



# Data Management in ERP system

## Actiw Oy - Case Study

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### **Abstract**

Data management is unquestionably a key component of every enterprise. Notwithstanding, without clear instructions and open communication among staff in the first implementation phase about using the new ERP systems, which the organization has never used is a risky and difficult task to aim for.

The purpose of the thesis is a guideline for the case company on how to use the ERP software system Odoo. The major findings of the thesis are crucial for other small and medium-sized businesses that desire to use the Odoo system in their processes. These businesses can use the information to plan ahead as the trial phase before the adoption takes a significant amount of time.

Both primary and secondary data are collected using the qualitative research method. To first make the fundamental concepts of the project clearer, secondary data like a literature review is obtained and examined. As soon as the theory is employed as the basis for the project flow, the company's CEO and financial controller offer the primary data, together with information gleaned from self-study, observation, and a few brief interviews conducted during the internship period. These are crucial data elements that the author needs to assess the software holistically and offer improvements.

In conclusion, both research questions are resolved, consisting of identifying valid data that are suitable to be entered into the system and defining expectations of the Indian subsidiary for the software.

### **Keywords/tags (subjects)**

Enterprise Resource Planning, Open-Source ERP, Odoo, Small and Medium Enterprises.

### **Miscellaneous (Confidential information)**

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# 1 Introduction

## 1.1 Background and objective

In fact, logistics environment becomes increasingly complex due to a vast number of partners joining the market, especially when working with third-party logistics companies, depending on the goods, today's supply chain comprises hundreds of phases, different geographical locations, a bunch of payments, and invoices. Furthermore, shipments are frequently lost, broken, or delayed due to confusion in the chain of custody. Consequently, companies need certain software to control their procedures and operations. For small and medium businesses, there may be sufficient to use accounting programs offered by accounting firms, before choosing an accounting software, the company needs to evaluate their capabilities in search of suitable demands such as QuickBooks online, FreshBooks, Xero, etc. as each application provides distinctive features not only for small businesses but also for certain people e.g., part-time freelancer or independent contractors.

Thus far, several studies have revealed a correlation between the application of Enterprise Resource Planning (ERP) system and the size of cooperation. By drawing on the concept of this, the Investopedia has been able to show that the larger the firms, the more essential ERP system is frequently demanded. ERP is an approach used by organizations to manage and integrate the critical components of their operations. Numerous ERP programs assist businesses in integrating all necessary company operations into a single platform., which include accounting, production, inventory management, customer relationship management, marketing, sales and invoicing, human resources, ... (2021). This facilitates information and communication transmission between several departments through a single interface, boosting productivity, money, and energy.

Besides, it depends on the budget of the Actiw company, ERP systems are complicated, and the entire deployment process necessitates a significant investment of time, money, and effort on the part of the firm and its personnel. Adopting a new ERP system poses a risk to the firm as well. Take common large ERP platform as an example, it is notorious for an extremely high Total Cost of Ownership (TCO), there are remarkably high acquisition and implementation costs. Not only is it expensive, but it takes years to implement common large ERP system across the entire organization. Furthermore, these systems are highly configurable and because every company is unique, customizing them to fit a business can result in unexpected, even multi-year implementations. Lastly, the software itself can be challenging at first, there is a steep learning curve for end users, it requires proper

training for user to catch up with the speed in company, where people have been accustomed to their job in a certain way, thereby it can be a huge resistance to change.

For the reasons above, the company called Actiw is implementing ERP software called Odoo, the project is planned to operate in India, a subsidiary of the company. Additionally, the project needs to be tested in advance for three months (from the beginning of May to the end of July), before taking into actual operation in August. Odoo is aimed at all types of companies: small, medium, or large, meanwhile, common large ERP system offers suitable version for large or only a simpler one for medium-size business.

The project of Actiw company is about bringing all basic data such as employees, customers, products, and vendors... into an ERP system named Odoo, they have a desire to alter the obsolete ways of managing data by common Excel to a more professional and systematic as Odoo. Based on those inputted data, it can be available to test different modules of the system from end-to-end, for example, create purchase orders, sales orders, and invoices. And the thesis is in search of base knowledge related to how to use some Odoo features which Actiw company needs. Afterward, the author is responsible for delivering document working instructions to other departments and training the India subsidiary, moreover, suggesting solutions if some technical issue occurs.

In addition, the external financial management system Visma Netvisor is the supporting tool to derive information for the Odoo system. The affiliation is attributed to supporting the subsidiary in the Indian market to manage their data flow efficiently compared to traditional tools like Excel, MS office, google calendar, and so on. The India team mostly used Excel to make calculations, and assign everyday tasks for each member, and the project stages are tracked by MS project software. These tools have many weaknesses such as human errors when inputting figures in Excel by default of text format or number duplication. Therefore, Odoo is supportive of controlling those tasks effectively. For instance, with a project module, it is possible to replace Excel to keep track of the employee's tasks. This module shows the number of hours and tasks that we have done in task analysis, we could save time by creating a by pivot table in Excel.

## **1.2 Research questions**

The aim of the thesis is not only to transmit instructions for the Indian staffs to use the new ERP system in understandable ways but also to test that Odoo is a suitable idea for Actiw, as well as other small and medium-sized businesses. During the research and data entry process, the common

errors, missing features of Odoo that the company encounters, and technical errors are also discovered, which can be used as a lesson to avoid cost loss, time and take full advantage of all the features the company deserves.

As shown below, the research questions are:

RQ1: What kind of data is required to put into Odoo system, how those data are validated?

RQ2: What are the features of Odoo that the Indian subsidiary expects?

The management of data aims to give the company insights, characteristics, and evidence of cost structure and its provider. The study might be credited with reshaping and modifying some of the company's processes in the Indian market. Furthermore, the research on Open ERP Odoo software has aided the author in widening the horizontals when resolving the ERP solution in small and medium-size businesses. The outcome is an ideal choice to maintain and increase the ambitious standards for the company system, as well as the author, can be beneficial from her post-graduate stage.

## **2 Actiw Company**

### **2.1 Overall introduction**

Actiw is a family business, the company was founded in 2008 in partial division of Naaraharju Oy and the head office located in Finland. Previously, Actiw Oy used to be material handling department of Naaraharju Oy. Besides, the subsidiary is India since 2017, they are one of the leading outbound logistics innovators and solution providers for industrial warehousing and storage. Actiw's shareholders had a decision to focus on unique storing, sequencing, loading solutions and technologies within intralogistics. Moreover, they invest strongly in Research and Development (R&D), key processes, and product life cycle management. In fact, they have completed over 100 large projects in a variety of cultures and situations over the course of many decades.

Some customers of Actiw Oy includes Coca-Cola European Partners Norway, P&G, UPM, MetsäBoard, Stora Enso, Euroports, Mitsubishi Electric, etc. Actiw has a current client base of more than 200 installations globally, including Europe, India, China, Asia, North and South America. Regarding geographical growth, having previously established themselves in Europe and Asia, Actiw is presently searching for investment possibilities and assistance to bring the efficiency of their automated loading solutions to the North American market



The number of employees is around 30 members, they focus on providing clients with turnkey solutions and seamless project handling.

## 2.2 The core business process and focus

Regarding the company's business process, the figure 1 below represents the own personnel is the core competence area. For engineering, manufacturing, and installation, Actiw uses partners which make its operations scalable. With this business model, Actiw has successfully proved its capabilities to supply multi-million euros projects.



Figure 1. Actiw's core business process

According to latest research, despite the COVID-19 dilemma, by 2026, it is forecasted that Automated Truck Loading Systems (ATLS) will generate revised sales of US\$2.9 billion, rising at a CAGR of 7% throughout the research period. [Global Automated Truck Loading Systems (ATLS) Industry, 2022]. Market segment by type covers, Modified Truck ATLS and Non-modified Truck ATLS. Additionally, non-modified loading solution was major part of the automatic loading business segment in the year 2020, in which it is the Actiw's focus on the business as well.

Even though the technology has been accessible for over ten years, the market is still relatively young, when there are just a few opponents worldwide, and even fewer locally. For other competitors, the ATLS is only a minor part of their overall product range. Others may concentrate on a certain geographical area or industry. Actiw is a well-established worldwide firm with a portfolio that includes the most tried-and-true solutions for the one-shot-loading sector.

Actiw has installed over 160 semi-automated and automated loading solutions worldwide for the loading of palletized and complex goods into non-modified trucks, trailers, and containers.

The figure 2 is where Actiw concentrates on, which is automatic loading of common carriers (non-modified trucks)

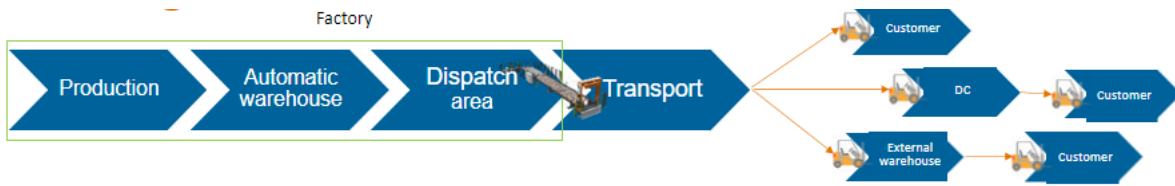


Figure 2. Automatic Storage + Loading

Because unloading is done automatically on standard trucks, Actiw has more flexibility in transporting to numerous locations. When shipping straight to the clients, there is unnecessary for them to modify anything. Nevertheless, there is flexibility to choose third-party logistics (3PL) when shipping to an external warehouse to compensate for production excess or when preparing for peak seasons. If modified trucks are employed, investments in an external storehouse will be required.

## 2.3 Actiw Oy Products

Actiw Oy provides products and solutions including LoadPlate, LoadMatic and LoadForming.

### 2.3.1 Actiw Load Plate

The first Actiw LoadPlate was manufactured in 2001 to improve customers' loading operations. The Actiw LoadPlate is a semi-automated loading equipment for standard, unmodified trucks and containers. Customers utilize LoadPlate for complicated or long cargo, which is frequently tough to containerize and susceptible to damage, or necessitates the use of specialized transportation units such as open top or flat rack containers, it accordingly is proven and long-term efficiency gains for loading lumber, steel plates, steel pipes, construction materials, and other complex goods. The lifetime of the product is designed for over 15 years. Especially in Nordics market, LoadPlate has been in operation for more than 20 years.

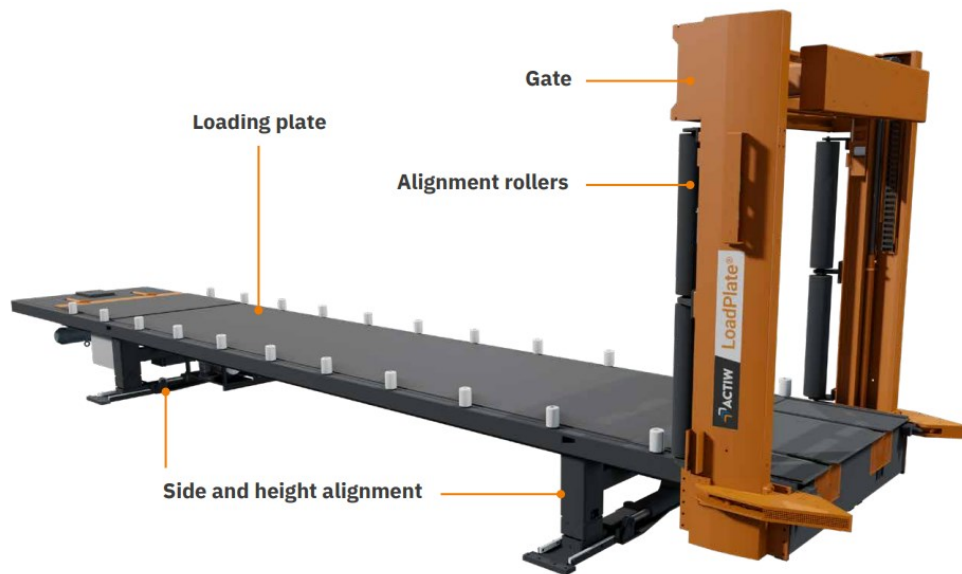


Figure 3. Actiw LoadPlate (Actiw Oy.)

