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Business Process Analysis And Odoo Implementation For Retail Industry

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Abstract

Distribution companies face significant challenges due to reliance on manual processes in sales recording, inventory management, and order processing, leading to operational inefficiencies and financial losses. This study aimed to implement an integrated Enterprise Resource Planning system that automates order processing and real-time inventory monitoring. The methodology included business process analysis, system design, implementation, and system evaluation. The case study was conducted at SSN, a company engaged in the distribution of retail commercial products. The results showed that the implemented system reduced order processing time from 15–40 minutes to 5–10 minutes, increasing efficiency by 75%. The error rate in order entry decreased from 12% to 3%, while inventory discrepancies dropped from 41% to 10%. This implementation has been proven to improve operational efficiency, data accuracy, and optimize inventory management in the distribution industry.

Keywords: *Odoo; ERP; Sales; Inventory; Inventory management; Manual proccess.*

Abstrak

Perusahaan distribusi menghadapi tantangan signifikan akibat ketergantungan pada proses manual dalam pencatatan penjualan, pengelolaan inventaris, dan pemrosesan pesanan, yang menyebabkan inefisiensi operasional dan kerugian finansial. Penelitian ini bertujuan untuk mengimplementasikan sistem *Enterprise Resource Planning* terintegrasi yang mengotomatisasi pemrosesan pesanan dan pemantauan inventaris secara real-time. Metodologi yang digunakan meliputi analisis proses bisnis, perancangan sistem, serta implementasi dan evaluasi sistem. Studi kasus dilaksanakan pada perusahaan SSN yang bergerak dalam bidang distribusi produk komersil. Hasil penelitian menunjukkan bahwa sistem yang diterapkan mampu mengurangi waktu pemrosesan pesanan dari 15-40 menit menjadi 5-10 menit, meningkatkan efisiensi sebesar 72%. Tingkat kesalahan dalam entri pesanan berkurang dari 12% menjadi 3%, sedangkan ketidaksesuaian inventaris turun dari 41% menjadi 10%. Implementasi ini terbukti meningkatkan efisiensi operasional, akurasi data, serta mengoptimalkan pengelolaan inventaris dalam industri distribusi.

Kata kunci: *Odoo; ERP; Penjualan; Inventaris; Manajemen inventaris; Proses manual*

1. Introduction

Digital transformation has turned as a key driver of operational efficiency across various industries, including sales and distribution. Information systems play a vital role in managing data, optimizing business processes, and supporting decision-making. However, many sales and distribution companies still rely on semi-computerized or even fully manual systems. In the retail industry, accepting orders through social media or messaging platforms has increased transaction volume and effectively boosted sales, particularly when integrated with internal order handling processes. Yet, without adequate information system support, this approach can disrupt order management. For instance, receiving orders via social media may result in data duplication, processing delays, and inconsistencies between physical stock and inventory records. These issues ultimately hinder company performance and reduce customer satisfaction.

This study found that SSN manages most of its processes manually, from receiving orders via messaging apps to data entry, picking, packing, and delivery, all handled through spreadsheets. This approach results in two major drawbacks: (1) long processing times (15-40 minutes per order) and input error rates of up to 12%, and (2) inaccurate inventory tracking, leading to stock discrepancies of up to 41%, which can cause financial losses and diminish customer trust. These challenges underscore the urgent need for a digital solution that streamlines workflows and automatically integrates and synchronizes sales and inventory data.

ERP systems integrate multiple business functions into a single platform, improving operational efficiency through real-time data synchronization. They align sales, inventory, finance, and procurement through real-time data synchronization [1], reduce errors, cut costs, eliminate data duplication, and enhance financial reporting accuracy [2]. This study proposes implementing an Odoo as ERP-based system. As an open-source, modular platform, Odoo allows cost-effective customization and activation of only required modules. It unifies sales, inventory, and administrative processes, improving efficiency and data accuracy. Previous studies have shown Odoo enhances data management, inventory control, and transaction workflows across industries [3].

The contribution of this study is summarized as follows:

- Analyze the existing manual processes, identify inefficiencies, and design an optimized workflow.
- Implement Odoo as ERP-based system that integrates sales and inventory functions to enhance order processing and inventory management.
- Evaluate the system's effectiveness through pre- and post-implementation comparisons, focusing on data accuracy, processing time, and overall operational efficiency

The structure of this paper is as follows: Section 2 reviews related studies and theoretical foundations. Section 3 outlines the methodology, including system evaluation, process design, implementation, and results. Section 4 concludes the study, discussing limitations and future research directions.

