Implementation Of Erp-Based Open-Source Odoo For Chicken Farm Warehouse Management System Using The Quickstart Method (Studi Case: Cv. Cindil Laras)

1st Adam Yusuf Kartodiwiryo
School of Industrial and System Engineering
Telkom University
Bandung, Indonesia
workingadamysf@gmail.com

2nd Avon Budiono
School of Industrial and System Engineering
Telkom University
Bandung, Indonesia
avonbudi@telkomuniversity.ac.id

3rd Warih Puspitasari
School of Industrial and System Engineering
Telkom University Bandung, Indonesia
warihpuspitasari@telkomuniversity.ac.

CV. Cindil Laras is a company that engaged in parent stock chicken farming that supports the demand of parent stock chicken meat in it's vicinity. However the growing demand of chicken meat that directly proportional to the growth of local population make CV. Cindil Laras suffers from mismanagement of maintaining the warehouse and monitoring company data because the lack of a system that support it's business process and also the use of conventional way on recording data result in the stagnant of the company growth. Odoo is an open-source business management software suite that provides a range of applications to help organizations manage various aspects of their operations. It's known for its modular approach, allowing businesses to select and customize the specific applications that meet their needs. QuickStart is a three-stage application development methodology that is appropriate for use in MSMEs. Existing business processes on CV will be able to be integrated by the system created. In order to support the warehouse management process and the company's growth, Cindil Laras may effectively assist in monitoring business data pertaining to the goods and products inside the warehouse as well as in managing the warehouse.

Keywords— enterprise resource planning (erp), warehouse, msmes, poultry, quickstart, odoo

I. INTRODUCTION

Having an advanced economy and sufficient food needs of the people are often the benchmarks for a prosperous nation. Indonesia is still far from prosperous when using this benchmark. However, it is not impossible for Indonesia to become a prosperous nation by measuring the economy and food needs. This can be achieved with the independence and will of the Indonesian people. It is very important for the independence of a country to produce its own crops, especially since Indonesia has abundant local livestock*id* biodiversity such as Bali cattle, Madura cattle, arrowroot sheep, kacang goat, native chickens and ducks (Usman, Ali, 2016). The productivity of a nation is determined by the community's ability to process and manage the available potential resources.

The poultry sector has an important role in creating a prosperous nation in the field of economy and food security. Food needs can be fulfilled with animal sources or livestock products. In addition, the increase in population from year to year will cause the increase in consumption of animal protein foodstuffs, including chicken. From 2012 to 2016, the number of broilers in the country's livestock grew. This circumstance demonstrates that broiler farming offers chances and development potential. In East Java, domestic meat chicken production increased significantly between 2012 and 2016, rising from 5,685 tons to 36,782 tons (Bappenas, 2016).

The economic sector is primarily reliant on developments in the age of globalization as a gauge of government success. Micro, Small, and Medium-Sized Enterprises (MSMEs) play a crucial role in the growth of a nation, particularly in terms of its economy. In the national economy, MSMEs play a significant and strategic role. This condition is very possible because the existence of MSMEs is quite dominant in the Indonesian economy. (Sudati N, Hanung E, Dian M, 2019)

CV. Cindil Laras is an MSME sized chicken collector company that engaged in poultry industry especially in parent stock chicken (PS) meat production that are targeted for human consumption, the company sells their product to local residents and traditional markets around their farm in Batununggal, Bandung. CV. Cindil Laras has a few thousand ready to sell chicken meat and eggs that will be sold around the vicinity of Bandung especially in traditional market, it is primarily a supplier of live parent stock chickens (PS), approximately 4kg - 5kg in size. This chicken is usually for purposes such as soup, opor, tek-tek noodles, chicken noodles, porridge, etc. It also provides service such as cutting the live chicken on the spot. The sales of chicken per month in CV. Cindil Laras reach between 1000 and 1700 chickens per month As of November 2022 the chicken production has reach 1500 chicken or approximately 7000 kg.

The implementation of ERP system in CV. Cindil Laras is imperative for the problem that CV. Cindil Laras has such as lack of chicken, lack of poultry feed and husk in the warehouse that happened because of no communication and no way to inform from the warehouse division to the procurement divison due to the absence of an integrated system that records the amount of stock inside the warehouse, and the difficulty of

recording distribution and sales because the lack of systematic data recording in the warehouse which resulted in these problems.