### 2.3.2 Actiw LoadMatic

LoadMatic is more automated and further developed from the LoadPlate version, the difference is that it loads both palletized and non-pallet goods, market concentrate on LoadMatic are petrochemicals, fertilizers, and cement products in bags, without slip sheets. LoadMatic is available in different degrees of automation, it can be seamlessly integrated into any production, warehouse, or sequencing system. By substituting a fleet of forklifts with a single loading machine, LoadMatic drastically reduces customers' fixed asset costs. Furthermore, LoadMatic will outlast any forklift by 20 years or more. When it comes to alternative designs, LoadMatic can be complemented with container stand, if containers are handled with reach stacker, or similar equipment on the yard.

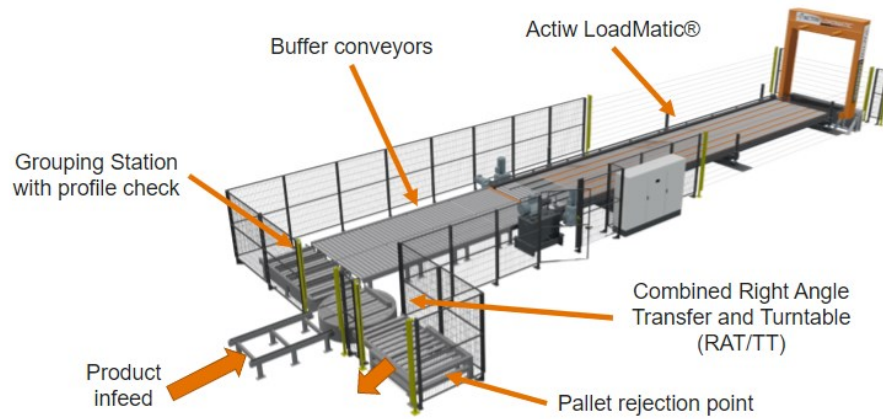


Figure 4. Actiw LoadMatic (Actiw Oy.)

### 2.3.3 LoadForming

The whole outbound material flow for the customers is optimized using Actiw LoadForming, it executes load forming processes automatically on a load-by-load basis. To boost customers' outbound capacity, the LoadForming system combines their existing warehouse with our automated loading equipments. Compared to typical loading dock operations, automated load forming reduces unnecessary labor and simplifies your loading processes. Depending on material flow, customers can choose their own options such as sequencing load buffer, on pallets, or without pallets. LoadForming can relate to any upstream manufacturing or warehouse pallet flow, such as production line pallet conveyors, ASRSs, AGVs, forklifts, etc. Integration to any major ERP or WMS as well. Market focus on LoadForming is fast-moving consumer goods (FMCG) and beverage industry.

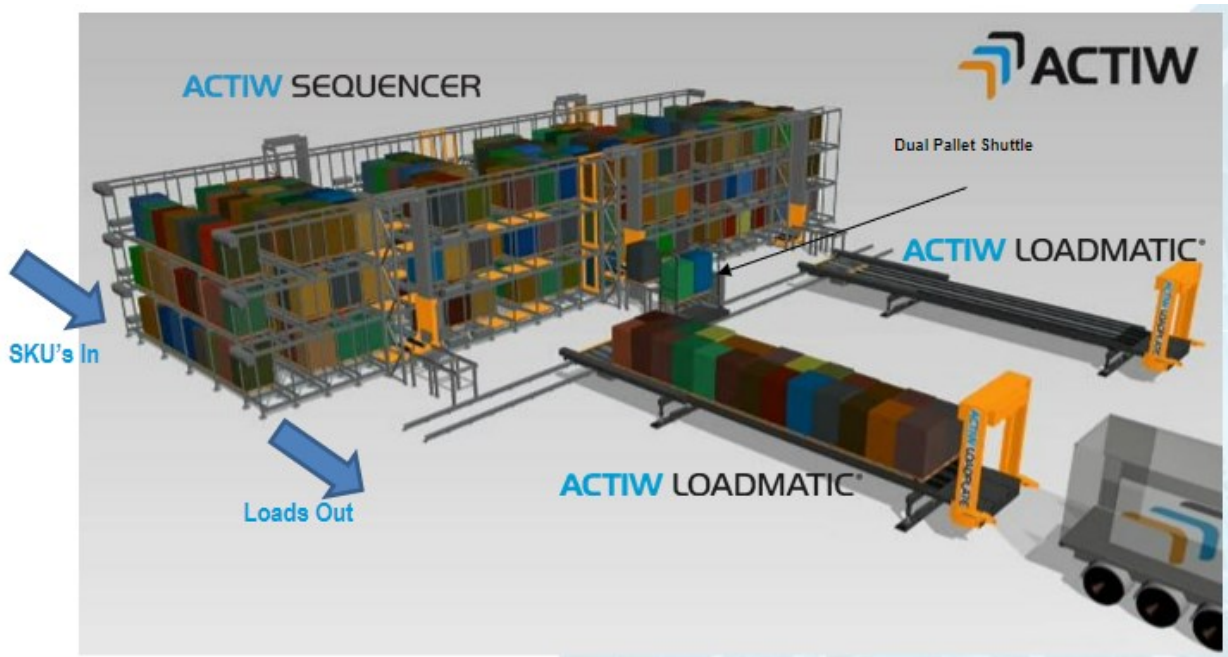


Figure 5. Actiw LoadForming (Actiw Oy.)

### 3 Thesis approach

In this thesis, qualitative research is used to gather data for defining the case company's special demands of the new ERP system. The qualitative technique is often used to aid the researcher in acknowledging other people's experiences and viewpoints. The goal of the strategy is to gain an understanding of the Odoo theory, which the India subsidiary has never encountered previously. To answer the question whether it is prospective to replace Microsoft Excel or not.

#### 3.1 Research method and objective

To better comprehend concepts, viewpoints, or experiences, qualitative research involves acquiring and analyzing non-numerical data (such as text, video, or audio). It can be used to learn more about a subject in-depth or to come up with innovative research ideas (Bhandari, 2020).

Qualitative research is extensively utilized in the humanities and social sciences, such as anthropology, sociology, education, health sciences, history, and so on (Bhandari, 2020).

#### 3.2 Scope and limitations

Due to the limited time of training period prolonged to only 3 months, the thesis lacks time to delve deeply into the information about the accounting software - Netvisor that the Finnish branch is using. It is better if the research for comparison between the two software occurred, it is

advantageous for the case company to have more insights and probably have more effective options. For example, the comparison reflects the Netvisor's processes to Odoo and reflects on how to keep the data of Netvisor at the same level as Odoo. Besides, although Odoo might be linked with Netvisor, this requires additional configuration and consultation which might be costly, the company accordingly does not consider applying Odoo for Finland company at this moment like the Indian branch.

Despite the fact that Odoo is a well-established software among other typical big markets for ERP, the information regarding Odoo's local market in Finland is difficult to find online and appears to be an internal system for all Finnish businesses. In reality, there are not many Finnish businesses using Odoo in this day and age, making it challenging to contact partners, stakeholders, and internal users to interview about their general experiences and compare them to my own situation.

Regarding the scope, the thesis is mentioned only certain modules of Odoo and its features including Accounting, Purchase, Sales, CRM, Project, Employees, Timesheet, and Inventory. Odoo also offers many different modules that the company does not require such as Human Resources or Manufacturing because it belongs to external stakeholders and is suitable for bigger organizations. Additionally, the inhouse IT skills and Python knowledge required for the customization and development of Odoo are not discussed in this topic.

The impediment is the lack of materials in unsuccessful projects as the case company and its subsidiary in India hesitated to expose their imperfect projects, as it should be given high attention to maintain the security and safety of sensitive information, especially some belonging to their business secrets.

In the writing process, it is unavoidable in intensive reading about the subject area to find the right terms and useful words for the context. Therefore, the author read a substantial number of academic materials related to the logistics sector and Odoo system. Moreover, she also attends some chargeable courses to delve deeper into other functions of Odoo, exploring any abilities to clarify certain obstacles during experiment phase.

Lastly, when the author wants to determine which regions are benchmarked based on their market size, share, trends, growth, and prediction from 2022 to 2030 in order to evaluate the market's future growth, it is highly expensive to get primary data from marketers and research teams about the Odoo industry. Although the research team provided several sample pages of the report, all the numbers are unfortunately hidden out of respect for privacy. Because of this, the author opted to omit certain reports.

### 3.3 Research process

As far as figure 6 is concerned, as soon as the planning stage has been done, the next step is collecting data. This step requires the author to observe the case company's operations and the testing operation of the Odoo software. Simultaneously, the interviewing participants is one of the supportive factors for gathering information. Without a doubt, interviews are the most widely used method of data collection in qualitative research projects, possibly because they allow us to directly elicit the opinions of the subjects we are interested in studying (Johnny 2011, 75).

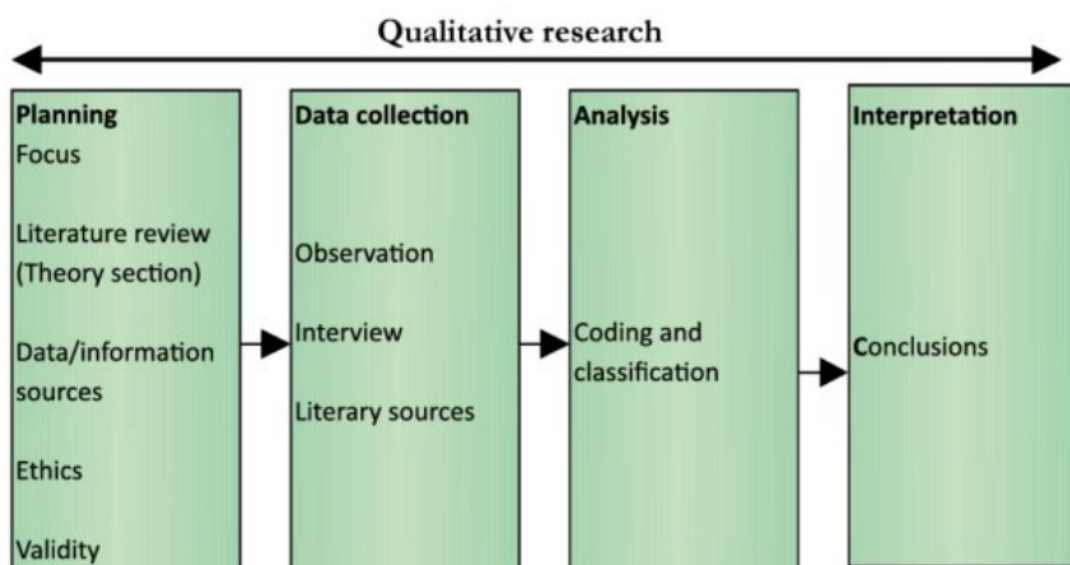


Figure 6 Qualitative Research flow chart [adapted from Kananen 2009. Toimintatutkimus yritysten kehittämisessä (Action Research in Company Development)].

