purchasing, production, and finance processes so that data flow is automated, consistent, and there is no repetitive recording. This system model has been proven to support increased data accuracy, reduce data duplication, and provide faster and more accurate information for decision-making.

Introduction

The rapid development of information technology has driven significant changes in the way companies manage business processes and increase competitiveness. Increasingly complex business competition requires companies to focus not only on product quality but also on service speed, operational efficiency, and information management accuracy. In this context, the implementation of supply chain management (SCM) has become a crucial strategy for companies to control costs, increase operational flexibility, and maintain customer satisfaction (Plekhanov et al., 2023; Chandak et al., 2021; Lee, 2021; Van Nguyen et al., 2025; Farida, 2023). Supply chain management is an integrated approach that coordinates the flow of materials, information, and finances from upstream to downstream. According to (Geha et al., 2021), a supply chain is a network of companies that work together to create and deliver products to end customers. (Simatupang & Surjasa, 2007) emphasizes that SCM involves the integration of key business processes spanning suppliers, manufacturers, distributors, and customers into a single, interconnected system. Furthermore, Nasution (2024) states that SCM

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plays a vital role in integrating business processes from end-users to suppliers to create an effective flow of information and services.

In practice, many small and medium-sized companies still face challenges in supply chain management due to the use of manual systems (Sahoo et al., 2023; Kot, 2023; Ghazi & Salih, 2023; Gonçalves et al., 2024). The use of physical documents and non-integrated record-keeping often leads to problems such as document loss, data duplication, and information inconsistencies between departments. These issues directly impact operational process delays, data uncertainty, and reduced organizational effectiveness (Lei & Naveh, 2023; Adepoju et al., 2022; Garcia-Buendia et al., 2023). This situation indicates a gap between the need for fast and accurate information management and the systems used by companies (Valacich & Schneider, 2022).

CV. Adi Makmur Metalindo is a manufacturing company engaged in the production of palm oil mill machine components using a make-to-order production system. The company produces more than 20 types of products with different specifications and handles an annual demand of approximately 6,771 units. Along with the increasing volume of demand, the company still manages purchasing documents and transactions using a manual system. Based on observations and interviews, problems were found in the form of missing Purchase Order documents, poorly documented transaction notes, and duplicate transaction records. The frequency of these problems is quite significant and has an impact on late payments, incorrect billing, and an increased risk of data inconsistencies (Burks et al., 2022; Krishnan, 2022).

The urgency of this research lies in the need for companies to have integrated information systems capable of providing real-time data. Alignment between business processes and information technology is a key factor in improving organizational efficiency. (Demilda, Arvianto, and Rosyada 2022) state that Enterprise Resource Planning (ERP) is capable of increase business process efficiency through cross- data integration department. Swastika et al. (2023) emphasize that ERP is working as tool strategic in manage source Power company for increase mark for stakeholders interest.

Previous studies have shown that ERP implementations, particularly open source ones like Odoo, can provide integrative solutions for small and medium-sized enterprises (SMEs). Wu & Chen (2020) This proves that Odoo ERP is capable of providing real-time information, improving cross-departmental coordination, and reducing implementation costs. Devi Resviani & Sulaksono (2024) emphasized that Odoo ERP offers high flexibility and can improve business process control. However, most research still focuses on large-scale companies or specific sectors, so ERP adoption in medium-sized manufacturing companies with make-to-order characteristics still requires further in-depth study.

Based on these problems, a systematic solution planning is needed through the design of an integrated ERP system . This designing business process models Odoo ERP based (to-be) proposal that can support channel order acceptance up to delivery product (Himawan & Jonathan, 2025; Mujaddid, 2024; Zahra et al., 2023). Design This directed For reduce data duplication, increasing accuracy of data input, as well as provide valid, accurate and real time information for all over part Thus, the company is expected to be able to improve the timeliness of order fulfillment and maintain customer satisfaction (Aziza & Nur Rahayu, 2019; Kaligis et al., 2024; Ridho et al., 2021; Akpe et al., 2023; Ridho et al., 2021).

The purpose of this study is to improve CV. Adi Makmur Metalindo's internal business processes through the implementation of an ERP system and to design an integrated system that meets the company's operational needs. Furthermore, this study aims to develop a data management model that can improve data input accuracy and minimize the risk of recording errors. Conceptually, this study also develops a working hypothesis that implementing an

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Odoo-based ERP system can improve business process efficiency and the quality of company information (Hadiana, 2018; Utami, 2024; Yaseen et al., 2023).