CV. Cindil Laras does not have an integrated in its business process since its inception, the business process suffers from a data silo where each branch of the company can't interact with each other seamlessly and each branch need to resolve its report before being sent to the headquarter to be consolidated with other reports. This makes then process suffers from lack of real-time data that might help prevent the problems that may appear in the warehouse or when the chicken is outbound on the delivery to the customer or other branches.

Because of the current scale of business that the CV. Cindil Laras is in, with the yearly revenue of 5.000.000.000 (five billion) Indonesian Rupiah (IDR) it is still in the range of Micro, Small and Medium Enterprises (MSME), the most appropriate ERP system to use is an Open-Source ERP that does not cost a lot to implement and scales with the growth of the company. Therefore, this research decided to use Odoo ERP web version 16.3 to be used as the ERP Application System to assist the recording of data and also add the integration of data to ease the process of warehouse management of stocks. The implementation of the system will use the Quickstart method that pairs well with Odoo implementation, the researcher will conduct of research with the title of "Implementation Of ERP-Based Open-Source Odoo For Chicken Farm Warehouse Management System Using The Quickstart Method (Case Study: Cv.Cindil Laras)".

II. THEORETICAL STUDIES

A. ERP (Enterprise Resource Planning)

ERP (Enterprise Resource Planning) is a system that automates and integration of the main business processes that exist in the company. ERP can minimize problems and functional barriers that are still traditional within the organization by sharing / sharing data, information flow, and introduce common business practices among users in the organization [1]

The systems of ERP ties together many parts of business process to enable flow of data. The system also collects the shared organization transactional data from multiple sources to eliminate the duplication of data while also providing integrity within the data. It is a critical part in today's business for ERP systems to manage multitude of business ranging from small local business to multinational company. The ERP system enables businesses to adapt with growth of the company and also respond to market changes. SAP, Oracle, Microsoft, Sage Systems, and other industry leaders in creating and implementing ERP systems include these.

These suppliers charge their clients a hefty price for a comprehensive ERP solution. They possess a proprietary ERP software program, which they may alter to meet the needs of the client. Due to this strategy, small- to mediumsized businesses found it challenging to make an ERP system investment. This resulted in the development of open sourcebased ERP systems, which are less expensive than proprietary ERP systems and permit compatibility with other platforms, tools, plugins, and other resources. [2]

B. Odoo

One of the most important enterprise resource planning platforms right now is Odoo. Odoo was founded in 2005 and has had great growth since then. It is now a market leader for small to large businesses. Odoo includes all the benefits of open-source ERP systems, including affordability, adaptability, complete ownership, quality assurance, and simplicity of upgrade. It that has very complete features ranging from CRM, Sales, Purchase, Accounting, Inventory, Project Management, Events, Payroll, Website, e-Commerce and etc. [3]

Regardless of the size of the firm, open-source ERPs are currently popular. This is mostly because to the increased adoption success rate it has seen in recent years and the additional benefits customers would experience when compared to commercial ERP systems.

C. Warehouse Module

One of the modules owned by the Odoo program is the warehousing module. Due to the usage of the double-entry approach, the warehousing module in Odoo is simple and adaptable, and warehousing management has full capabilities. Odoo's warehousing system ensures that nothing is forgotten, lost, or utilized because it explicitly outlines all stock transfers and change orders. Odoo can handle the demands of the business very easily by tracking stock from suppliers and customers, where all data can be traced from batch number, date expiration date, and serial number. This is done by using the concept of double-entry on Inventory management system. Features for managing multiple users are offered by the Odoo app. storage space overall, storage space for internal businesses, storage space from other parties, customers, and manufacturing-related warehouses. Regarding the tasks that the Odoo warehousing module is capable of performing. [5]

D. Quickstart Method

One of the ways frequently utilized in the implementation of Odoo is the quickstart approach. The Odoo team and many cloud platform partners provide the quickstart technique. Small and medium-sized businesses can use the quickstart method to standardize business operations. There are four steps in its implementation, namely Kick-Off, Analysis, Configuration, Production. [6]