2. Theoretical Foundation

Enterprise Resource Planning (ERP) is an integrated system designed to manage and automate various business processes within an organization. Several previous studies have examined the implementation of ERP to enhance operational efficiency, data accuracy, and data-driven decision making [1].

In the study conducted by M. Teja Sri, Nunna Suresh, and T. Varalakshmi (2024) [2], the authors examine ERP system integration as a means to optimize business processes, focusing on three key aspects: adoption factors (license costs, management support, technical readiness), the impact of user training, and workflow alignment strategies. The results of a systematic literature review and empirical survey indicate that the primary obstacles lie in the high costs of implementation and training, as well as a lack of top management commitment. However, organizations that conducted intensive training were able to double the effectiveness of ERP module usage. Furthermore, configuration adjustments and inter-module integration were shown to reduce the average business process cycle time by 30%. Based on descriptive and inferential statistical analyses, the study confirms that all three factors adoption readiness, training intensity, and process alignment significantly influence ERP implementation success ($p < 0.05$). Unlike previous studies that employed purposive sampling, this research applied total sampling among respondents within the target organization, allowing for more comprehensive data coverage. Thus, the study recommends that organizations adopt a holistic budgeting approach including training and infrastructure maintenance costs engage key users early in the process, and implement ERP systems in a modular manner to maximize efficiency and system adoption.

In the study conducted by Santuso and Aditya (2022) [3], the authors investigated how the implementation of the Odoo ERP system could address business process issues that were still being handled manually at CV. Mitra Perkasa, particularly in the areas of sales, purchasing, and accounting. The research applied a *Value Chain Analysis* approach to examine the business processes, and used the *Conference Room Pilot* (CRP) method to validate the developed system. The findings indicate that the configured Odoo ERP system was able to replace most of the manual processes previously managed using Excel, significantly reducing data duplication and input errors. After testing the system through predefined business scenarios, it was deemed to align well with the company's operational needs and was accepted by the management of CV.

Mitra Perkasa. The ERP implementation was also customized based on user requests, such as adding product categories and images, as well as grouping services for installation cost estimation. Unlike previous studies that employed surveys and statistical testing to assess user satisfaction, this research utilized a single case study approach and CRP as the system validation method.

Tsai et al. (2010) [4] analyzed the impact of Business Process Reengineering (BPR) on ERP implementation across 242 large companies in Taiwan. The study found that aligning ERP systems with business processes significantly improved user satisfaction ($p = 0.044$) and organizational impact ($p = 0.095$). Companies without misalignment showed notable gains in information quality and user satisfaction ($p = 0.017$ and $p = 0.003$). Additionally, incorporating BPR during implementation led to improved information quality ($p = 0.023$) and individual performance ($p = 0.000$), while a higher degree of BPR correlated with greater organizational impact ($p = 0.045$) and overall ERP success ($p = 0.036$). The study concludes that successful ERP adoption requires not only the right system but also well-aligned processes and strategic BPR efforts.

3. Methodology

3.1 Prototype Development Method

This research adopts a Research and Development (R&D) approach using the prototyping method to design and test an Odoo-based ERP system. Prototyping allows for iterative development with direct user feedback, ensuring the system meets functional and non-functional requirements.

The methodology includes:

1. Problem Identification. Define key issues in current business processes, assess their impact, and set objectives for the new system.
2. Data Collection. Obtain a comprehensive understanding by gathering information and evidence through interview, observations and documentation reviews, to understand requirements and existing inefficiencies.
3. Data Analysis. Analyse collected data to identify system gaps and specify functional and non-functional requirements.
4. Prototype Testing and Feedback. Test the prototype with users to evaluate usability and performance, collecting feedback through usability tests, interviews, and surveys.
5. Final Implementation and Evaluation. Deploy the refined system, provide user training, and evaluate performance based on initial objectives to measure its impact and identify areas for improvement.

3.2 Problem Identification

The company faces significant challenges in information management due to a manual, non-integrated system, affecting the efficiency of order processing, inventory control, and interdepartmental coordination. As shown in Figure 1, currently, the ordering process starts with the sales team offering products to customers, who place orders via WhatsApp. These orders are then manually recorded by the admin into an Excel spreadsheet before being processed in Sage 50 for invoice generation. This recording takes 5 to 40 minutes, with an additional 5 to 10 minutes required for processing and printing invoices. Any order errors or stock shortages can cause further delays. Once the invoice is confirmed, goods are loaded onto trucks within 10 to 20 minutes and delivered to customers, with delivery times ranging from 2 to 6 hours.