Nonetheless, the engagement with other participants is occurred relatively less, simply because they have never experienced the new ERP system neither in Finland nor India market. That is why

the author feel necessity for seeking further base knowledge on other papers, trustworthy courses offered by Udemy, and other material products relevant to the corporation process that other employees generated to connect them all with the new system.

As shown by Johnny (2011), approaches also include your cognitive and emotive processes, such as inferring, intuiting, empathizing, and evaluating, in addition to obviously mechanical tactics like observing, counting, and transcribing. These should also be recorded because everything you think, feel, and do while conducting research counts as data. (p.32)

The figure 7 represents description of the research process, in the first stage, all primary datas are gathered by improvised conversations with the managing director, the financing controller, and the Indian project manager, these data are attributed to answering to the first research question. Not only data are gathered and put in one random document, but they also needed to be validated beforehand, and summarize into brief sentences if needed so that it is ready to input into the Excel template. There are special reasons to shorten some sentences into keywords because that helps Odoo easily recognize which content belongs to which category, moreover, it helps to save a tons of time if that information needed to update in the future. For instance, payment terms require the input of days or how many percentages of payment. Likewise, some Odoo features had to be changed to fit the needs of the business, and other categories may be added or eliminated

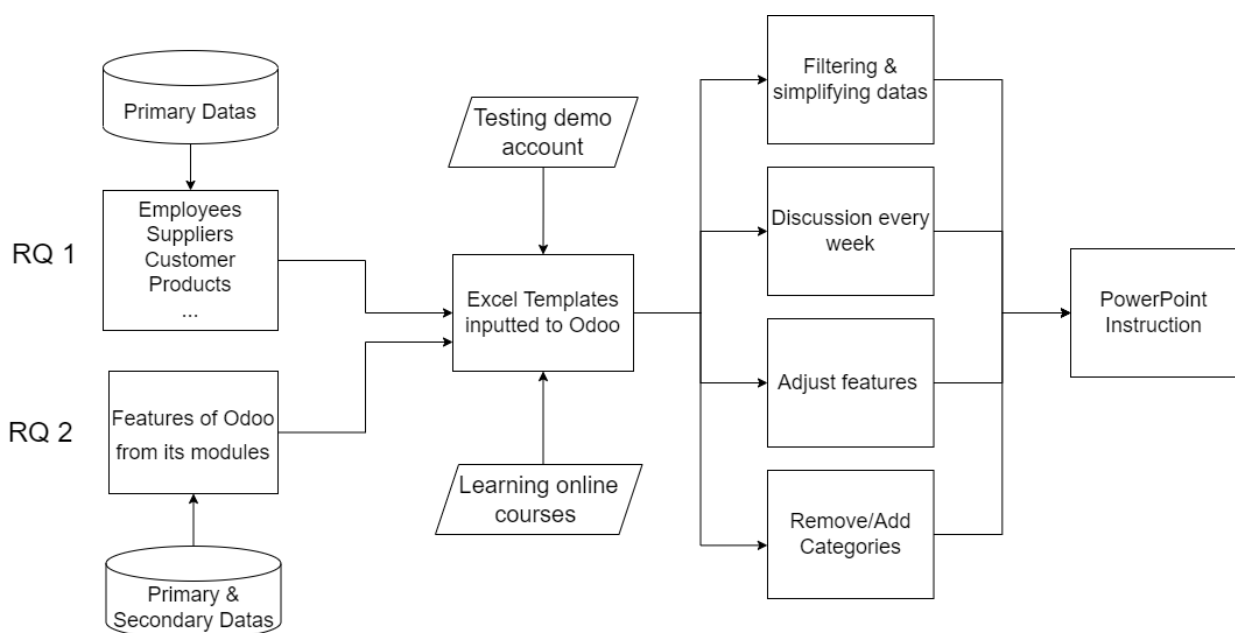


Figure 7 Research process



On the second research question, it requires experiencing the Odoo demo account beforehand in order to fully comprehend the fundamental functions and customizing each applications to suit the demand of the business. As soon as the first and the second questions are clarified, the excel templates can be created based on suggestions of Odoo website as well as other online courses, with the aid of these combined knowledge, the datas from excel template might be inputted systematically and updated conveniently whenever necessary.

Lastly, the powerpoint instruction for entering and manging datas in the Odoo interfaces are the result of summarizing the key theories, and they should be provided to other departments as well. When the author presents the final results, it is anticipated that she will have a good understanding of all the materials and be able to explain them to the lecturers, the CEO, and the project manager. More crucially, The CEO continued to utilize the powerpoints' summarized results for training Indian members when he later traveled to India on business.

### 3.4 Data Collection

#### 3.4.1 Primary Data

Primary data is collected by the researcher herself from the improvised interviews and experiment process with the CEO, the financing controller, and the project manager in India.

Most of the data presenting the current state of Actiw company has been gathered before and during the thesis stages has begun. Due to the internship period is in 3 months, the daily discussions with the CEO and other staffs from different departments offered valuable firsthand information about the existing scenario, its merits, and downsides. These primary data is particularly generated for comprehending and resolving the current research problem. The table below describes more detail about time, responsible individuals, and descriptions of certain data and how they were derived.

Table 1. Primary Data Collection

Data types	Collected Date	Collected From	Description
Products and operation of Actiw	10.05.2022	CEO	Information of company's three main products and their key operations, the data is

			presented in powerpoint by the CEO.
Internal references, and technical descriptions for products	15.05.2022	Financing Controller and Project Manager	The internal references, product types, and technical descriptions of certain products needed to derive for Indian teams, all data are collected under one Excel file, along with product information.
Purchase Order and Invoices	20.05.2022	Project Manager and Financing Controller	Some purchase orders and invoices are done in 2022 and used as references for customizing the payment terms and the templates that have company signatures and policies.
Employees	13.05.2022	Project Manager	Basic contact datas (Names, phone number, email, ID numbers,...)
Vendors and Customers	16.05.2022	Project Manager	Datas about addresses, payment terms, GST numbers,

			mobile phone, email, etc.
Products	30.05.2022	Project Manager	Datas about product names, category, internal references, price, from which suppliers, etc.
Project	1.7.2022	CEO and Project Manger	Information about all implementing projects in both India and Finland (Project name, assigned employees, allocated tasks, hours spent, completion dates, budgets, and so on).

### 3.4.2 Secondary data

Secondary data is consisting of an enormous theory about ERP Odoo systems. There are many electronic papers and academic publications that are a significant contribution to the author's understanding of the subject comprehensively such as its implementation process, selection criteria, risk management, etc. Apart from it, the staff's individual perception and user reviews online of the Odoo system within the firm can be witnessed as secondary data sources. Despite the fact that these reviews are not typically regarded as facts. The reviews are based on genuine user experiences; hence, when forming an overall impression of the product, the points might be taken as indicative.

More specifically, the table below outlines the benefits and drawbacks of Odoo systems based on the author's perceptions after using the systems. These findings are acquired with the aid of secondary data and are also gathered from Indian employees and online evaluations.

Odoo	
<b>Pros</b>	<ul style="list-style-type: none"> <li>+ Easy and friendly user interfaces</li> <li>+ Easy to test the basics of the system online (with a free version)</li> <li>+ No big initial investment in the implementation project</li> <li>+ High scalability and customization options</li> <li>+ Instructions are online, the company does not need to buy separate staff training for the system</li> <li>+ Friendly for languages, it automatically translates into the partner's native language</li> <li>+ Suitable for the case company (under 10 users)</li> <li>+ Save us time and avoid human errors with double data entry</li> </ul>
<b>Cons</b>	<ul style="list-style-type: none"> <li>- Bad in reporting, with scattered data and templates</li> <li>- Some parts required high IT skills and Python knowledge (require extra expensive costs)</li> <li>- Consume times to fix bugs and can cause distortion in some features.</li> <li>- Difficulty linking information between versions if Odoo upgrades to the new version</li> <li>- Odoo can be linked with Netvisor but requires additional configuration and consultation which might be costly</li> <li>- Has limitation to link with its mobile app</li> <li>- Vulnerability to the code, can lead to low security</li> </ul>

Figure 8 Employees and online users Reviews

### 3.4.3 Data analysis

With regard to data analysis, the figure 9 below describes the included contents, actions, and outcomes.

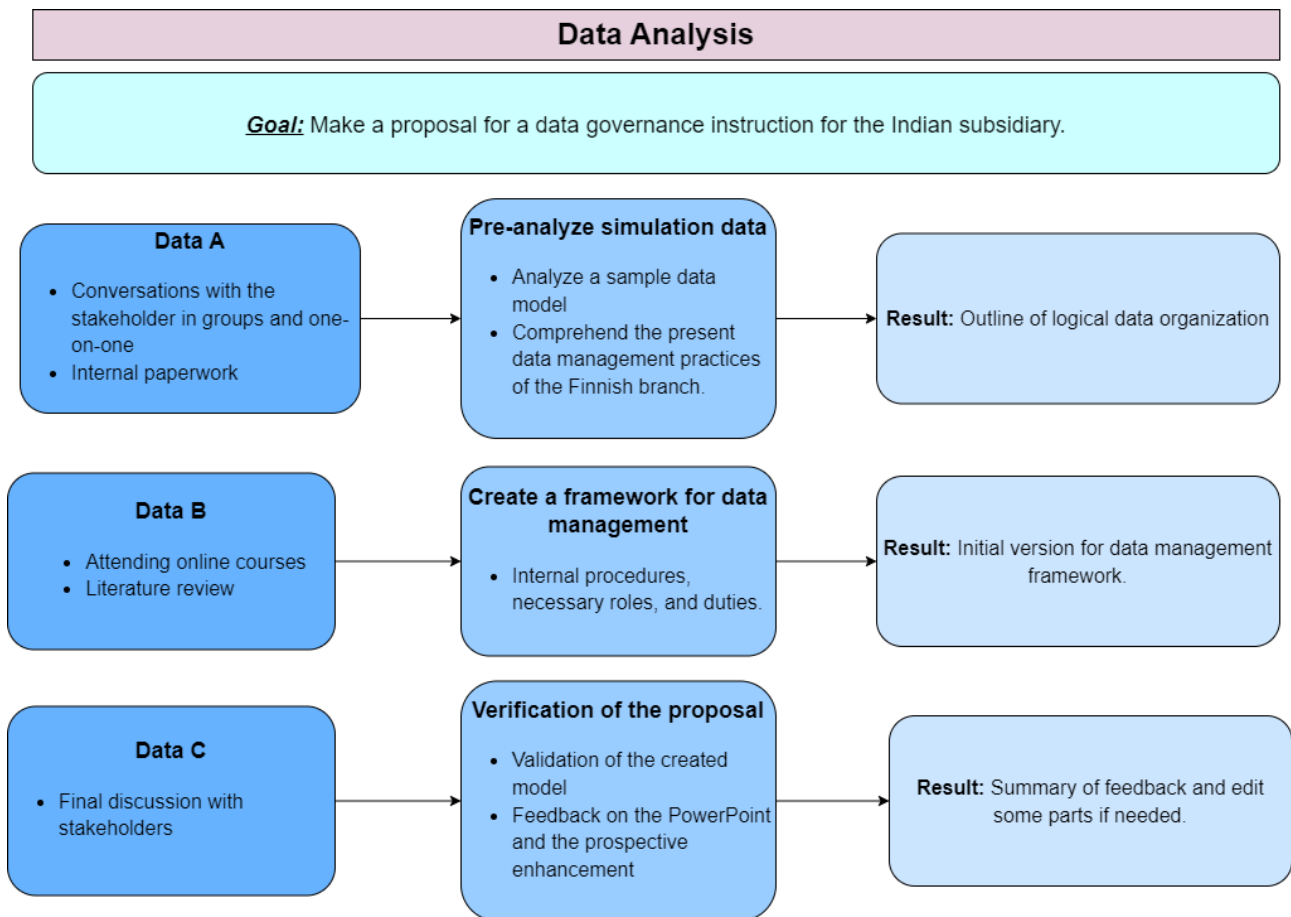


Figure 9 Data Analysis

As was mentioned in the previous chapter, research data is gathered in formal meetings every week and improvised discussions through online applications, they were used to define the analysis state and the validation for the study.