E. Blackbox Testing

Black box testing is a crucial and more focused testing method for software that is functioning and has no plans for further implementation. This test focuses more on running tests that cover every feature of the application and seeks to ascertain whether or not the application satisfies the previously stated requirements from the user. Additionally, black box testing is a straightforward and thorough method of software testing. [7]

F. User Acceptance Testing (UAT)

Software is validated by the intended audience through user acceptance testing (UAT), which takes place in a real environment. Unit testing, functional testing, integration testing, and system testing are all layers of testing that are part of the software development process. The application's suitability to the client's demands is not tested until after the client uses it, though. User Acceptance Testing is what is used to describe this (UAT). The target audience tests the software in a real environment during UAT. To ensure that as little as possible is misunderstanding between the customer's declaration of demand and what is actually developed, use the program itself as a communication and discussion tool. Under the guiding premise of "customer cooperation over contract negotiation," Agile offers analogous insights. [8]

III. METHOD

A. Conceptual Method

The conceptual model is a well-organized, systematic illustration of how a system functions. This conceptual model seeks to comprehend the terminologies and ideas that users employ to address issues. [9]

In this research, Hevner's conceptual method will be used since it's approach for information systems research enables the development and evaluation of theory and artifacts to address practical business challenges. Hevner's conceptual methodology adopts the framework of thinking of IS Research that this study uses to map the organizational environment that will serve as the research object as well as the theories employed.

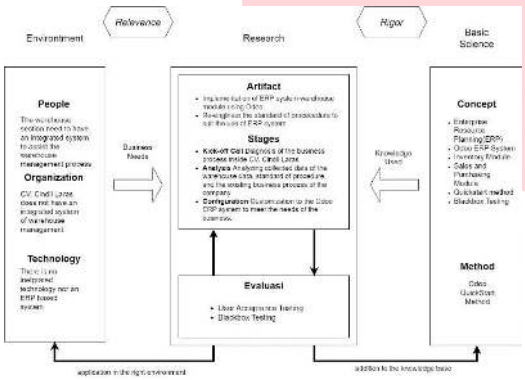

Figure 1
Conceptual Method

The lack of a system of warehouse management that assist the management of stocks and goods inside the warehouse, there is also no technology nor an ERP based system inside the company. CV, Cindil Laras also suffers from the absence of integration between it's divison especially the important part between sales, purchase and the warehouse division. A diagnosis of the business process is needed to ensure a correct assessment to meet the needs of the company. To provide a solution to this problem, an integrated ERP system using Odoo web version 16.3 and to analyze and configure the designed system, the Quickstart method will be used to ensure a systematic configuration of the implementation of the integrated system for the warehouse management in CV. Cindil Laras.

B. Systematic Problem Solving

The steps taken in this study's execution are outlined in a methodical problem-solving approach. On implementing Odoo, this research will use the QuickStart method. Because of the QuickStart method's straightforward procedures that are effective, efficient, and not overly complicated, it was picked. QuickStart Method facilitates implementation in less time with a straightforward stage. The Odoo team's QuickStart method, which was created to streamline existing work on Odoo, makes it simple for analysts or consultants to adopt Odoo.

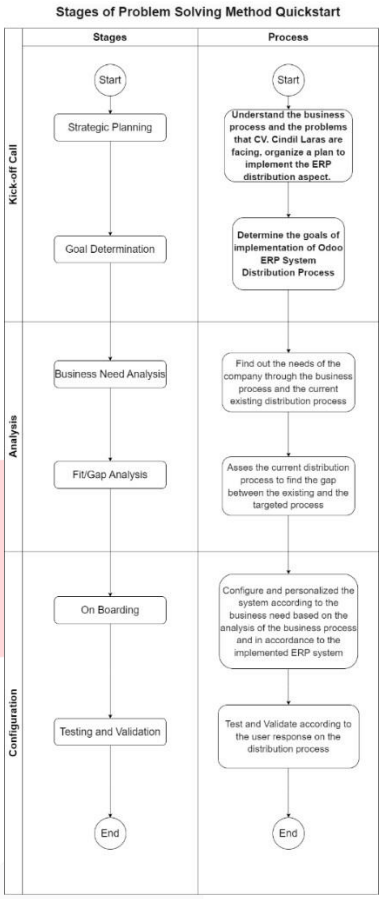

Figure 2
Stages of Problem Solving

IV. RESULT AND DISCUSSION

A. Kick-Off Call Stage

A needs analysis pertinent to the research on management system design ERP-based warehouse management will be conducted at the kick-off call stage. Understanding of the study is also done at this point. The design of an ERP-based using Odoo Web Version warehouse management system to support the business process of CV. Cindil Laras. This phase is the initial step on achieving the purpose of the study. The two phases of the kick-off call stage are strategic planning and goal determination.