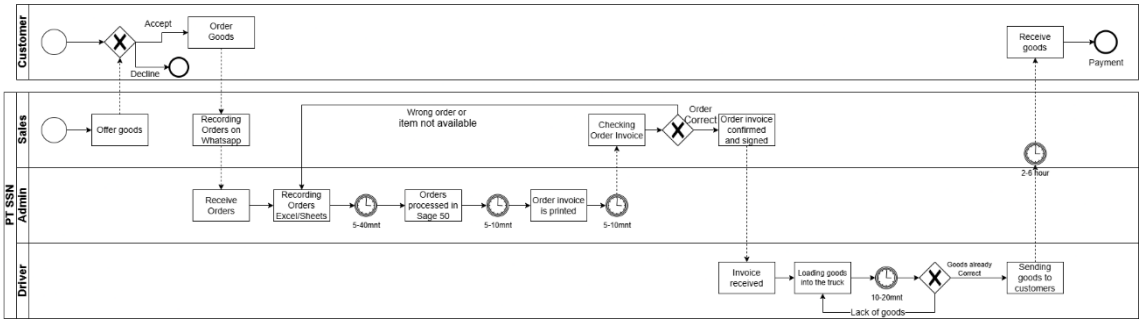


Figure 1. Sales business process

Additionally in Figure 2, the company faces challenges in inventory management due to irregular stock checks and the absence of a dedicated inventory management division. This often results in discrepancies between actual stock and system records, posing a financial risk and disrupting deliveries if ordered products are unavailable. The lack of integration between procurement, order recording, and inventory management also limits Sales' access to accurate stock information, preventing them from ensuring product availability before offering it to customers. The following Business Process Diagram illustrates the current process:

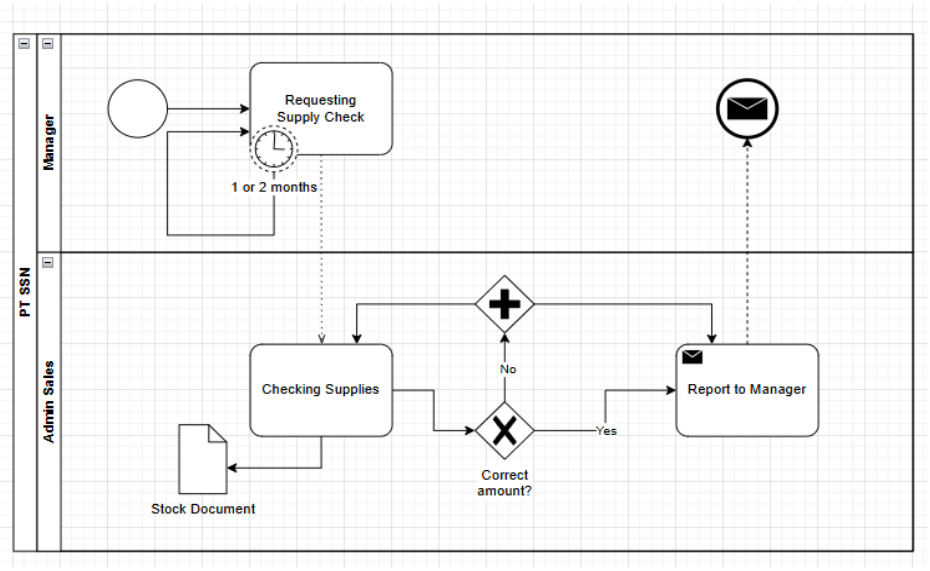


Figure 2. Inventory checking process flow

After the implementation of Odoo, the impact on the company's operations can be observed across several key areas [5]:

1. Increased Order Processing Efficiency. Previously delayed by WhatsApp and Excel, order processing is now automated through Odoo, significantly speeding up customer service.
2. Reduction in Data Entry Errors. Odoo minimizes human error by recording orders in real time, eliminating the frequent mistakes seen in the manual entry of item details.
3. Optimized Inventory Management. Real-time stock tracking in Odoo reduces mismatches and ensures more accurate inventory, unlike the old system which caused delivery issues.
4. Improved Interdepartmental Integration. By connecting sales, warehouse, and procurement in one system, Odoo eliminates miscommunication and provides transparent access to key order information.
5. Data-Driven Decision Making. Odoo's automated reporting and dashboards replace unreliable manual reports, enabling faster, more informed management decisions.