The hypothesis proposed in this study is that the implementation of an integrated ERP system is able to: (1) increase the accuracy of transaction data, (2) reduce delays in operational processes, and (3) increase the effectiveness of interdepartmental coordination. This hypothesis is the basis for compiling the system design and developing the proposed business process model.

Methods

This study uses a qualitative descriptive research design (Sinulingga, 2021) to analyze the business processes of Purchase Order document management and transaction recording at CV. Adi Makmur Metalindo. This approach enabled the researchers to identify key issues particularly document loss and data asynchronization and design an integrated solution based on Odoo ERP.

Data were collected through interviews, observations, and documentation studies. Primary data included actual operational activity flows, while secondary data consisted of internal company documents and ERP literature. Done through three stage: (1) As-Is analysis for map current process conditions This; (2) To-Be based design Business Process Management principles; and (3) Mapping processes to Odoo ERP modules such as Sales, Purchase, Inventory, and Accounting.

Framework of thinking

Framework think study This describe connection between manual process problems, data asynchronization, As-Is process analysis, To-Be process development, and design ERP system as solution.

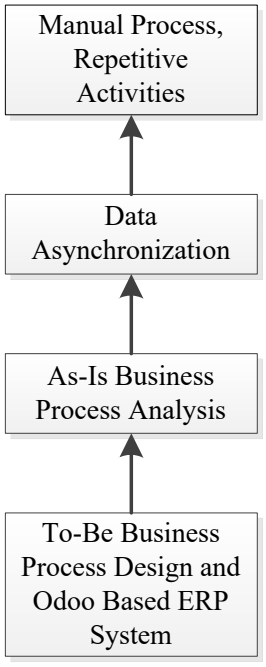

Figure 1. Framework Conceptual

Conceptually, the research moves from problem identification → process analysis → solution design → system recommendation.

Research Flow

Research flow consists of from eight stage main :

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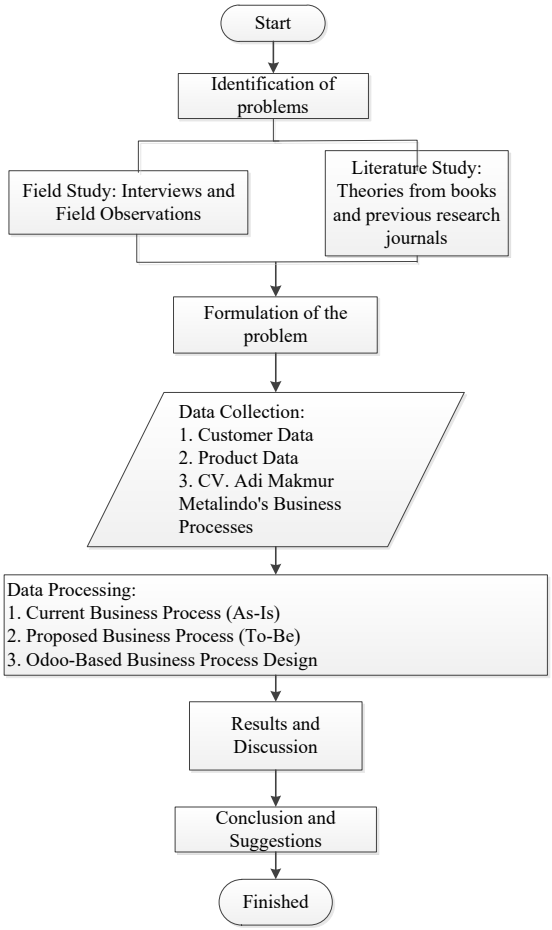

Figure 2. Research Flow

Results and Discussion

Current Business Process Analysis (*As-Is)*

Analysis results show CV. Adi Makmur Metalindo's business processes are still running, from production to payment recording. Interdepartmental communication is conducted via WhatsApp without systematic documentation, making information prone to loss .