1. Project Team

In this research each of the corresponding members of the team handles one part of the business process and will work on their task individually to create the implemented system. Below are the names and their corresponding tasks.

No	Name	Task
1	Adam Yusuf Kartodiwiryo	Implement inventory and sales module at Odoo for warehouse management in CV. Cindil Laras.
2	Edward Yuliano	Implement procurement and sales module at Odoo for sales and procurement management in CV. Cindil Laras.
3	Muhammad Afif	Implement accounting module at Odoo for accounting and treasury management in CV. Cindil Laras.

B. Analysis Stage

In this stage a study of the business processes and needs of the warehouse division is conducted before the implemention of the warehouse management system.

1. Business Needs Analysis

In this phase an investigation of the CV. Cindil Laras existing business processes was conducted so that researchers could choose the targeted business process based on their needs. A study was also conducted to identify the design of the system that would be created. 2. Business Process Level Zero

Figure 3
Business Process Level Zero

a. Chicken Purchase

In this stage, the chicken purchase stage has an activity of creating purchase order to purchase goods from the vendor.

b. Chicken Collection

In this stage, the chicken collection stage has an activity of maintaining the goods bought into the warehouse, manage the warehouse, manage the equipment and chicken rearing needs.

c. Sales of living chicken or chicken meat In this stage, the sales of parent stock chicken has an activity of preparing the sales of chicken, creation of sales order, and the act of selling the product.

3. Business Process Existing

As shown on the business process figure below, The warehouse division create the inventory record for the warehouse stock count, after that the warehouse staff check the chicken stock availability and then count the chicken physically, after that the warehouse staff checks the inventory record to validate if the chicken stock match the count on the inventory record, if it is correct then the warehouse division send the record physically to other division and if the record is incorrect, the warehouse division inform other division that there is an error on the record and began creating a new inventory record again.

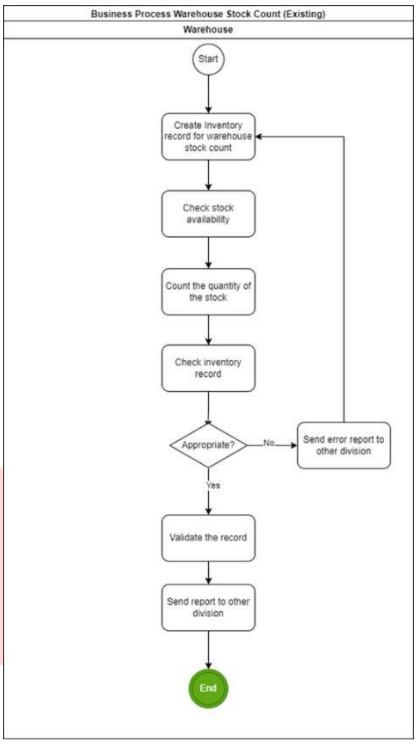

Figure 4
Business Process Stock Count (Existing)

As shown on the business process figure above, The vendor first send the goods and invoice to the warehouse and they receive both the goods and the invoice for the goods, after that the warehouse check the amount of goods and record the new product alongside it's price and then the warehouse will generate the product record that will be informed to all the other division, if the record has an error then the warehouse division will correct the record and check it alongside the newly arrived goods.

