Jurnal Penelitian dan Aplikasi Sistem dan Teknik Industri (PASTI)
Vol. XVII, No. 1, April 2023, 13-20
p-ISSN 2085-5869/ e-ISSN 2598-4853

# The Implementation of Cloud Enterprise Resource Planning by Snell X in Manufacturing Process Strategy: A Case Study of Skincare's Company

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## Abstract

In the midst of the growing awareness of the Indonesian people to use skincare products from various manufacturers, Company X is one of the SMEs involved in it. Skincare products are sensitive products that can have a direct impact on the wearer. The risk in the skincare business is that Company X must ensure that all materials and production processes are carried out safely and according to procedures. Meanwhile, Company X must also pay attention to maximizing existing resources, including time efficiency. Through this problem, Company X decided to implement an ERP system in its manufacturing process. The purpose of this research is to find out how the process takes place on the production side if it is implemented into the ERP system, as well as observe the benefits and challenges that will be faced by Company X. The method used in this research is qualitative with systematic review which will be described descriptively by conducting direct observations. As a result, the manufacturing process runs normally with the use of several new terms in the system, besides that several advantages are found such as cutting time and costs, however, regarding the limitation, this research only mentions time efficiency advantage. Due to the new system, the adaptation of employees and the high cost of maintaining the system will be the challenges for Company X.

**Keywords:** Manufacturing Process; ERP; Skincare; Production

## INTRODUCTION

The population of Indonesian has been reached over than 250 million people. It means the market opportunities is really huge for any kind of business, skincare industry is not an exception. By 2021, the consumer demand of cosmetics reaches 70% especially in production of skincare. Therefore, Indonesia is counted as one of the biggest skincare markets in the world. The cosmetic industry in Indonesia, especially in the skincare product segment, is experiencing rapid development (Ferdinand & Ciptono, 2022). This is marked by the increasing demand for skincare products in Indonesia. Even some local skincare manufacturers have started to scatter and beat the sales value of conventional skincare. For example, in 2021 in the online marketplaces Shopee and Tokopedia, Ms Glow dominates the number of products sold with a total revenue of Rp. 38.5 billion ( Asosiasi Digital Marketing Indonesia, 2020), thus becoming the best-selling skincare producer, this trend is followed by local brand Scarlett which generates revenue of Rp. 17.7 billion. This is

a fantastic number considering the number of requests for cosmetic products has also increased by 70% recently.

The cosmetic company in this paper later on will be stated as company X due to the privacy. Company X is located in West Java, Indonesia, it produces more than thousand cosmetics and skincare product a month. The customers come from various groups ranging from individuals to institutional classes that resell cosmetic products with their own brands. It can be stated that Company X is also a supplier of finished products for many cosmetic and skincare brands in Indonesia.

Company X was previously an SME that had traditional business processes with manual recording, but day by day, the number of productions of company X is increasing, The production volume of Company X increased from 1860 products per month in 2012 to 5541 products per month in 2022, which represents a growth rate of approximately 197.4% over the 10-year period. This significant growth has likely put pressure on its traditional manual recording and management processes. Other than that, since Company X produces skincare products using chemical liquids and herbs, the production process needs to follow government regulations and standards to prevent chemical reactions that can harm consumers and damage the company's reputation. The production room is monitored by the head of production and inspected by the Food and Drug Supervisory Agency. Noncompliance can result in the products being withdrawn from the market and the company losing its trading license. Illegal distribution of cosmetics violates Health Law No. 36 of 2009 and can result in a penalty of up to 15 years in prison or a fine of 1.5 billion rupiah (UUD 1945 Indonesia, 2009). Despite being an SME, Company X's products are sensitive and pose a risk to consumers if the production process is not strictly maintained.

Due to these considerations, Company X may need to consider adopting more efficient and automated processes to manage its increasing production volume and maintain its production process to be in line with government regulations to maintain the document very well. Finally, company X decided to adopt an Enterprise Resource Planning (ERP) system to maximize the company's productivity and minimize production time. In this firm, there are several operational activities that carried out while producing the skincare product, one of them is manufacturing the products. The manufacturing process is highly determined by the supply of raw materials and manufacturing process management. Therefore, the author interested to discuss the strategy for the manufacturing process of cosmetic & skincare products at company X by utilizing the ERP system. Particularly, the cosmetic and skincare market has quite good prospects in the future.

## LITERATURE REVIEW

### Enterprise Resource Planning (ERP)

Enterprise Resource Planning (ERP) is a type of software solution that unifies all of a company's operational functions in an effort to satisfy customer demands and achieve organizational objectives (Anaya & Qutaishat, 2022). Within the organization, manufacturing, logistics, distribution, inventory management, shipping, invoicing, and other company functions, such as human resources, are all part of the value chain, which is the primary emphasis of ERP.