The core issue affecting the company's operational performance lies in its inefficient order processing and inventory management, largely stemming from a reliance on manual, fragmented systems. These inefficiencies result in processing delays, frequent data inaccuracies, and reduced overall productivity. Figure 3 categorizes the root causes of these problems into five key dimensions: environment, material, human, method, and machine.

From the environmental perspective, excessive workloads on administrative staff and a poorly structured warehouse layout hinder effective order fulfillment and inventory control. In the material domain, the sales team's lack of access to real-time stock data, combined with frequent stock misplacements and the absence of automated inventory reports, leads to unreliable data and disrupted order handling. Human factors such as manual entry errors, frequent invoice revisions, and insufficient staff training further contribute to operational inconsistencies. Methodological weaknesses include the use of non-standardized, multi-step recording procedures that vary across departments. Finally, technological limitations, particularly the absence of an integrated, automated system with real-time monitoring, significantly increase the risk of errors and processing delays.

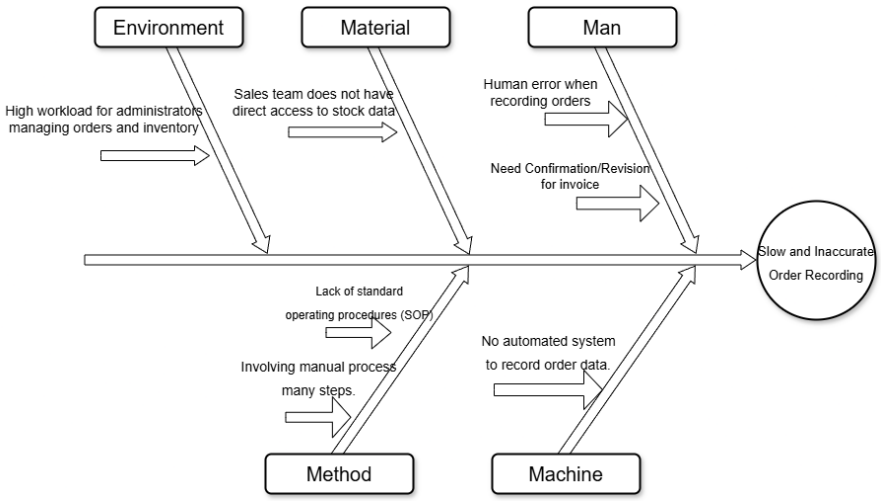
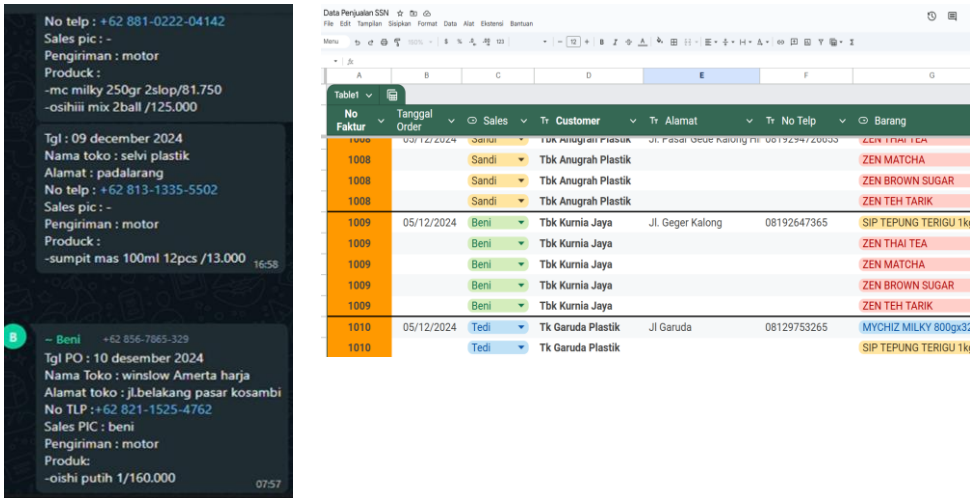


Figure 3. Fishbone Diagram

These interconnected issues highlight the urgent need for digital transformation in order management and inventory control. Implementing an integrated and automated system would enable real-time synchronization between sales and inventory functions, thereby improving process accuracy and speed. Specifically, the recommended solutions include deploying an automated stock monitoring system, establishing standardized procedures for inventory checks, and providing regular training for warehouse staff. These interventions are critical not only to reduce human error and operational delays but also to enhance overall organizational efficiency and decision-making accuracy through reliable, real-time data access [6][7][8].