## 4 Literature review

### 4.1 Key concepts

**Data management** is a process in the administration that involves obtaining, authenticating, keeping data, safeguarding, and processing essential data to assure its users' accessibility, dependability, and timeliness. There is a growing number of organizations and businesses that are using big data than before to inform decision-making, gain an in-depth understanding of consumer behavior and trends, and explore opportunities for delivering exceptional customer experiences. (Galletto, 2016).

The Investopedia Team (2021) indicated that **Enterprise Resource Planning (ERP)** is a process employed by organizations to manage and integrate the critical components of their operations. They presented how numerous ERP software systems are vital to businesses because these systems are the facilitator to unifying all the procedures required to operate their businesses into a single system. They also illustrated about additional modules included in ERP software are planning, inventory management, purchasing, sales, marketing, finance, human resources, and others.

An **Open-source ERP** is an enterprise resource planning (ERP) software system source in which code is made available to other developers for usage, modification, and enhancement. Rather than relying on a vendor, businesses may obtain the open-source code for free and configure the program themselves. Open-source ERP is especially beneficial for small and midsize enterprises (SMEs) who wish to upgrade or personalize their ERP systems without incurring hefty license costs as well as support charges. (Global Open-Source ERP Software Market Size by Product, By Application, By Geographic Scope and Forecast, 2021)

According to Vossel and Pinckaers (2011), "**Open ERP** believes that business softwares should not be considered a luxury. That any firm, anywhere on the globe, should be able to afford the greatest tools to professionally expand their operations. That is one of the reasons why Open ERP needs to break the existing rules of the ERPs and the Business Application market". (p. 11)

Prater & Whitehead (2013) state **The Supply Chain** is the chain of companies that contribute to the development and distribution of a good or service to end users. This extends from the origin of raw materials and subcomponents to the point of consumption. (p. 8)

Silver et al. (1998) stated that "**Supply Chain Management (SCM)** is the term used to describe the management of materials and information across the supply chain, from suppliers to component producers to final assembler to distribution (warehouses and retailers), and ultimately to the consumer. In fact, it often includes after-sales service and returns or recycling." (p. 471).

## **4.2 Enterprise Resource Planning system**

### **4.2.1 Definition and Evolution**

To describe Enterprise Resource Planning, Wallace and Kremzar (2002) note the following, for instance:

An enterprise-wide set of management tools that balances demand and supply, containing the ability to link customers and suppliers into a complete supply chain, employing proven business processes for decision-making, and providing high degrees of cross-functional integration among sales, marketing, manufacturing, operations, logistics, purchasing, finance, new product development, and human resources, thereby enabling people to run their businesses with high levels of customer service and productivity, and simultaneously lower costs and inventories; and providing the foundation for effective e-commerce. (p.5)

While Mulvenna (2018) highlighted that the Gartner Group first used the term ERP in the 1990s, enterprise resource planning systems actually have a long history dating back to the 1960s in the manufacturing sector. Manufacturers at this time required a better method for tracking, managing, and controlling their inventories. To address their needs, basic software programs known as MRPs or Material Requirements Planning systems were created. These systems assisted manufacturers in maintaining inventory levels, balancing accounts, and performing extremely fundamental manufacturing, purchasing, and delivery tasks.

Abdullah (2018) found that the second generation of systems, known as Material Requirements Planning (MRP) systems, was created in the 1970s and primarily entailed planning the product or component requirements in accordance with the master production schedule. Manufacturing Resources Planning (MRP II), the third generation of the new software systems, was developed in the 1980s with a focus on streamlining production requirements and materials to optimize manufacturing operations. He indicated that with the ability of enterprise-wide, cross-functional coordination and integration, Enterprise Resource Planning (ERP) systems released their fourth generation in the late 1980s and early 1990s. To conclude the historical events of ERP, he provided that the "extended ERPs" were created in the 1990s as a result of additional modules and functionalities being "add-ons" to the core modules by ERP suppliers.

In this day and age, a large number of major providers, including SAP, Oracle, NetSuite, Microsoft Corporation, Odoo, IBM Corporation, and others, control the worldwide ERP market.

#### 4.2.2 Benefits

Altekar (2013) addressed ERP unifies all of the organization's departments and functions. It makes an effort to incorporate everything into a solitary system that can meet the requirements of each functional area and department. While doing so, it concentrates on the areas of the company plan and applies the integrated planning technique to solve such issues. (p.9)

According to Beheshti (2006), the benefits of adopting an ERP system differ from business to business. However, the system offers some general advantages that all businesses can take the opportunity of. It is crucial that these advantages outweigh the system's drawbacks, and they should do so provided that the appropriate system is selected and appropriately put into place for the firm. Long-term savings from these systems could amount to millions of dollars, a ton of documentation, and countless hours of labor over the long term. (p.186)

Based on my personal and real experience of the company's ERP case, among the most significant benefits of an ERP system is the all-in-one solution that is constructed on a modular structure. In more detail, Beheshti's (2006) study found the following:

ERP systems typically include standard applications that consolidate information from several departments into a common database. Businesses are beneficial from standardized business applications and the use of a shared database by having software that looks and functions similarly. These programs become more universal throughout the company. It might be more user-friendly and efficient to standardize the appearance and functionality of the many programs used in different departments. ERP systems can be used by local or international businesses to implement formalized and structured procedures all throughout the corporation. The majority of ERP systems offer a customized browser that enables employees and managers to establish their own view of the application. Access control can be set up by managers to deter illicit access to sensitive information by staff members, clients, and business partners. While sharing a core of common information across all of their locations, businesses with numerous locations can transform their ERP programs to fit each location's needs. (p.187)



### 4.3 Challenging risks of ERP systems

From my perspective, adopting an ERP project entails a certain number of risks, building a risk-free environment is unavoidable. The difference between a successful and a flawed ERP project is determined by how we anticipate, interact with stakeholders, approach issue resolution, and figure out ways to handle and mitigate it effectively.

Indeed, one study found that in order to successfully implement an ERP system, project teams should be provided with clear instructions detailing the project's goals and a work plan that interacts with a resource allocation strategy. In fact, ERP deployment projects, especially those that are large-scale and span extended time periods, may ultimately fail in the absence of efficient project management. Additionally, a big part of how an ERP system is implemented is determined by the composition of the project team. (Soliman & Karia, 2016, p. 1940)

According to Sreekumar et al. (2019), they highlighted top 12 critical challenges in ERP implementation as reported by project role group including project team was disbanded very quickly, this factor constitute for the highest vote by 30% of participants, followed by interface issues, no proper testing, time zone limitations, implementation causes stress on people, offshoring cause delays, people are resistant to change, short hyper-care support period, lack of business buy-in from internal stakeholders, data cleanse, excessive customization is sub-optimal, and leadership did not understand the complexities. (p.60)

### 4.4 Odoo Descriptions and Evolution

The first version of the open-source enterprise resource planning software solution was named TinyERP in 2005 by Fabien Pinckaers, the founder and current CEO of Odoo. Three years later, the name was changed to OpenERP in 2010, and finally, in 2014, the company was renamed Odoo (On-Demand-Open-Object) officially in the following years (Rajasekar, 2020). Odoo is a vast collection of business-related tools and modules such as CRM (Customer Relationship Management), Sales management, E-commerce, Warehouse management, Purchase management, accounting suite, Manufacturing management, HRMS, and so on. All these fundamental elements are referred to as Enterprise Resource Planning software (Cybrosis Technology, 2018).

One of the reasons for the name change to Odoo was that the corporation desired an unrestricted brand. ERP had the brand of being a defined product, but Odoo had a range of diverse modules that could all operate nicely together. Furthermore, several of the company's newest features, such as website management, were not at all typical of ERP software. (OpenERP: Odoo OpenERP Origin, Benefits, and More, 2018).

Odoo is built on modules created by individuals and businesses, which may be downloaded in their thousands via Odoo's app store. This is one of Odoo's major benefits over other ERP systems: expanding and adding functionality is not limited to the system developer; anybody may extend their Odoo environment with third-party modules if they really would like. WordPress is an excellent metaphor since it evolved into open source, which means it is regularly updated and enhanced, owing to its enormous range of add-ons and customizability (Plesk, 2018).

There are two editions of Odoo available on the market, Odoo Community and Odoo Enterprise. Odoo Enterprise requires a separate paid license, and Odoo Community is a free basic version and completely open source. Therefore, the Community edition is narrower and only offers Odoo's core functionality. Regarding Accounting module, Odoo Community only aids with invoicing, payments, and basic bookkeeping. Meanwhile, Odoo Enterprise customers may access a comprehensive set of accounting features (Nguyen, 2018). For the reason above, Actiw chose the Enterprise version for fully testing all functions the system offers.

#### **4.4.1 Odoo Market among SMEs**

In fact, Small and medium-sized enterprises (SMEs) constituted approximately 90% of all firms globally, offer roughly 70% of all employment and, according to some estimates, occupied up to 90% of global GDP. These enterprises together play a crucial role in enabling, restraining, and determining the nature of growth, innovation, and sustainability in our global, regional, and local economies (World Economic Forum, 2021).

Based on the world's situation nowadays, SMEs are the first to suffer a numerous crisis from corona pandemic, war, inflation... more and more organizations prioritize to increase their revenue and cut unnecessary costs. Consequently, embracing the most recent developments and technology of ERP is critical for SMEs seeking to effectively grow internationally. It boosts efficiency and accelerates market access, two areas where SMEs frequently fall short. In the case of managing actual data, although an ERP system is critical to an organization's day-to-day operations and overall company

success, establishing an ERP system in-house is a time-consuming process since these systems may become overly complicated. It necessitates the ongoing engagement of multiple functional specialists. Meanwhile, Open-source ERP - Odoo platform can be witnessed as the best fit for SMEs due to the numerous useful functions without the requirement of experts and knowledge of coding, this is one of the perceptions that encourages SMEs to invest in and continue their journey with Odoo. Odoo is very aware of the consumer's mindset when the primary objective of small businesses is to save money over the long term, but this does not imply that quality and client satisfaction are neglected.

More importantly, large organizations can still adopt open-source ERP software to lower total cost of ownership. Because there are no license or maintenance fees associated with open-source enterprise resource planning (ERP) software, it can help a firm save money. Furthermore, it enables businesses to modify their requirements and swiftly adjust to industry developments (Dataintel, 2022).

Regarding the region, the market growth of Open sources ERP (included Odoo) is anticipated to climb considerably during the forecast period as compared with other regions in Asia Pacific. (Dataintel, 2022). To illustrate, the top geographies of Odoo for performance-management include India with 454 (8.78%) customers (Odoo Customers by Industry, 2022)

Due to the privacy of the sources derived, the figures for market growth and rate base on region are unexposed. Nevertheless, the goal is to witness that Odoo has the potential to grow in India, which is suitable for the situation of the author, when she focuses on the data management of subsidiary in India of the case company.