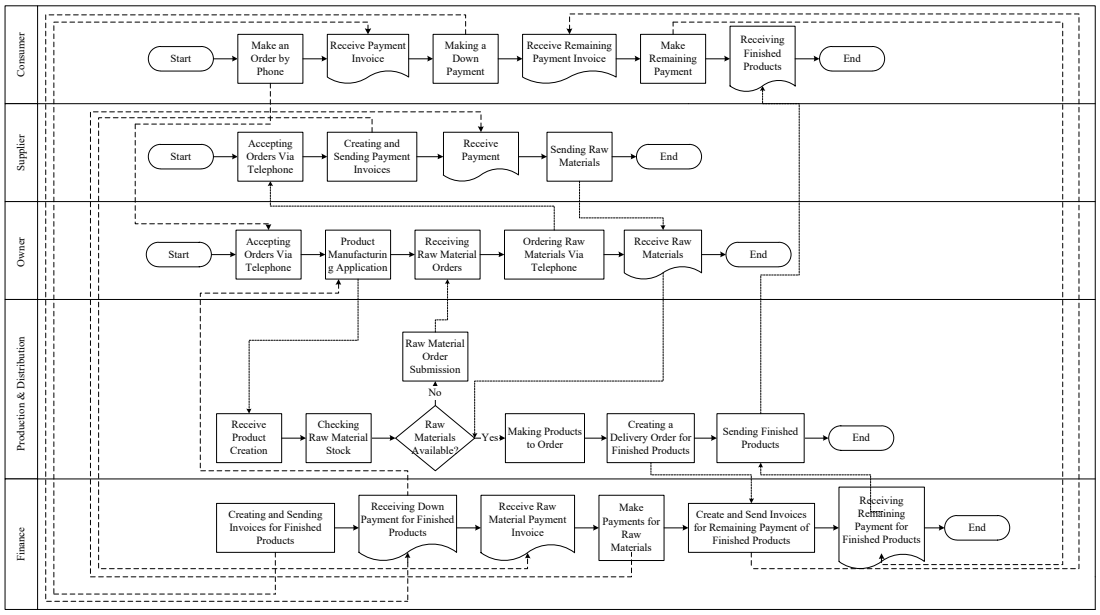

Figure 3. Business Process Before (As-Is)

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Order via WhatsApp → check manual stock → ordering material raw materials via WhatsApp → production → manual invoice → payment → delivery goods. Findings Main As-Is: Purchase Order, invoice, and proof payment often lost. Recording done repeated in several Section → data duplication. Stock information is not real-time → causing production delays. No audit trail and centralized record-keeping. Delays in coordination between departments due to lack of system integration.

VA – NVA Analysis

Of the 16 business activities analyzed, the following were obtained: Value-added activities (VA): 37.5%, Non-value-added activities (NVA): 62.5%, the largest NVA came from: re-registration, manual inventory checking, sending documents via WhatsApp, manual invoice creation, manual raw material ordering. This shows that the company's business processes are dominated by activities that do not provide direct value to customers, resulting in very low operational efficiency.

Business Process Design Proposal (To-Be)

Business processes Then designed repeat using Odoo ERP for integrate all over channel Work.