3.3 Data Collection



(a) (b)

Figure 4. Sales data process flow (a) Order received via chat platform. (b) Process contined with manually recorded in spread sheet.

Data collection in this study was carried out to obtain accurate and relevant information regarding the implementation of the Odoo-based Enterprise Resource Planning (ERP) system in order and inventory management. The data collection involved methods such as direct observation of business processes and data gathering. Historical data from the previous system, which relied on Excel and Sage 50, was analyzed to compare efficiency

before and after ERP implementation. Through this approach, the study aims to evaluate the extent to which the developed system can address operational issues, improve work efficiency, and reduce errors in order recording and inventory management [9].

The absence of systematic stock audits and real-time synchronization between physical inventory and system data leads to errors that could disrupt operations and can cause financial losses. As seen on Figure 5, multiple item have differences in real stocks and recorded stocks. This highlights the urgent need for implementing standardized operating procedures (SOPs) and a digital inventory management system to improve accuracy, accountability, and efficiency.

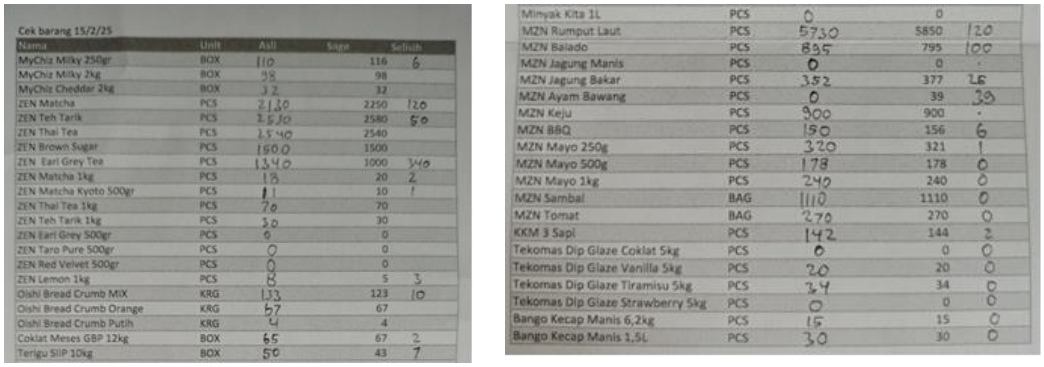


Figure 5. Discrepancy in item quantity with the system

The absence of systematic stock audits and real-time synchronization between physical inventory and system data leads to errors that could disrupt operations and can cause financial losses. As seen on Figure 5, multiple item have differences in real stocks and recorded stocks. This highlights the urgent need for implementing standardized operating procedures (SOPs) and a digital inventory management system to improve accuracy, accountability, and efficiency.

3.4 Data Analysis

The initial gap analysis at SSN, as illustrated in Table 1, highlighted several inefficiencies in the company's core business operations, particularly within sales processing and inventory management. The manual approach to order entry, conducted through WhatsApp and Excel, led to prolonged processing times, frequent data entry errors, and the absence of real-time visibility. Additionally, discrepancies between recorded and actual stock levels, coupled with a lack of automated workflows, caused delays in order fulfillment and disrupted coordination between departments. These operational pain points underscored the urgent need for a centralized and automated system to improve speed, accuracy, and interdepartmental collaboration. A gap analysis typically involves identifying the current state of business operations and comparing it with the desired future state that the organization aims to achieve [10].

Table 1. GAP Analysis

No	Current State	Desired Condition	GAP
1	Manual order recording through WhatsApp and Excel takes 15–40 minutes with a data error rate of up to 12%.	Orders are recorded directly into the ERP system, reducing processing time by 50% and minimizing data errors.	• No system integration. • Manual processes cause duplication and errors.
2	Manual inventory management without integration with sales data results in discrepancies of up to 40% between physical and system stock.	The system monitors inventory in real time, provides alerts when stock is low, and ensures stock data reflects actual conditions. Stock accuracy improves to 100%.	• No automatic stock updates. • Risk of overstock/stockout.