#### **4.4.2 Odoo Architecture**

Odoo employs a multi-tier architecture, it follows the MVC-like (Model-View-Controller) architecture. It can be defined with three primary tiers: data, logic, and presentation.

##### **Data Tier**

Data tier is the lowest layer level and is responsible for data storage and persistence. Odoo relies on PostgreSQL server for this. Binary files such as attachments of documents or images, are usually stored in the file systems. (Reis 2018, 8.)

Besides, Models are the classes stored in the PostgreSQL database, it is implemented using a Python class derived from an Odoo template class. Models describe business objects such as Opportunities, Sales order, or Partners (customers, vendors, etc.) (ibid., 59.)

### Logic Tier

The logic tier is responsible for all the interactions with the database layer and is handled by the Odoo server. At the core of the Odoo server, we have the Object-Relational Mapping (ORM) for this interface. The ORM provides the Application Programming Interface (API) used by the addon module to interact with the data (Reis 2018, 8).

### Presentation Tier

The presentation layer oversees displaying data and communicating with users. Clients interact with the ORM API by using ORM API methods via Remote Procedure Calls (RPCs) to read, write, verify, or execute any other activity. These are transmitted to the Odoo server for processing, and the results are returned to the client for review. (Reis 2018, 9).

Generally, the following figure demonstrates how the three main tiers are attached significantly to each other and summarize the process in the big picture.

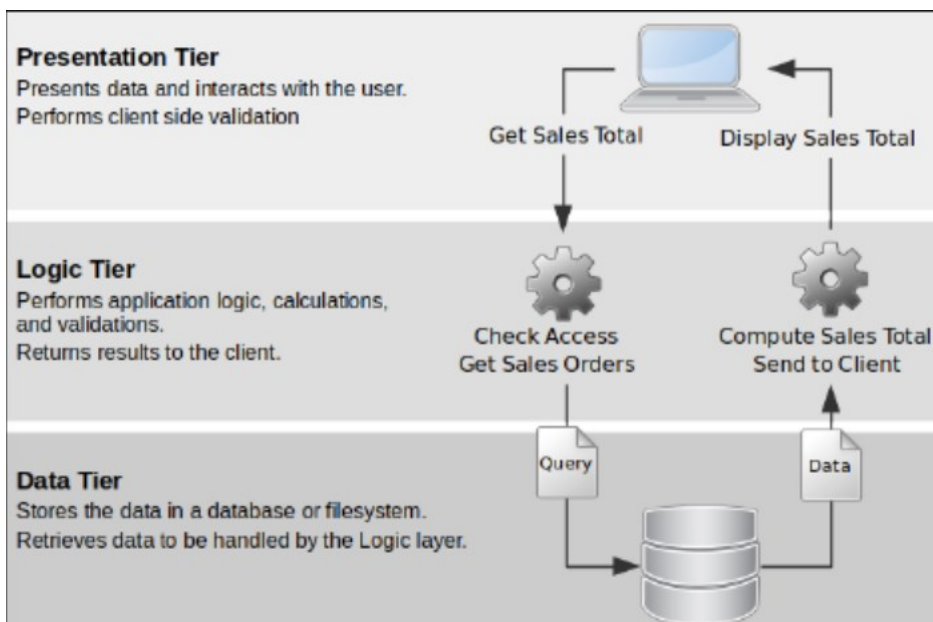


Figure 10. Odoo Architecture

### 4.4.3 SaaS (Software-as-a-Service) Solution

As mentioned formerly, the case company use a paid version of Odoo - Odoo Enterprise edition for testing process, this edition enables us to use the official hosting from Odoo which are Odoo Online (Software as a Service), Odoo.sh (dedicated cloud), or On-Premises utilizing our own infrastructure. Among of these three hosting options, Actiw company opts for Odoo Online, since this type is recommended for those who want to test before committing to long-term hosting.

The Software as a Service (SaaS) model suggests that your software product is available around-the-clock, scales elastically, is universally available and fault tolerant, provides a responsive user experience on all popular devices, and does not require the user to install a client or perform updates or patches. A procedure known as Continuous Delivery is used to deploy and maintain the software product, ensuring that users always have access to the most recent and current version. (Familiar, 2015, p.2.) The system is accessible over the internet, and real-time data may be retrieved regardless of location or device, so employees can use their mobile phone, laptop, or computer without any additional devices.

Software as a Service (SaaS) has evolved as a model for modern software solutions that give users with a wonderful experience and businesses with a dynamic platform for advertising, communication, and the regular release of new features (Familiar, 2015, p.9)

SaaS products can be divided into a variety of groups. Enterprise business applications including customer relationship management (CRM), enterprise resource planning (ERP), accounting, human resources, and payroll are the most widely used. (Kavis 2014, p.83)

For non-core competence functionality, SaaS solutions are highly frequent. Companies select SaaS solutions for non-core operations so that they are not required to manage everything, namely providing maintenance, paying per-personnel, and supporting the application infrastructure. Instead, subscribers use a browser to access the service through the Internet after paying a subscription fee. (ibid., 18.)

## 5 Odoo Implementation based on testing

In the section that follows, it will be discussed about the practical implementation of Odoo, in general, the fundamental processes for entering all the company's essential data into the Odoo system.

## 5.1 Odoo database

Prior to the Odoo implementation being applied in the process of the Indian subsidiary, the CEO of Actiw expects that the Odoo demo version is fully tested and comprehended thoroughly by most Indian staffs. Regarding the Odoo demo installation, it is created in advance by IT stakeholder that Actiw company outsource. This third party takes responsibility to create the database, manage the installation of the software, update the features, and fix technical problems. Although there are many offers to download the Odoo demo account for free on the Odoo website that any users can take advantage of to visualize and test a quick experience of Odoo. Actiw has ambitious to test with the Odoo Enterprise version, which offers the experiences quite the same as reality, therefore, their employees will not feel ambiguous due to limited features of the complimentary products.

To access the Odoo server, the IT partner created these database manager like the figure below

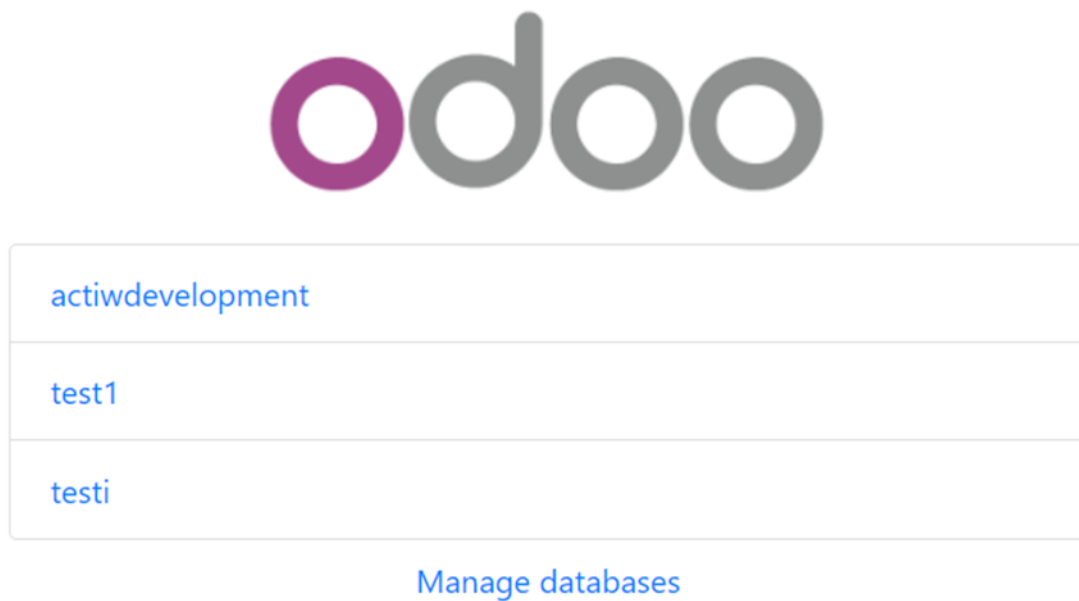


Figure 11 Demo Database

The *testi* is the only database are tested during trial phase, the others are for internal demonstration which requires expert knowledge of coding to explain such as master passwords creation, Linux or Python systems, therefore, it should not be delved deeply into the thesis content.

### 5.1.1 Odoo main dashboard

As soon as the database *testi* is clicked, the Odoo main dashboard is showed as the following figure:

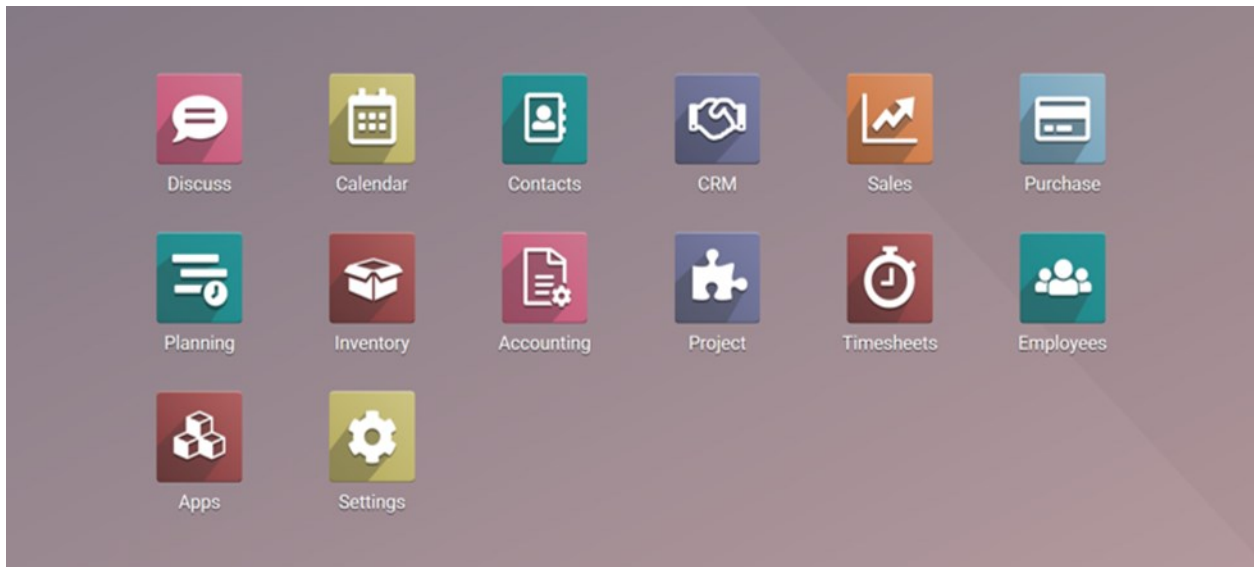


Figure 12 Odoo dashboard

The biggest strength of Odoo is its scalability, as different functionalities can or may not be deployed depending on the size of the company. With the support of the Apps module, the administrator can access the Apps that have an interface like figure 14 and click install the applications that fit the needs of the company's operations. Certain apps are installed within a few minutes, and they charge extra fees per month based on the provided prices on the Odoo website. As soon as acquiring the knowledge of how to create apps and how to modify the software system, one can do basically anything with Odoo. Another significant aspect of those apps is it does not require as big an initial investment in the implementation project at the first stages, and the overall cost of Odoo for the case company (under 10 users) is much more reasonable.