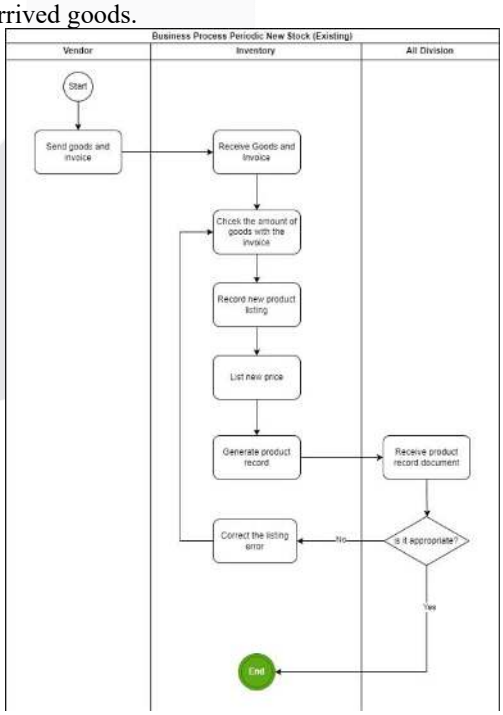

Figure 5
Business Process Periodic New Stock (Existing)

4. Business Process Targeting

As shown on the business process figure below, The warehouse division create the inventory record in the system for the warehouse stock count, after that the warehouse staff check the chicken stock availability and then count the chicken

physically, after that the warehouse staff checks the inventory record in the system to validate if the chicken stock match the count on the inventory record, the record will generate automatically and integrated with other division to be informed about the stock inside the chicken coop.

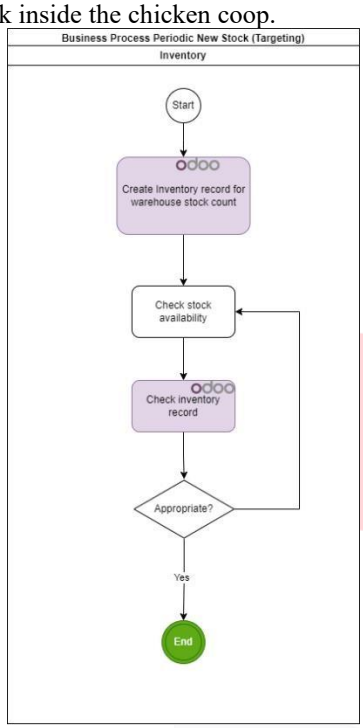

Figure 6 Business Process Chicken Stock Count (Targeting)

As shown on the business process figure below, The vendor first send the goods and invoice to the warehouse and they receive both the goods and the invoice for the goods and it will be recorded in the system, after that the warehouse check the amount of goods and record the new product alongside it's price, the record will then automatically generated in the form of product master data that integrated with other division, if the record has an error then the warehouse division will correct the record and check it alongside the newly arrived goods and update the newly corrected data.

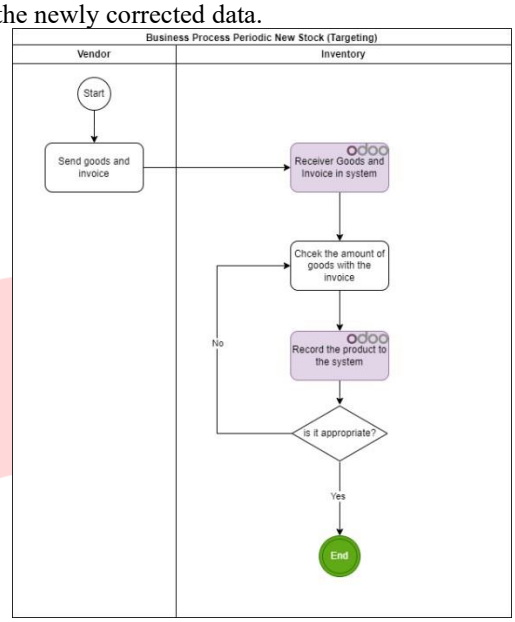

Figure 7
Business Process Chicken Stock Count (Targeting)

Process	Existing	Targeting
Chicken Stock Count	Chicken coop inside the warehouse do not have any monitoring and recording system to count the precise number of the poultry in stock	Poultry inside the warehouse can be recorded in the system. The storage location of chicken in the warehouse will be recorded in the system according to its respective locations. This location arrangement will be useful for sales and purchase.
	which subsequently sends material request paperwork to the purchasing department.	the amount of stock in the warehouse reaches the minimum threshold.
Sales Order	Need of a system to check the availability of a product that are about to be sold from warehouse division to sales division while also renews the stock inside the warehouse	The sales process can continue with the help of the odoo system when processing a transaction to integrate the changes in stock while simultaneously generate a sales order and purchase order to renew stock.
Receiving Goods	By comparing the incoming materials with the actual purchase documentation, the inventory department can directly verify the receipt of materials.	On a system that directly refers to purchase orders recorded in the system, the procedure for obtaining supplies can be confirmed and approved.