No	Current State	Desired Condition	GAP
3	Order processing takes a long time due to reliance on multiple manual stages, such as re-recording, order verification, and warehouse stock checking.	Order processing becomes automated through an integrated system, making the process faster and more efficient.	• Reliance on repetitive manual steps. • No digital workflow.

To address the operational gaps identified, SSN implemented two primary ERP modules within the Odoo platform: Sales and Inventory. These modules were prioritized due to their direct impact on daily operations and their ability to resolve issues highlighted in the gap analysis.

The Sales Module replaced manual processes with a streamlined digital workflow, enabling real-time order entry, automated validation, and faster processing. This significantly reduced handling time and minimized human error, while its intuitive interface improved user adoption.

In parallel, the Inventory Module enabled real-time stock tracking across multiple warehouses, eliminating discrepancies and improving order fulfillment. Features like low-stock alerts, auto-replenishment, and integration with the Sales Module ensured better stock accuracy and prevented overselling.

To enhance system capabilities, SSN also integrated Accounting and Purchase Modules as secondary tools. The Accounting Module automated bookkeeping and invoicing, improving accuracy and financial reporting. Meanwhile, the Purchase Module ensured timely restocking by linking procurement with live inventory data, helping to prevent stockouts and streamline the supply chain.

Table 2. Primary and Secondary Features

Priority	Module	Functions	Contribution	Key Features
Primary	Sales	Manages Sales Cycle	Reduce order time	Real-time data
			Replace Manual Process	Auto Validation
				Intuitive interface
	Inventory	Monitors stock in real-time	Reduces stock discrepancies	Multi-warehouse stock tracking
		Manages goods movement		Auto-replenishment when stock reaches minimum levels
		Provides low-stock alerts		Integration with the Sales Module
Secondary	Accounting Module	Automates bookkeeping	Minimizes manual errors in financial records	Connected to the Sales Module for automatic invoice
		Financial reporting		
	Purchase Module	Integrating procurement with inventory ensures stock availability	Minimizes stockout risk	Automatic Order Alerts

4. Implementation and Evaluation

This section discuss digital transformation initiative by implementation of Sales and Inventory modules of the Odoo ERP system to streamline order processing, stock management,

and interdepartmental coordination, followed by a comprehensive User Acceptance Test (UAT) to evaluate system effectiveness and user satisfaction.

4.1 Sales Order Form

The Sales Order Module serves as the core of the system, acting as a central hub where all customer data and order details are stored and seamlessly integrated with other modules. As illustrated in Figure 6, each customer placing an order has a dedicated profile containing essential details such as name, phone number, and address. With a user-friendly interface, this module ensures ease of use for the Sales team, featuring well-organized columns that clearly present key order information. Moreover, it is fully synchronized with the Inventory Module and Contact Module, enabling real-time data updates. This integration ensures a smooth and efficient order management process, reducing errors and enhancing overall operational efficiency

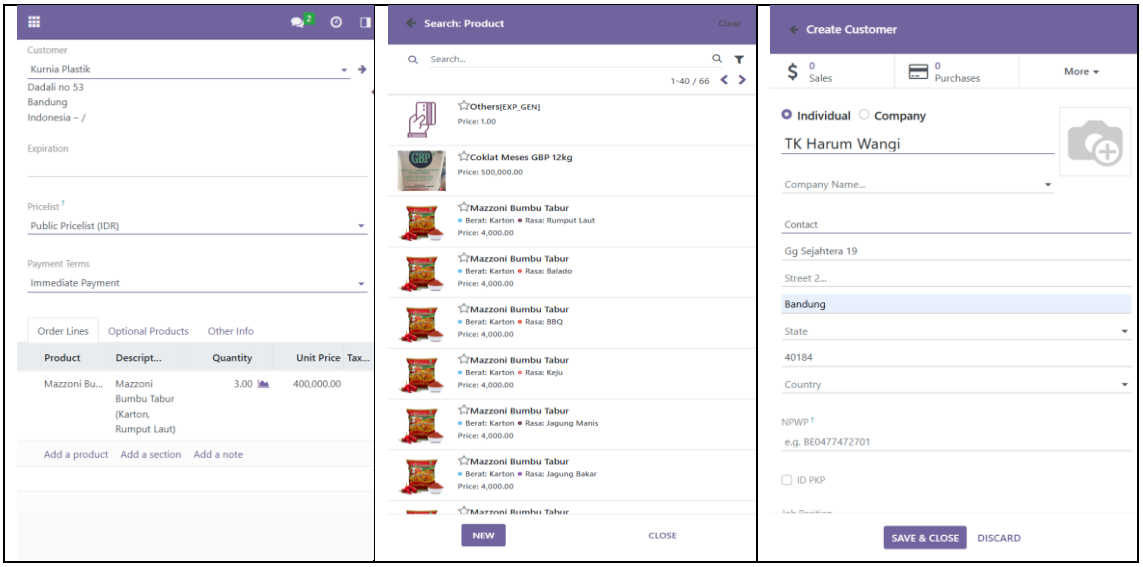


Figure 6. Sales order (a) Sales Order Form (b) Customer pick items (c) Create new Customers