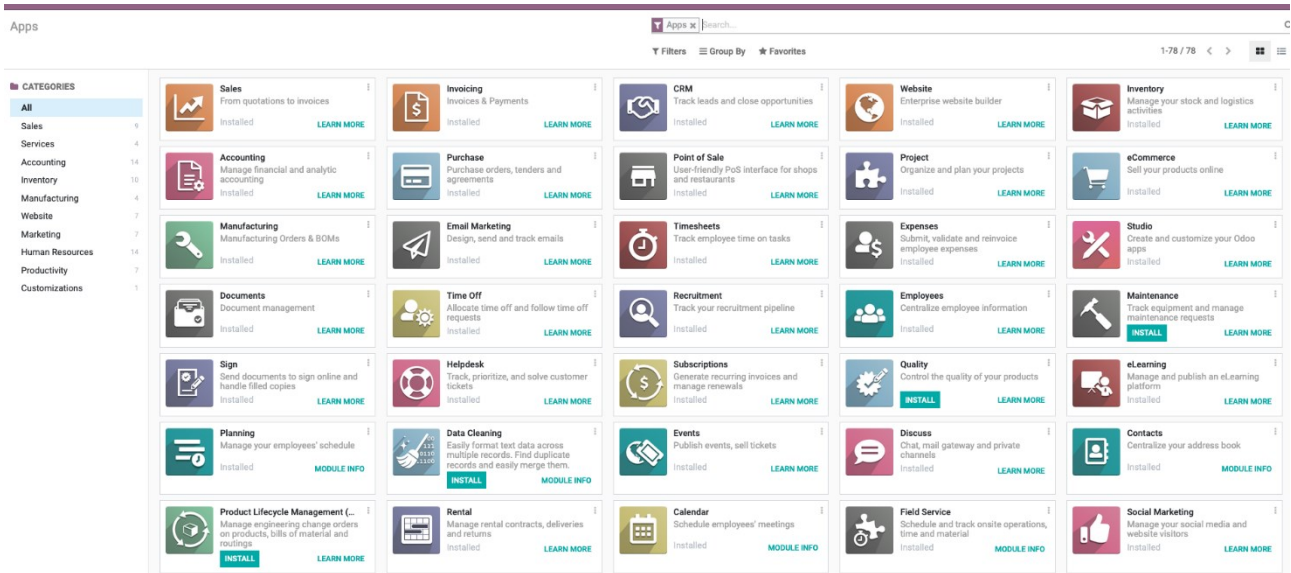


Figure 13 Odoo Apps

## 5.2 Data input

Before proceeding to examine Odoo modules, it is important to explain what kinds of data are used for those modules. As was pointed out in the primary data section of this paper, the inputted data are employees, vendors, consumers, products, etc. In general, there are always two ways to import data into the system which are manually inputting and inputting based on Excel Template.

### 5.2.1 Customers

To create customers, these steps are needed to follow: the Sales module → Orders → Customers. If enter information manually, the basic info required like the following figures:



Individual
  Company

## ACTIW Intralogistics LLP

---

**Address**

R-40 First floor NDSE II,  
New Delhi 110049 - India  
New Delhi Delhi (IN) 76850  
India

**GST Treatment**

VAT 07ABIFA6305P1Z5

**Phone**

**Mobile**

**Email** LLPinvoicing@actiw.com

**Website Link** http://actiw.com

**Tags** Tags...

Contacts & Addresses
Sales & Purchase
Accounting
Internal Notes

---

**Sales**

**Salesperson**

**Delivery Method**

**Payment Terms**

**Purchase**

**Payment Terms**

**Payment Method**

**Receipt Reminder**

Fi  
Fis

Figure 14. Customer data example (1)

**Bank Accounts**

Bank	Account Number
Add a line	

**Accounting Entries**

Account Receivable	100400 Debtors
Account Payable	112110 Creditors

Figure 15 Customer data example (2)

Figure 16 and 17 show the components that needed to be filled in, including contact and addresses, GST treatment, and bank account,... Due to the fact that there are numerous amount of clients, it is wiser for choosing to input via template approaches inevitably. In addition to saving time and effort, it also simply updates and eliminates outdated data while avoiding mistakes caused by duplication.

There is an example illustrates if datas are inputted as an Excel Template:

Name	Is a company	Reference	Customer Payment Terms	Street	Street 2	City	State	ZIP	Country	Phone	Mobile	Email	Website
Webmax	TRUE	C101	30 Days	15 Tarir	Down town	Cairo	Cairo	35000	Egypt	+8542316432	+850637842	webmax@oy.eg.com	www.webmax.eg
Mike Olson		C102	60 Days	12 Toritie	Kuokkala	Lahti	Lahti	40720	Finland	+35853167532		mike.olson@gmail.com	
Evol	TRUE	C103	Immediate Payment	29 Liukakatu		Oulu	Oulu	30720	Finland		+358475892909	evol@oy.fi.com	www.evol.fi

Figure 16 Customers in Excel template

Similarly, if more datas needed, the excel columns can be extended such as bank account number, payment method, delivery method, and so on.

## 5.2.2 Vendors

To create vendors, accessing the Purchase module → Orders → Vendors. As the information of vendors when inputting manually is exactly the same when creating customers, therefore, the excel template of vendors is demonstrated as follows:


Name	Is a company	Reference	Vendor Payment Terms	Street	Street 2	City	State	ZIP	Country	Phone	Mobile	Email	Website
Cloud Hub	TRUE	W101	2 Months	15 Aujurinko		Stockholm	Stockholm	35000	Sweden	+8542316432	+850637842	<a href="mailto:cloudhub@comp.sw.com">cloudhub@comp.sw.com</a>	<a href="http://www.cldhub.sw">www.cldhub.sw</a>
Wire Care		C102	45 Days	17 Emmanantie		Kuopio	Kuopio	40720	Finland	+35853167532		<a href="mailto:wire.care@gmail.com">wire.care@gmail.com</a>	

Figure 17 Vendors in Excel Template

There is noticeable if the vendors or customers are individuals and not a company, the excel template can leave as blank and Odoo can understand it. Most importantly, all of the payment terms are crucial to creating beforehand, simply because each payment term requires different detailed information such as percentage value of a payment, number of days or months after the invoice date, and description for the invoice,....

There are some demonstration of payment terms in Odoo:

Payment Terms

[CREATE](#) 

- Payment Terms
- + Immediate Payment
- + 14 Days
- + 21 Days
- + 30 Days
- + 45 Days
- + 60 days
- + End of Following Month
- + 30% Now, Balance 60 Days
- + 7 Days
- + 10% Advance, 90% in 7 Days
- + 100% against Tax Invoice, Material Despatch in 14 Days
- + 100% against Tax Invoice, Material Despatch in 7 Days
- + 50% Advance, 50% against Material Readiness in 7 Days
- + 20% Advance, 80% against Tax Invoice in 30 Days

Figure 18 Payment Terms in Odoo

### 5.2.3 Employees

To create a staff, the process begins with the Employees module, enter the essential private information as well as the basic information shown in the image below.

Figure 19 Employee datas (Manually input)

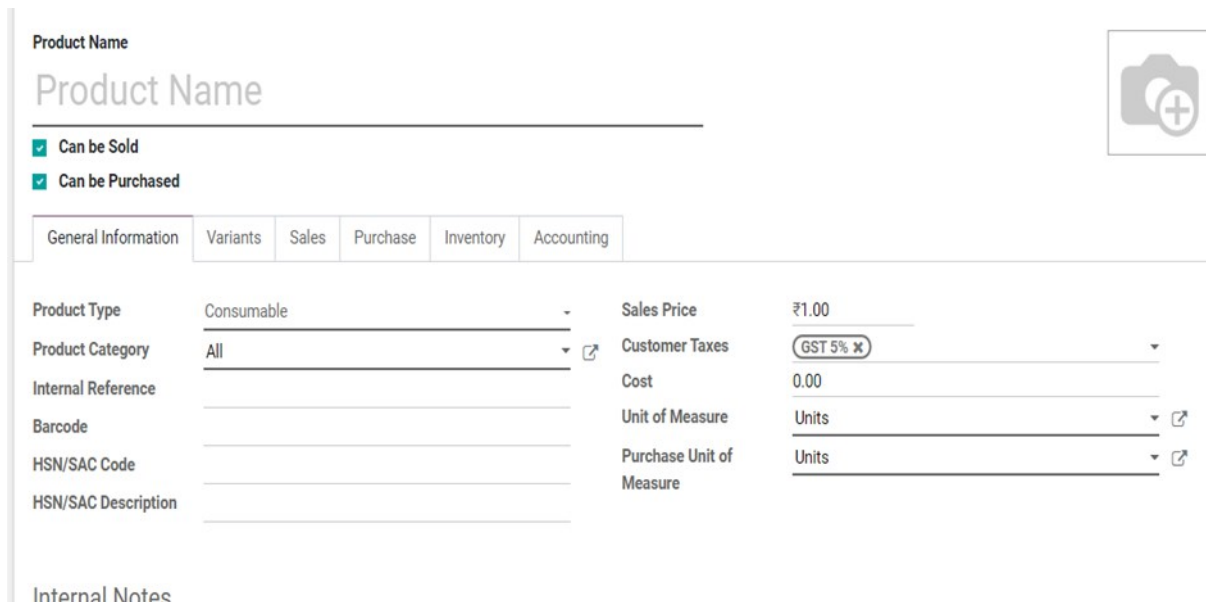
In terms of Excel template, the data is seen as:

Name	Work Email	Work Phone	Mobile	Department	Gender	Notes	Marital Status	Date of Birth	Nationality	Identification No	Passport No	Visa No	Work Permit no	Visa Expire Date
Julia Ropert	<a href="mailto:julia.ropert@abc.com">julia.ropert@abc.com</a>	+3587932573	+358703063114	Purchasing	Female	Trainee position	Single	9/29/2000	American		2979A203	290900-278		10/20/2022
John Doe	<a href="mailto:jod@odoo.com">jod@odoo.com</a>		+46872653876	Sales	Male		Married	7/30/1995	France		7838942	300795-543		10/15/2025

Figure 20 Employees in Excel Template

## 5.2.4 Products

To import products manually, the steps involve: Sales module → Products, the product variants can also be added if the company have.



Product Name

Product Name

Can be Sold

Can be Purchased

General Information Variants Sales Purchase Inventory Accounting

Product Type Consumable

Product Category All

Internal Reference

Barcode

HSN/SAC Code

HSN/SAC Description

Sales Price ₹1.00

Customer Taxes GST 5%

Cost 0.00

Unit of Measure Units

Purchase Unit of Measure Units

Internal Notes

Figure 21 Product information example

If importing by Excel, the data is recommended to look like this example:

Name	Internal Reference	Barcode	Product Category	Sales Price	Cost	Weight	Can be Purchased	Can be Sold	Product Type	Description
ABB Robot 415	AW101	6147532	Robots	750	500	15 kg	TRUE	TRUE	Storable	
Chain Conveyors	AW102		Conveyors		850		TRUE		Consumable	
Account Moderation	AW103		Social Media	170				TRUE	Service	
ERP Programming Service	AW104	1126876	Design & Programming	100				TRUE	Service	

Figure 22 Products in Excel Template

In the excel template, the supplier's column (Supplier 1, Supplier 2,...) can also be added, so the products are easy to keep track from which suppliers. More importantly, the product categories are needed to create in advance in the product category section because they are not available in Odoo due to each company having different categories for their goods.

### 5.3 Update new information into the system

There is no doubt that people sometimes make mistake, all staff is inclined to inputting incorrect information in the process, or in the future, the company wishes to get rid of the obsolete data that is not in use anymore. Odoo accordingly offers the function for unlimited modification. However, if need to change any data such as price, quantity, new suppliers for products, contacts, etc. It is noticeable that the information should not be imported again with the same content, which caused duplication. And it can be serious for consuming a lot of time when a numerous of data needed to be deleted due to the plethora of the same name.