Periodic New Stock	Newly arrived goods are recorded by the warehouse division to be listed in the record that will be updated every time there is a change in the product details and catalogue while also inform other division about the changes.	The warehouse integrated management system can inform the changes made in orderly manner to other division. The goods have separate storage locations and can be automatically recorded into the system during the process of receiving, the product category and putaway rules can differentiate different goods on where to store it, what it classifies as and what type of goods it is.
Demand for Goods	The traditional method of handling material requests still applies, involving the use of physical papers made by the production department and sent to the inventory department,	The inventory and purchasing divisions are all integrated with one another, making it possible to request materials through the system. The system can quickly make a purchase once

2. Location Configuration

In this stage, the location will be created in Odoo inside the inventory module to signify the location of the warehouse in CV. Cindil Laras inside the odoo that will act as the location of the warehouse to store the goods that will be used and sold, as shown on the figure below.

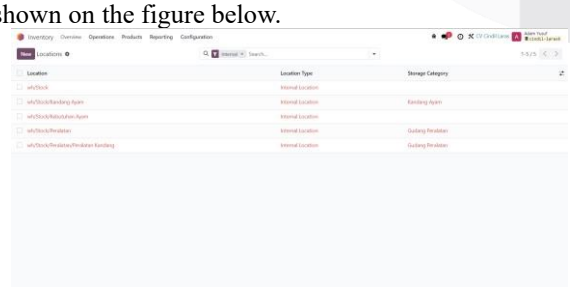

Figure 9 Location Configuration

3. UoM Configuration

In this stage, the Unit of Measure will be created in Odoo inside the inventory module to signify the unit of measure for the goods stored in the warehouse in CV. Cindil Laras inside the odoo that will act as the identifier of the unit of measure for the goods, as for the configuration all of the needed measurement is already sufficient for the use of this system, as shown on the figure below.

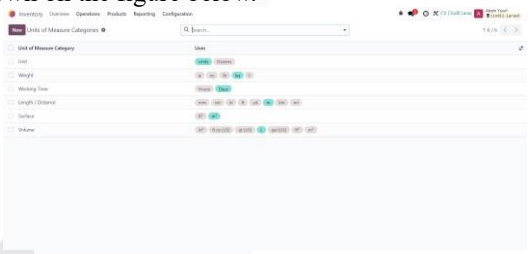

Figure 10
UoM Configuration

4. Product Categories Configuration

In this stage, the Unit of Measure will be created in Odoo inside the inventory module to signify the unit of measure for the goods stored in the warehouse in CV. Cindil Laras inside the odoo that will act as the identifier of the unit of measure for the goods, as for the configuration all of the needed measurement is already sufficient for the use of this system, as shown on the figure below.

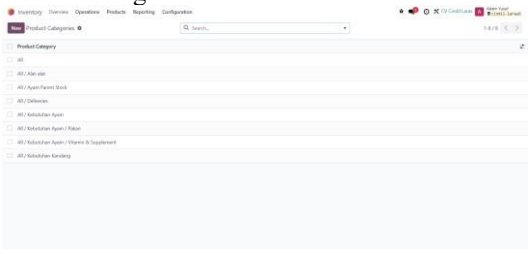

Figure 11
Product Categories Configuration

5. Fit/Gap Analysis

C. Configuration

In this phase, the system development will be put into practice based on the analysis findings from the previous chapter. Configuration is carried out to ensure that the ERP system being built or installed can satisfy established goals and requirements. Onboarding and testing will take place at this time. The system that will be built will go through onboarding, configuration, and customization while being tested to see if it achieves the required goal.

1. Warehouse Configuration

In this stage, the warehouse will be created in Odoo inside the inventory module to signify the warehouse of CV. Cindil Laras inside the odoo that will act as the main company storage to store the goods that will be used and sold, as shown on the figure below.