An additional feature in this module is the Customer Section, which allows users to effortlessly add new customers by entering key details such as name, contact person, address, NPWP (Tax ID), phone number, email, profile photo, and payment terms. This functionality streamlines the customer registration process, making it more convenient and efficient for the Sales team to manage new client entries

Another key feature of this module is the Product Section, which enables the Sales team to efficiently select and manage ordered products. This section provides an intuitive interface that displays available products, allowing Sales to quickly browse, filter, and select items based on customer preferences. By integrating real-time invent ory data, this feature helps prevent order discrepancies and ensures that only in-stock items are offered, streamlining the sales process and improving order accuracy.

4.2 Inventory Module

The Inventory Module plays a crucial role in managing stock levels and ensuring seamless product availability within the company. Through this module Odoo provides a comprehensive overview of inventory status and product asset values, serving as the foundation for reconciling physical stock with recorded system data. This process enhances inventory accuracy, ensures transparency in stock management, and enables organization to optimize its inventory control more efficiently [11][12].

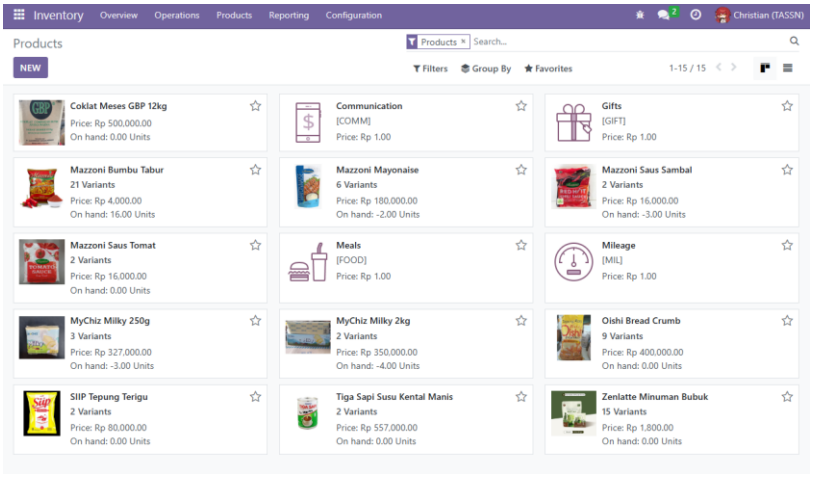


Figure 7. Inventory products module

As shown in Figure 7, the inventory module provides a detailed overview of available stock, recent stock movements, and low-stock alerts, allowing the company to proactively manage inventory and prevent shortages or overstocking. This module serves as the foundation for efficient warehouse operations, ensuring that products are always ready to be processed for sales and distribution.

4.3 Evaluation

During the User Acceptance Test (UAT), users reported high satisfaction with the system's usability and performance. Performance Expectancy (PE) and Effort Expectancy (EE) both received high scores, with 100% of respondents agreeing that the system is easy to use and significantly accelerates their daily tasks. Moreover, Behavioral Intention (BI) was rated a perfect 5 out of 5, reflecting a strong willingness among users to continue using the Odoo system. These results indicate that the system not only meets functional expectations but also encourages sustained adoption across departments.

Table 3. Test User Acceptance

Question	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Total Weighted Score	Final Score (%)
Performance Expectancy (Average 100%)							
PE 1	0	0	0	0	10	50	100%
PE 2	0	0	0	0	10	50	100%
PE 3	0	0	0	0	10	50	100%
Effor Expectancy (Average 100%)							
EE 1	0	0	0	0	10	50	100%
EE 2	0	0	0	0	10	50	100%
EE 3	0	0	0	0	10	50	100%
Behavior Intention (Average 100%)							
BI 1	0	0	0	0	10	50	100%
BI 2	0	0	0	0	10	50	100%
BI 3	0	0	0	0	10	50	100%

The implementation of Odoo has brought significant improvements to operational efficiency, particularly in order processing. Previously, the manual system required 15 to 40 minutes per order, often involving WhatsApp and Excel, which was time-consuming and prone to delays. With the automation provided by Odoo, order processing time has been reduced to just 5 to 10 minutes, a 72% improvement. This drastic reduction enhances not only internal workflow but also improves customer satisfaction through quicker service delivery.