In more detail, figure 23 demonstrates the export data table when updating data:

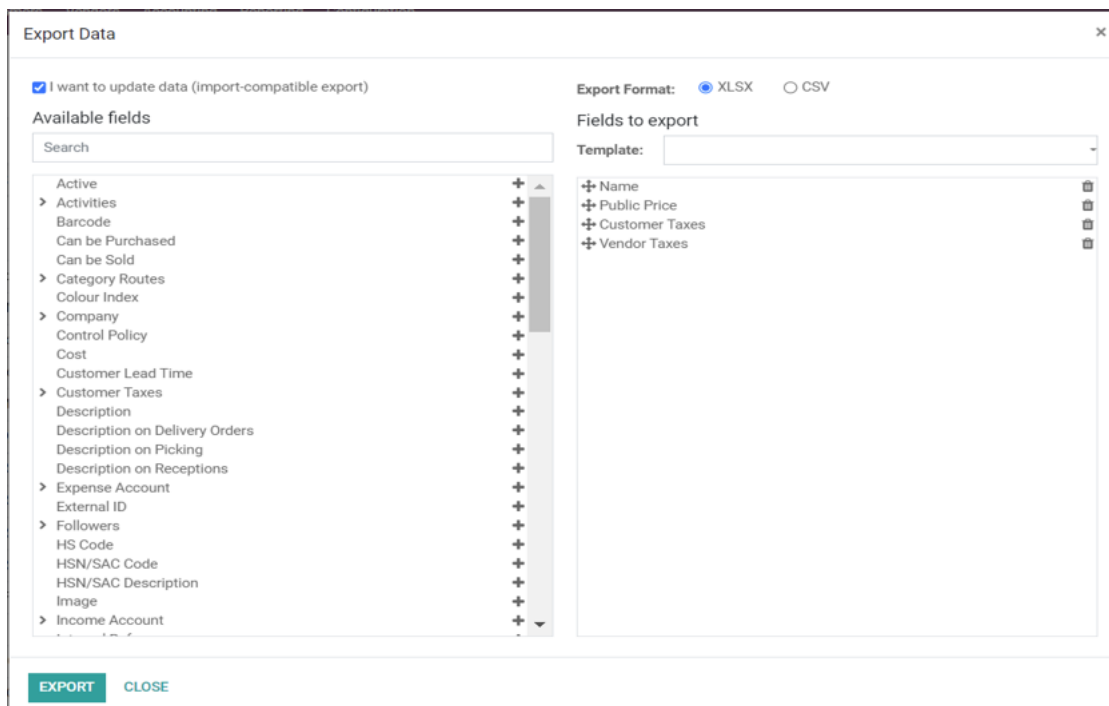


Figure 23 Export Data table

To easily follow the steps include:

1. Export certain series of data that needed to update or get rid of, the export formats can be XLSX or CSV
2. The box "I want to update data (import-compatible export)" must be clicked if the data are supposed to be changed, or the export file is just simply for reviewing.
3. Choose the sections on "Available Fields" that want to update (e.g product category, price, VAT,...)

4. When clicking Export, the file is downloaded to the device, if updating the information, the contents at that box needed to replace, or eliminated information, can just delete and leave it blanker.

5. When all the information is ready, the file is needed to be saved and imported again to Odoo, then all the information is changed immediately.

## **6 Results**

The following part of this paper moves on to describe the results of Odoo based on personal experiences tested by the author. Although there are a huge number of advantages regarding Odoo features that have been mentioned in the theory part and recognition based on different perspectives, this section is concentrated mainly on the author's own evaluation and her impression of the Odoo features belonging to some modules.

### **6.1 Key Features of certain Odoo modules**

#### **6.1.1 Customer Relationship Management (CRM)**

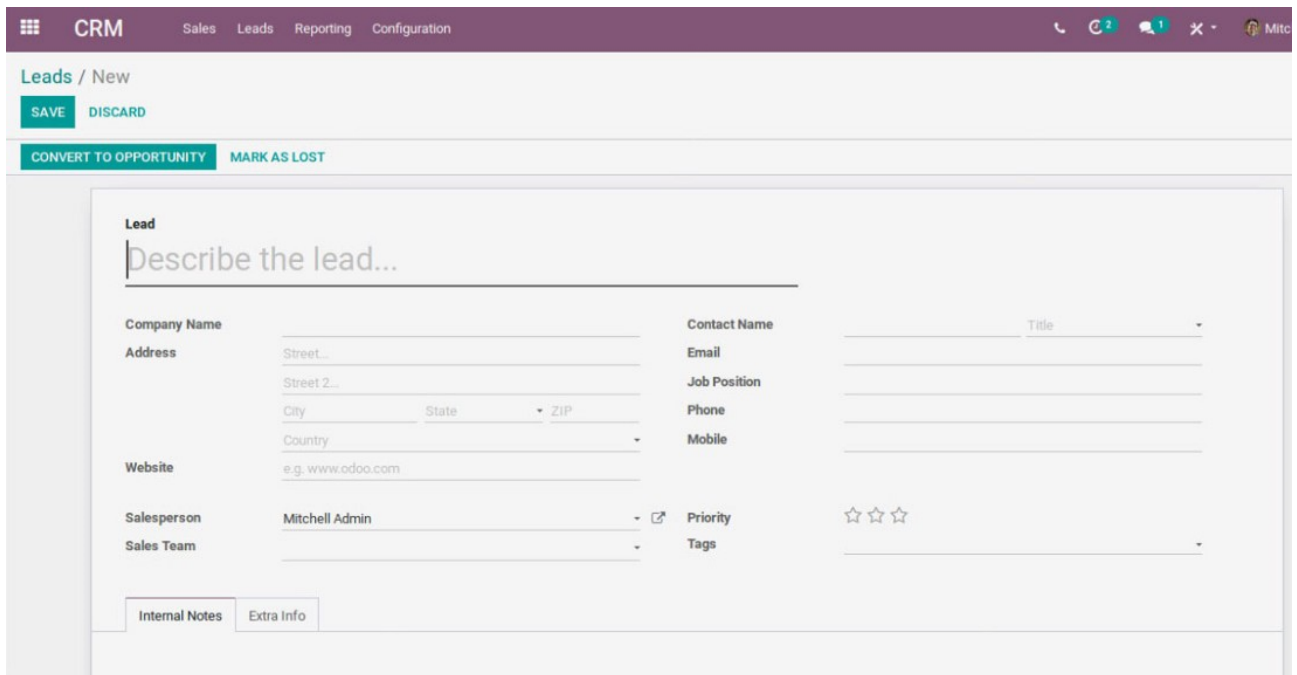
The Indian market can handle its Leads effectively thanks to one of the powerful tool - CRM. This function aids in the management of leads and their transformation into opportunities.

After going through some discussions with the country manager, it can be seen that most SMEs often experience a few similar symptoms, and the Indian subsidiary is no exception. Firstly, they might not have Leads that are enriched, this occurs with novices who are just starting their business and with those who are unfamiliar with their brand. This may be seen in the same issue as the necessity for Actiw to expand its lead range. The other issue is that the business must score a sizable portion of its leads, validate them, and allocate them to the appropriate salesperson when there are so many leads floating into its system that manual qualifying is necessary. Especially, the case company in India used simple tools like Excel to manage their leads, this can cause some clients to be prone to be neglected, this activity might result in repeated leads and even no insights on status.

In the testing process, the Leads are just created by some examples so I can visualize a big picture how to mark certain leads' case as won or lost. Nevertheless, Odoo can transfer customers into Leads directly to CRM from multiple sources if their customer wish e.g Leads can be gathered when

the customers fill in their contact through the company website, social media post, marketing contact form, email, or even online appointment, etc.

The figure below demonstrate of Leads creation in CRM module:



The screenshot displays the 'Leads / New' form in a CRM system. The interface includes a top navigation bar with 'CRM' and menu items like 'Sales', 'Leads', 'Reporting', and 'Configuration'. Below the navigation, there are buttons for 'SAVE', 'DISCARD', 'CONVERT TO OPPORTUNITY', and 'MARK AS LOST'. The main form area is titled 'Lead' and features a large text input field for 'Describe the lead...'. The form is organized into two columns of fields:

- Left Column:**
  - Company Name:** Text input field.
  - Address:** Multiple text input fields for 'Street...', 'Street 2...', 'City', 'State', 'ZIP', and 'Country'.
  - Website:** Text input field with the example 'e.g. www.odoo.com'.
  - Salesperson:** Text input field with 'Mitchell Admin' and a dropdown arrow.
  - Sales Team:** Text input field with a dropdown arrow.
- Right Column:**
  - Contact Name:** Text input field with a 'Title' dropdown menu.
  - Email:** Text input field.
  - Job Position:** Text input field.
  - Phone:** Text input field.
  - Mobile:** Text input field.
  - Priority:** Three star icons (☆☆☆).
  - Tags:** Text input field with a dropdown arrow.

At the bottom of the form, there are two tabs: 'Internal Notes' and 'Extra Info'.

Figure 24 Create Leads

As the following figure, the pipeline goes through 4 stages: New – Qualified – Proposition (already sent quotation and made proposition) – Won or Lost. The pipeline presents the sale process visually, from initial contact to the ultimate sale.

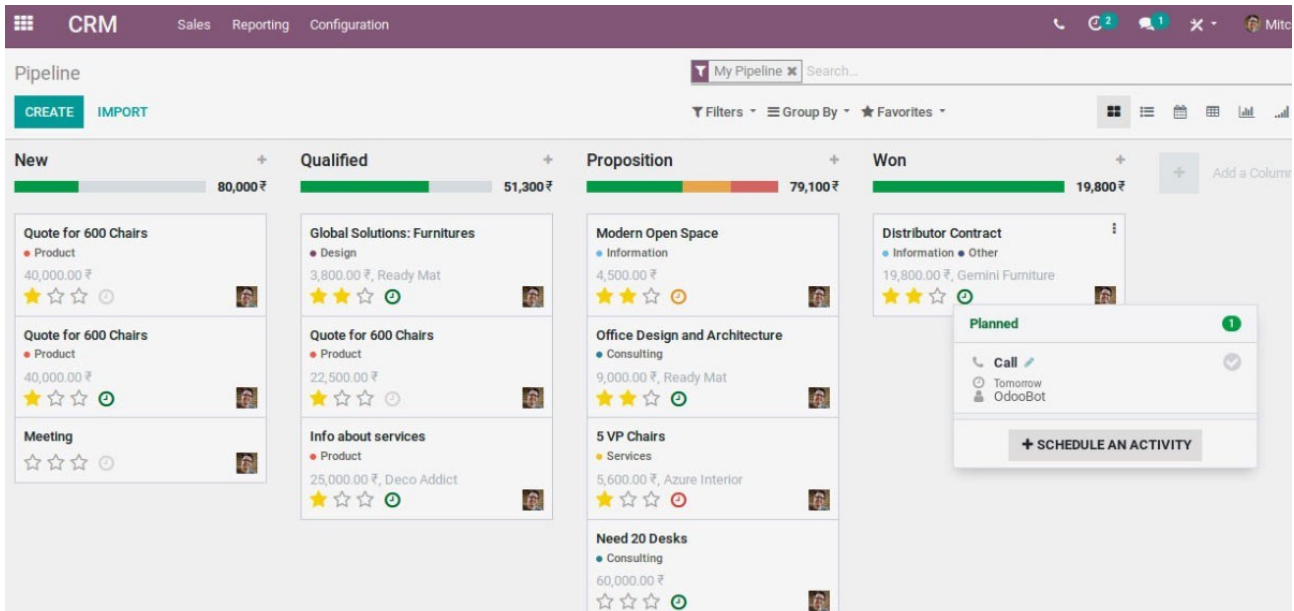


Figure 25 CRM Pipeline (Source: ERP Solutions Oodles)

Following the creation of the lead from a customer list, it is possible to easily add the anticipated income, anticipated closure date, and the appropriate salesperson or sales team. Odoo reminds users to schedule their next activity, such as setting a reminder for the next meeting or calling the customer, to stay up to date on the deal. So that we can send emails for the most recently closed cases, all activities can be filtered as the most recently due when accessed through My Activities.