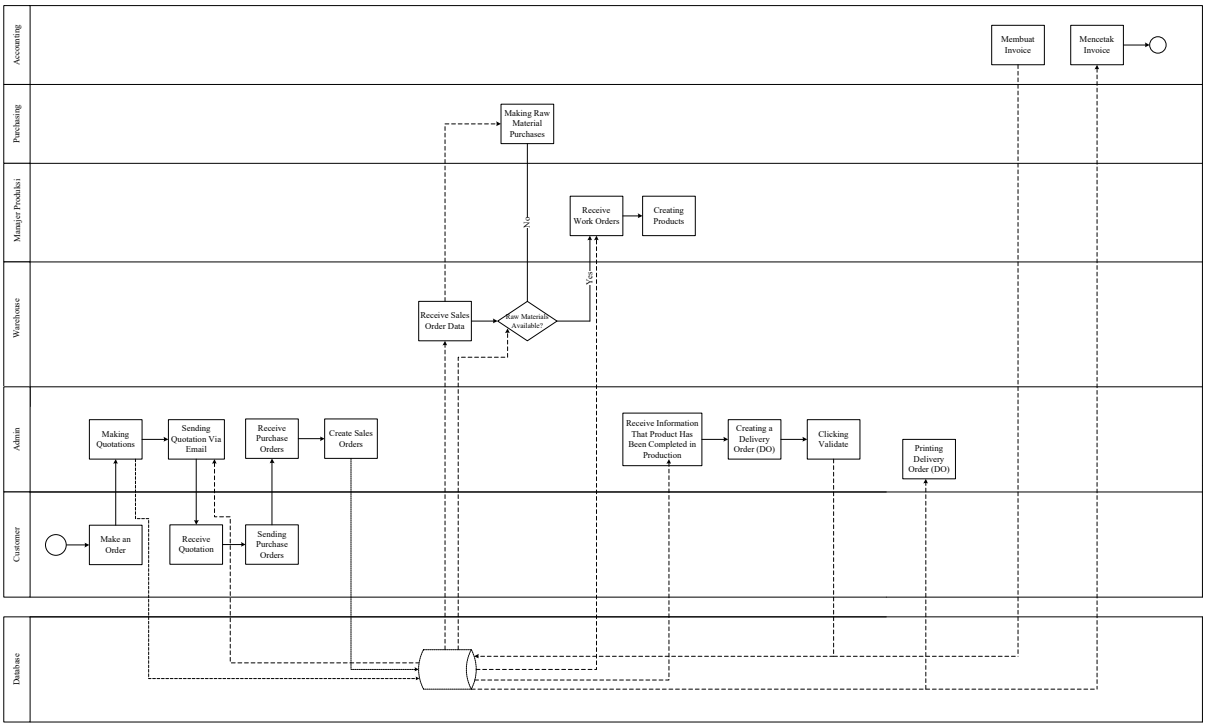

Figure 4. Business Process After (To-Be) Based on Odoo

Sales Order → check stock automatic → needs purchase Automatic → Purchase Order → Manufacturing Order → Delivery Order → Automatic Invoice. Improvements Main To-Be: Order directly noted in Sales Module, no Again depends on WhatsApp, System automatic check supply via Inventory Module, if stock less, Odoo creates a draft Request for Quotation / Purchase Order, Production controlled through the Manufacturing Module using BOM, Invoice and payment recorded automatic Through the Accounting Module, the entire process is documented, integrated, and has complete audit trail.

Master Data, Workflow, and ERP Module Design

research results also produced design : customer, supplier and product master data, complete BOM structure, location inventory, flow integration Sales → Purchase → Inventory → Manufacturing → Accounting module.

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All design the used for ensure ERP implementation according to make-to-order business process needs.

The Gap Between As-Is Process and BPM Theory

Research findings indicate that the As-Is process has inefficiencies similar to the characteristics described by Brocke et al. (2021), namely: activity redundancy, information irregularity, absence of process control, and high risk of human error.

Manual processes that rely on WhatsApp do not meet BPM principles, where processes must be: documented, integrated, traceable, provide real-time data.

VA–NVA Findings Discussion

The dominance of NVA activities at 62.5% demonstrates that the previous system did not meet the *Lean Business Process concept* , which requires minimizing NVA to increase value flow.
This study's findings align with Dumas et al.'s (2021) theory, which states that manual activities tend to create time waste and information inconsistencies.

Alignment of To-Be Process with ERP Theory

The Odoo-based To-Be design supports the ERP theory put forward by Chong et al. (2020), that ERP improves data integration by: eliminating duplication of records, providing a single source of truth, and accelerating the flow of information between departments.

Your research shows real impact: no more lost POs/invoices, stock is always updated, production can start on time, financial documents are automatically generated, managerial decisions are faster because of real-time data.

Impact of ERP Implementation on Business Processes

Based on the results of the system design: repetitive manual activities are eliminated, communication no longer relies on WhatsApp, inventory control becomes accurate, the make-to-order process is more stable, the risk of delays and incorrect input is significantly reduced.

The transformation from As-Is to To-Be supports the theoretical basis that digitalization of business processes is key to improving the operational efficiency of manufacturing MSMEs.

Conclusion

Research result show that business process companies that are still depend on manual communication, recording separate, and unstructured data flow integrated cause various problem like disappearance documents, duplication recording, and inconsistencies information between parts. Through business process analysis and identification activity worth plus as well as No worth add, research This capable formulate core problems and offer business process models proposal Odoo ERP based as solution. To-Be design that integrates proven Sales, Purchase, Inventory, Manufacturing, and Accounting modules answer objective study with increase data accuracy, reducing activity repeated, and create flow more work effective, structured, and real-time. With Thus, the findings study This give answer on formulation problems and goals study through provision system integrated that supports improvement efficiency operational and retrieval more decisions appropriate.

Suggestion

Based on results research, it is recommended that companies apply ERP system that has been designed in a way gradual and consistent for ensure more transitions smooth from manual process to digitalization full. The company needs to do training sustainable, monitoring, and evaluation periodically so that Odoo can be utilized optimally, especially in management orders, inventory, planning production and recording finance. Research furthermore

ISSN: 2716-3865 (Print), 2721-1290 (Online)

recommended develop module additionally, do measurement performance in a way quantitative, as well as evaluate impact term long ERP implementation so that can enrich development science and practice digitalization of business processes in the future.

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