In terms of inventory management, the accuracy has also improved substantially. As shown in Tabel 4, before Odoo implementation, there were stock discrepancies as high as 41%, leading to fulfilment errors and customer dissatisfaction. After implementation, this figure dropped

to just 10%, marking a 76% reduction. Real-time stock tracking and automated inventory updates have allowed the company to better align its system stock with actual inventory, resulting in more reliable operations and fewer delays. Furthermore, Odoo has greatly enhanced synchronization across departments. Previously, there was no automated integration between sales, warehouse, and procurement, causing frequent miscommunication. With Odoo in place, synchronization accuracy now stands at 85%, creating a more cohesive and transparent system. This improved connectivity ensures that all departments work from the same data, reducing misunderstandings and improving overall coordination.

Table 4. Evaluation metric performance

Evaluation Metric	Implementation		Improvement
	Before	After	
Order Processing Time	15-40 minutes	5-10 minutes	72%
Stock Discrepancy	41%	10%	76%
Synchronization Accuracy	Not Automize	85%	85%

Overall, the data reflects a clear transformation brought by Odoo, from reducing processing time and stock errors to enabling accurate, synchronized operations that support better decision-making and scalable growth. [13]

4.3 Discussion

The results of the Odoo ERP implementation at SSN demonstrate substantial gains in operational performance that closely mirror findings from prior studies. Order processing time fell by 72%, and 30% cycle-time decrease has been achieved. Likewise, the dramatic drop in order-entry errors (from 12% to 3%) and inventory discrepancies (from 41% to 10%) confirms the error-minimizing benefits of real-time data synchronization [14] [15] [4].

By focusing on the Sales and Inventory modules within a distribution context, this study extends the existing ERP literature much of which centers on manufacturing or service industry into a sector where manual workflows still predominate. The prototyping approach, coupled with modular deployment, ensured early user involvement and iterative feedback, reinforcing the critical role of Business Process Reengineering (BPR) in aligning ERP features with actual business needs, as theorized by Tsai et al. [4]. These findings validate the recommendations of Sri et al. [14] to budget holistically for training and infrastructure, and to engage key users from the outset.

Nonetheless, this research is subject to certain limitations. Its single-case design and concentration on only two modules may constrain generalizability to other functions or industries. The evaluation was also relatively short-term; long-run system stability and user adaptation remain to be assessed.

Future studies should:

1. Expand the scope to include additional Odoo modules (e.g., Procurement, Accounting, CRM) to gauge cross-functional impacts.
2. Employ longitudinal designs to track sustainability of efficiency gains and user satisfaction over 12–24 months.
3. Conduct multi-site comparisons across different distribution models or geographic markets to strengthen external validity.

By addressing these avenues, subsequent research can further substantiate the modular, user-centered approach to ERP implementation championed in this study.

5. Conclusion

Based on the research findings, the implementation of the Odoo-based ERP system has proven effective in transforming SSN's operations from manual processes to a fully digitalized workflow. A 72% reduction in order processing time, a 75% decrease in data entry errors, and a 76% drop in stock discrepancies serve as clear evidence of the successful integration of the Sales and Inventory modules. Moreover, the system fosters interdepartmental collaboration through real-time data synchronization and provides a solid foundation for data-driven decision-making.

Recommendations for SSN:

- Module Expansion: Implement the Purchase module to automate procurement processes and the CRM module to improve customer retention.
- Regular Training: Conduct monthly workshops to ensure employees stay up to date with the latest Odoo features.
- E-commerce Integration: Connect Odoo with platforms such as Shopee/Tokopedia to centrally manage online orders.

Research Limitations: This study focuses solely on the Sales and Inventory modules, leaving the impact of ERP on financial and HR functions unexplored. Additionally, a long-term evaluation (>12 months) is necessary to assess the system's sustainability.

Thus, this research not only serves as a reference for similar distribution companies but also opens up opportunities for developing a more holistic ERP system in the future.

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