### 6.1.2 Accounting

After experiencing most of the important modules, it can be witnessed that Odoo's primary function is Accounting, and its framework centers on finances.

Odoo Accounting delivers robust accounting features like a full chart of accounts, accounts payable, accounts receivable, basic reports, and more (Seppala, 2022).

While creating assets, Odoo Accounting supports user-friendly features, such as the ability to specify the depreciation date and alter it or the life duration with the indicated reasons. With another



widely used platform, it can be tricky to just go back and modify that information at times; instead, it is necessary to post an entry in the exact opposite way, which seems unsafe to do, users may be asked to essentially create a new journal entry, which the system will then compare against and may need validation to get rid of the older data. Another plus for the accounting feature is that it is unnecessary to make an invoice and then another accounting journal to match off this invoice because the invoice is unique in that it is immediately tied to the journal entry. Last but not least, Odoo has multiple payment options with various currencies, for example, Odoo includes a third-party application that can be incorporated into the database and via which the case company or its customers may even make cryptocurrency payments.

### **6.1.3 Project Management**

Cybrosis Technologies (2021) states the best open-source project management support solution is provided by Odoo. Odoo helps you plan projects, set tasks, handle invoices, coordinate work hours with a timesheet, and use spreadsheets for a project's effective completion thanks to its advanced features and functionalities.

The project management tool offers many convenient functions for the case company, especially when they have many service products. It offers a reporting module, which supports its users to follow the project cost and revenue on a regular basis, the project manager is able to see the overview of profitability e.g which project is already invoiced.

Conjointly, the planning module and project management are connected, which aids the manager in maintaining oversight of which employees are available to work and how long the project takes. Even so, the truly impressive aspect is that users can pinpoint precisely what resources are required for each project activity (e.g crane, or any machine based on their working hours).

More importantly, Odoo offers the ability to set milestones for each project in the event that it is large and difficult to plan. These features break the project into manageable pieces, and at the conclusion, after delivering a completed project to the clients, it also provides the customer rating feature so that we can determine whether our customers are happy with the company's service.

## 6.2 Evaluation key characteristics of all Odoo features

The following table is the grading board created by the author to estimate how the system meets the India team's expectations. More importantly, this is the facilitator to answering Research Question 2. The maximum point is 5, in which 1 is the least contribution value, and 5 is the most contribution value.

Table 2 Assessment of key characteristics

Key characteristics	Point
Functionality	4,5
Technical supporting	2,5
Budget	4
Convenience of the system	4

**Functionality:** Odoo is dedicated to small and medium-sized enterprises, therefore, it suits Actiw quite well. The system's primary functions will revolve around inventory, goods buying and selling, logistics activities, and financial accounting; it does not need to be linked to any cashier software, store management systems, etc. Because not many functions are expected, the capability is sufficient, and basic features will suffice. However, the more users the additional fees are incurred. Therefore, the point for this section is 4,5.

**Technical supporting:** technical issues such as continuous bug fixing are guaranteed and enhanced by the third-party IT company since the majority of employees are middle age, which leads to difficulty for them to communicate in English. The testing procedure is hampered as a result of the technical issues' procrastination, which brings us to points 2,5.

**Budget:** with the official price from the Odoo website and based on the necessary modules that the company installed, the real cost for one user can be up to 300€/user/month without discounts. Taking the testing process as an example, there are 6 users, the cost is 21,600€/user/year. In reality, the implementation cost can rise from 20000€ to 30000€ every year. It is also vital to consider the entire consultancy charge, the training time can fluctuate between 1-2 months. Moreover, as the business expands, the cost is rose when adding more features. Actiw company may have limit budget when they pay for a plethora of features that make less value in the future. However, with the current offers, it seems a good deal, so the score is given as 4.

**Convenience of the system:** fortunately, as Odoo is an online interface, there is a friendly system to utilize without strict and special requirements as long as the computer and the internet connection in the company are all in good condition. Besides, if the system can be linked with mobile devices, the compatibility is even better, it is also beneficial for other employees to record any data immediately if they do not have a laptop or fixed computer when they are out of the office. These factors contribute to points as 4.

## 7 Conclusions

This study aims to provide comprehensive instructions on how to use the Odoo system to train Indian employees. It can also serve as a guide for other SMEs that want to implement Odoo into their business operations. Odoo's initial adoption is still not simple for businesses, particularly Finnish businesses, for the simple reason that the system is not widely used in the industry. By emphasizing the important traits and primary constraints in the demo and trial phase, the research is attempting to persuade people to utilize this potent instrument in their early stages of the testing procedure. The research questions are addressed during the analysis and advancing phases, and the author also recognizes the requirements of the Indian workforce by conducting impromptu interviews.

### 7.1 Response to research questions

**What kind of data is required to put into Odoo system, how those data are validated?**

After going through the presentation instruction of the project with the CEO in the beginning, the author get general ideas of data types that should be inputted. Nonetheless, it is just a visualization step. In fact, not only the example templates on Odoo but self-studying knowledge learned in online courses for inputting certain data categories must be combined to achieve the final results. And the type of data imported into the Odoo system has been mentioned in the primary data section. In addition, not all kinds of data are accepted to be inputted into the system due to long sentences or wrong formats, self-studying is accordingly a profound contribution to realizing the incorrect format and simplifying the data into an understandable form for Odoo. Finally, the data is validated by re-checking with the original information from Netvisor, it is also validated and observed manually by the financing controller, CEO, and project manager.

### **What are the features of Odoo that the Indian subsidiary expects?**

The Actiw subsidiary in India faces challenges when using the restricted functionality of Excel to store and distribute their data because mistakes and inaccuracies are inescapable. Microsoft Excel, for example, has limitations when used for data storage because the spreadsheets do not connect with one another, leading to redundant information and fragmented data.

Consequently, Actiw has expectations for the Odoo system to offer a sharing interface where all staff can adjust the data in real time. With Odoo, customer relationship management is intended to be more comprehensive and streamlined, as the application service section of the software brings shared tools within reach of the company's management, vendors, and production factors, for each individual user. Through the SaaS system, interested parties have access to up-to-date customer-specific contact information and contact history. Quotations, orders, and sales invoices can be created quickly and easily, moreover, the calculations such as the life cycle of products and depreciation can be calculated smoothly. Besides, with planning and timesheet modules, real-time monitoring and reporting of the employee's tasks and service products are done more efficiently. Generally, the Indian project manager can exert more influence on other departments and minimize human mistakes as much as possible.

## **7.2 Personal realization**

A clear image of ERP systems' significance to the organization may be seen after both research questions have been answered. The project's risk factor should also be taken into account. Due to the various viewpoints of the business objective and internal users' evaluation, there is actually a very limited and trustworthy document to show how the ERP project is successfully accomplished. Furthermore, there is useful data for evaluation that may necessitate the business purchasing its report as references. These data may be used as metrics to measure the ERP project's progress, but it can be challenging to determine the validity of the sources. Therefore, to avoid risks occurring, it is always best to approach is to focus on the intensive resources and time in advance in the demo and during the implementation phase.

The risk factors should probably be carefully considered prior to any implementation, there is a limitation that the thesis's data may be viewed as unrealistic by some businesses that are hesitant to integrate the software into their processes for the simple reason that theory and empirical methods differ, and each business has its own complex background. Because of this, the trial phase is crucial for every organization that has questions about the Odoo features and is eager to learn from its own failures before, it is always better than they will lose the competitive edge on the market at the expense of lacking basic knowledge and skills.

## **8 Discussions**

### **8.1 Significance of the thesis**

The outcome of the thesis can be considered as guidance content for new employees or trainees to take responsibility for the use of Odoo. Additionally, when the company expands its business scale which may require to install of more modules of Odoo in the future, they may use the results for the management of basic data in a similar manner, although every module is different in functions, the way inputting, removing and updating could be the same for basic information. It is the facilitator for newbies to save tons of time and effort in organizing data, instead of watching all the detailed instructions on the Odoo youtube channel and even having to pay for many online courses.

For SMEs that are hesitant to apply for Odoo, they may use it as a reference during and prior to their demo phase, as it is the best way to deter potential risks, or for others, who still consider integrating Odoo with their current accounting software due to some software are missing some characteristics to fulfill the enterprise demands..

## **8.2 Self-reflection**

The data management in the Odoo system is a challenging topic, as the author has never had a chance to use the system previously. I desired to make it a summary guide for small and medium enterprises on a general level, therefore, every student, ERP consultant, or newbie player in the market who is on the way to deciding to choose Odoo employed in their company may have a clear understanding of and avoid common risks.

By virtue of support from the case company, I do not need to install the demo account and fix technical problems by myself, and I had a chance to practice the system just like in a real environment. Regrettably, the company also had more significant tasks that needed to be completed during my internship. As a response, the testing process was not well-prepared, and there was not enough time for a thorough system evaluation. In view of this, I believe the outcomes can even be better if the schedule was expanded to empower Indian personnel to seek self-knowledge and accommodate the Odoo process.

## **8.3 Future continuation of the project**

Because Odoo is an internal system, to test its capability fully, everyone has to pay quite expensive prices, or they can just use the free version with very few functions offered.

Overall, when the organization focuses primarily on the sales process, purchasing process, and project management, the core functionalities of Odoo satisfy those objectives. When the company plans to grow and more personnel join, which may make it impossible to handle manually, the effects of human resource and inventory management can also be studied further in the future.

It can clearly be seen that the Odoo industry is already evolved with over 8.000.000 users worldwide, I strongly believe the demand for adopting Odoo software will be an upward movement, especially in the Indian market where a subsidiary of Actiw is located, and also in Finland in the near future.

On the author's side, after experiencing the system, I have the growing appetite for coding such as Python knowledge or any related IT language skills, because I realize the huge benefits, whenever the systems needed to modify, I can fix them immediately without external consultants and save resources for my company in the long run.

#### **8.4 Reliability of the thesis**

Eisner (1991, as cited in Golafshani, 2003) found although the term 'Reliability' is a concept used for testing or assess quantitative research, it is most frequently used to all types of research. The most crucial test of any qualitative research is its quality if testing is seen as a technique to elicit information. A strong qualitative investigation can aid in our understanding of situations that might otherwise be mysterious or perplexing. (p. 58)

Indeed, according to Stenbacka, (2001, as cited in Golafshani, 2003) "the concept of reliability is even misleading in qualitative research. If a qualitative study is discussed with reliability as a criterion, the consequence is rather that the study is no good" (p. 552).

As mentioned earlier, it seems challenging to me to have valid answers from the software consultants and reliable user reviews, it also responds that the research is publicized to a certain extent, due to the confidential agreement with the case company, and it is a strong suggestion for a newbie to have a demo account and play with the system before deciding to purchase the suitable version and take responsibility for the actual risks. In light of these facts, Odoo basically should not be used as a medium that deliberately pose the unnecessary uniformity for function in all SMEs, joint effort between stakeholders is attributed to creating a competitive edge in each organization's ERP ecosystem.

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