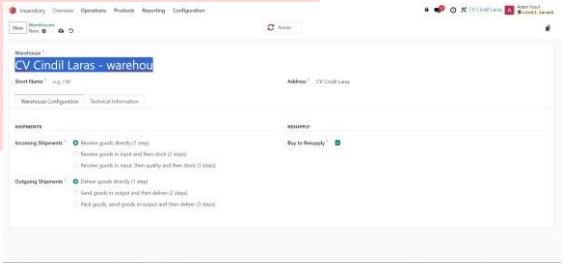

Figure 8
Warehouse Configuration

5. Master Data Product Configuration In this stage, the Master Data Product Configuration will be created in Odoo inside the inventory module to signify the Master Data Product for the goods stored in the warehouse in CV. Cindil Laras inside the odoo that will act as the product data in the system, as for the configuration all of the goods that is used in the company will be recorded in the master data product for the product catalogue as shown on the figure below.

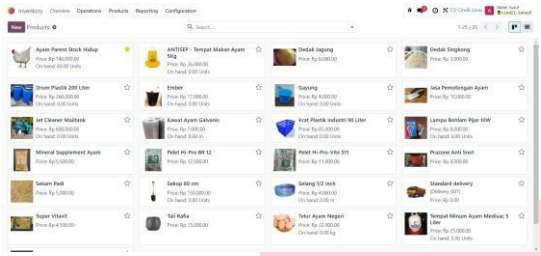

Figure 12
Master Data Product Configuration

6. Putaway Rules Configuration

In this stage, the Putaway Rules will be created in Odoo inside the inventory module to signify the Putaway Rules of the warehouse in CV. Cindil Laras inside the odoo that will act as the indentifier to locate where the arriving goods will be stored in the warehouse, as shown on the figure below.

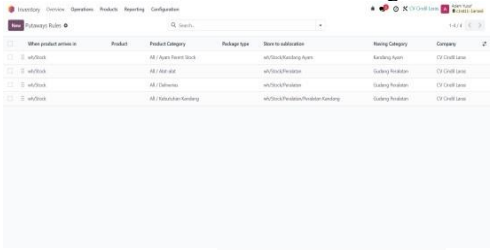

Figure 13
Putaway Rules Configuration

V. CONCLUSION

A. Conculsion

Based on the research on the development of ERP system using open source Odoo web version 16.3 with inventory module to support the warehouse management system in MSME CV. Cindil Laras, the following conclusion can be drawn from this research:

1. The use of open-source Odoo ERP system has been carried out to support the process of recording product inside the warehouse, the information of the items inside the warehouse has been integrated between the inventory module of the warehouse with purchase module, sales module, and the accounting module to produce seamless sharing of the most updated data and the details related to the items inside the warehouse.

2. The development of the ERP system in the warehouse with inventory module has been developed to meet several standards starting from the warehouse and locations, product master data, product categories, unit of measure, storage categories, and putaway rules that are carried out along with several configurations and customization processes that support the needs of CV. Cindil Laras.

B. Suggestion

These are the several suggestions based on the research that has been done for further research:

1. The implementation process of the quickstart method need to be in the production stage to test the system in a real working environtment to further research the immediate effect of the system on the business.
2. Preferably, if the company has an IT division and wants to implement the Odoo application, then qualified

training is needed for employees responsible for managing the Odoo system, because some adjustments are needed to the current business processes or organizational structure with the proposal.

REFERENCE

[1] Verasius Dian Sano, A., *Apa yang dimaksud dengan sistem ERP (Enterprise Resource Planning),* 2021.

[2] Ganesh, Amal; Shanil, K.N.; Sunitha, C.; Midhundas, A.M., *OpenERP/Odoo - An Open Source Concept to ERP Solution,* 2016.

[3] Jindal, Navita, and Kanwalvir Singh Dhindsa, *Comparative Study of,* 2013.

[4] Fathoni K., Siswanto F., & Ahmad J., *Implementation of Entreprise Resource Planning Development In Cosmetic Company Cosme Centre,* 2018.

[5] Gajjar M, *Odoo 10 Implementation Cookbook: Explore the capabilities of Odoo and discover all you need to implement it,* 2017.

[6] Muhammad Abid Jamil, Muhammad Arif, Normi Sham Awang Abubakar, Akhlaq Ahmad, *Software Testing Techniques: A Literature Review,* 2016.