The business has a strong desire to compete globally in the dynamic business environment that exists today. It thrives in the face of current competition by establishing more connections with its clients and delivering high-quality goods and services as quickly as feasible. However, despite the fact that ERP has become a well-known system in recent years, this does not preclude the appearance of brand-new difficulties during the process of putting this system into effect (Haddara, Gøthesen, & Langseth, 2022). Especially relevant

to the discussion is the fact that the skincare company in question, which operates at the medium business level, is only just beginning to mature enough to implement an ERP system.

Consequently, from the perspective of ERP theory and its implementation, two contradictory things will be discovered regarding the advantages and challenges that will be encountered during the implementation process.

**Manufacturing Process Strategy**

The organizational mission statement drives the achievement of specific business objectives for all manufacturing systems. The business strategy is then derived from these business objectives. It should be devised so that the organization can achieve its business objectives while remaining adaptable to change. In turn, the business strategy is used to formulate the marketing and manufacturing strategies (Kosky, Balmer, Keat, & Wise, 2020).

In accordance with the ERP Implementation at Company X, this article will only discuss manufacturing strategy. One way to describe the manufacturing strategy is as a long-term plan that outlines how the resources of the manufacturing system will be used to support the business strategy, which will then allow the company to achieve its business objectives. Operations develops a production strategy as well as a volume ramp-up plan. The product's requirements and effects on facilities, personnel, and equipment, as well as its related quality, reliability, and robustness requirements, are evaluated (Deng & Xu, 2023). Operations must be performed once to identify business processes and manufacturing process flows by producing a high-level value stream diagram, as well as to identify any special tools or equipment needed to make and test the product. As a result, it will assist the business in determining whether to continue the production process, unbuild, or scrap the product.

## RESEARCH METHODS

The present study employs a mixed-methods approach that combines both qualitative and quantitative methods to investigate the challenges and advantages associated with the use of cloud-based enterprise resource planning (ERP) systems. The qualitative method is utilized to observe and analyze the experiences of ERP system users, while the quantitative method focuses on calculating the total LT and CT in VSM to determine time efficiency.

To conduct the qualitative portion of the study, the authors will employ a systematic review scheme that allows for a comprehensive synthesis of factors based on primary qualitative studies (Mahraz, 2019). Direct observation (Mu'min, Haekal, & Lufti, 2022) will also be used in conjunction with a survey to gather information from Company X, both before and after the implementation of the ERP system. Through these methods, the authors aim to provide a thorough explanation of the findings that occurred during the ERP implementation process by describing the situation that occurred in the field.

To collect quantitative data, the researchers will analyze the total LT and CT in VSM. Data will be collected from the manufacturing department, which is responsible for controlling the ERP system during the manufacturing process. This department has extensive knowledge and experience in the ERP system implementation process and the impact it has on the manufacturing process, particularly in terms of time efficiency.

The study employs a variety of data sources, including primary and secondary data. Primary data is collected directly from ERP system users, allowing the authors to gain insight into the problems and challenges they experience when using the system. Secondary data is obtained from reputable literature sources such as research journals and books.

By using a mixed-methods approach, this study aims to provide a comprehensive analysis of the challenges and benefits of cloud-based ERP systems in the manufacturing industry. The results of this study will provide valuable insights into the implementation and use of ERP systems in manufacturing and can be used to inform future system implementations and research in this area.

## RESULT & DISSCUSSION

The result of this research presents a comprehensive analysis of the company's manufacturing strategy, benefits, and challenges in implementing an Enterprise Resource Planning (ERP) system for the first time. The study found that the company's manufacturing strategy can be improved by adopting an ERP system, as it provides a clearer and more structured manufacturing process. Additionally, the study revealed that the system is oriented towards decision-making output, and can generate time efficiency in the future. However, the research also identified several challenges in implementing an ERP system, including employee resistance to change and the additional costs required for implementation and necessary devices such as computers and laptops. These findings provide valuable insights for companies considering the implementation of an ERP system, highlighting both the potential benefits and challenges that may arise in the process.

### Company Manufacturing Process Strategy

To ensure the production process, the author immediately made a visit to company X and had the opportunity to enter the production room. Indeed, this company strictly implements SOPs that have been set with a fairly simple manufacturing process. During the visit, the head of production said that the biggest difficulty was facing demands from BPOM and maximizing company productivity and minimizing waste in the production process. Therefore, company X then focus to process strategy (Aregbesola, 2017) by implementing the Enterprise Resource Planning (ERP) system in the company.