[7] I. Otaduy, O. Diaz, *User acceptance testing for Agiledeveloped web-based applications: Empowering customers through wikis and mind maps,* 2017.

[8] Jannah, Suwarsono, & Alam, 2018.

[9] Dickson Perdanakusuma, Warih Puspitasari, Muhardi Saputra, "Utilizing Open ERP for Creating Medical Record Management System in Smart Hospital: A Case Study 2020 8 th International Conference on Information and Communication Technology," *ICoICT,* 2020.

[10] Cindy Mutia Annur , "Konsumsi Daging Ayam Warga RI Meningkat, Capai Rekor pada 2021," 2022. [Online]. Available: https://databoks.katadata.co.id/datapublish/2022/04/06 /ini-provinsi-penghasil-telur-ayam-terbesar-diindonesia-pada-2021.

[11] A. Roznovsky, "Benefits of ERP: 10 Advantages and 5 Disadvantages of Enterprise Resource Planning," [Online]. Available: https://light-it.net/blog/what-arethe-primary-business-benefits-of-an-erp-system/.

[12] CFI Team, "Enterprise Resource Planning (ERP)," *Enterprise Resource Planning (ERP),* 2019.

[13] S. K. White, "What is ERP? Enterprise resource planning systems explained," *What is ERP? Enterprise resource planning systems explained,* 2023.

[14] globalteckz, [Online]. Available: https://www.globalteckz.com/core-erp-modules-listwith-details/.

[15] I. McCue, "ERP Modules: Types, Features & Functions," *ERP Modules: Types, Features & Functions,* 2022.

[16] W. D. Rahmi, A. Budianto, R. W. Witjaksono, "Perancangan Enterprise Resource Planning, Untuk Sistem Payroll Menggunakan Software Odoo Dengan Metode Quick Start Pada Lembaga Sertifikasi Pt Telkom Prima Cipta Certifia," *EProceedings of Engineering,* pp. 8(5), 9617–9623, 2021.

[17] F. C. Ningrum, D. Suherman, S., "Pengujian Black Box pada Aplikasi Sistem Seleksi Sales Terbaik Menggunakan Teknik Equivalence Partitions," *Jurnal Informasi Univiversitas Pamulan,* pp. vol. 4, no. 4, hlm. 125–130,, 2019.

[18] J. Y. Bahtiar, "Peran User Acceptance Test (UAT) Pada Software Development," *Peran User Acceptance Test (UAT) Pada Software Development,* 2023.

[19] K. N. S. Amal Ganesh, "OpenERP/Odoo - An Open Source Concept to ERP Solution," 2016, August 18.

[20] Bappenas, "Produksi daging ayam buras menurut provinsi 2012-2016," 2016.

[21] Sudati N, Hanung E, Dian M, *UMKM Sebagai Pilar Membangun Ekonomi Bangsa,* 2019.

[22] Mira I. G., *Implementasi Sistem ERP Dengan Modul Accounting Pada Lembaga Amil Zakat Nasional Menggunakan Metode Quickstart,* 2019.

[23] Frizka Egiawan, Ari Yanuar Ridwan, Putra Fajar Alam, *Pengembangan Green ERP Modul Sales and Distribution Untuk Industri Penyamakan Kulit Dengan Metode Asap,* 2018.

[24] Afrizal S., Rohmat S., Wahjoe W., *Perancangan Sistem ERP Dengan Modul Purchasing dan Inventory berbasis Odoo 9 Dengan metode Asapa pada PT. Aretha Nusantara Farm,* 2017.

[25] Usman, Ali, *Membangun Ekonomi dari Peternakan,* 2016.

[26] Shruti Nagpal; Sunil Kumar Khatri; Ashok Kumar, *Comparative study of ERP implementation strategies,* 2015.

[27] Monk E, Wagner B, *Concepts in Enterprise Resource Planning,* 2013.

[28] Al-Saleem, Saleh M, *A Comparative Analysis and Evaluation of Open,* 2013.

[29] Desy F., Ari Y., Luthfia S., *Pengembangan Sistem Pengelolaan Limbah Medis Cair Berbasis Odoo Pada RSUP Hasan Sadikin Dengan Metode Quickstart.*