By utilizing ERP technology, company X can maximize the production process with efficient time cut and removing delay on vendor’s delivery (Lufti, Haekal, Kholil, & Mu’min, 2022). The author also gets the opportunity to get a blueprint or details of the manufacturing process contained in company X with utilizing ERP system. It consists of 6 processes: setting & configuration, manufacturing orders, bill of materials, work orders, unbuild order, and scrap orders.

Settings and configuration are used to manage the product master (who involved in the production process) which consists of the head of production and production operators. Then categorize the products into raw materials, work in progress and finished goods. After that determine the unit of measure (UoM) from the Bill of Materials (BoM), inventory and purchase. This is important because the units of measure used are different. The second process is a manufacturing order which involves two actors, namely the head of production and the production operator. After receiving the manufacturing orders, the next process is bill of materials (BoM) which defines the quantity of each component required to make or deliver the finished product. Then, the head of production will carry out useful work orders to ensure that the operator always follows the production steps and records the time needed to carry out production. Meanwhile, the unbuild order process is carried out to return the finished product back to its raw material. Unbuild order involves three actors, namely the Head of Production, Production Operator, and QC Staff. On the other hand, scrap order is leftover goods that have no economic value or only the value of basic materials, because usually these items must be discarded. Scrap order involves three actors,

namely the Head of Production, Production Operator, and QC Staff. An example of a scrap order is an item that does not pass the quality inspection and is unfit for sale.

**Benefit of the ERP Implementation on Manufacturing Process**

Company X previously carried out the manufacturing process[4] with a fairly simple process that only included bills of materials, work orders, and operations. By implementing an ERP system, company X can maximize the manufacturing processes that run in the company by implementing more detailed systems in it. In addition, by using this manufacturing system and strategy, Company X can cut costs and production time so that it is more effective, efficient and productive. The advantages of implementing the manufacturing process with ERP involve:

1. A clearer and more structured manufacturing process. This can be seen from the production process, before carrying out production, the system asks for configuration details such as who is authorized to carry out production orders and who will carry them out. Or just to classify products first, either by code or barcode, thus, it will make it easier for employees or managers to find items in inventory. It reduces search time and minimizes errors in item retrieval so that when other operators need an item in production, they don't have to wait too long to get the item.
2. The intent of the command is defined. When the head of production instructs staff or operators, his goals and objectives are more defined and categorized. For example, when finished goods need to be made into raw materials, they will be recorded in an unbuild order, or if there is a defect in production, they will be recorded in a scrap order. Therefore, the order will not again be scattered after undergoing the categorization and classification process.
3. Oriented on choice/decision-making output, not just a document. The difference between using ERP and traditional system can be seen from the implementation of its business processes. Before using ERP, business processes were carried out at the beginning. Unlike when using an enterprise system, business processes are carried out at the end. Other than that, ERP system implemented by company X not only focuses on the design process business but also includes the manufacturing or production system. The ERP system provides options for work orders, unbuild orders, or scrap orders, which are all related to the manufacturing process. Before implementing the ERP system, the final output of company X's business process was just a document, indicating that the company was not able to effectively manage its manufacturing process. However, with the implementation of the ERP system, the company can now manage its manufacturing process in a more efficient and effective way, from managing the supply of raw materials to the production of finished goods. The ERP system provides real-time monitoring of the production process, allowing the company to identify and address any issues that arise in the manufacturing process, which ultimately leads to increased productivity and reduced production time.The difference in business process design can be seen in the following figure:

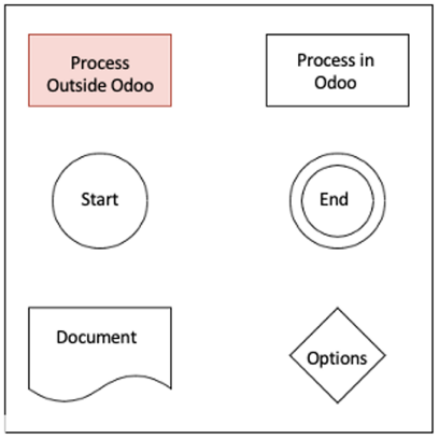


**Figure 1.** Traditional vs ERP Business Process Design

4. Generate value added in future. After visualizing the business processes through value stream mapping techniques, it was identified that the implementation of an ERP system could provide added value in terms of process time. The implementation process was projected to take approximately 5 months until all users and employees were able to effectively implement the system. Once the system was fully implemented, the expected value added would be improved time efficiency in the processes. For comparison purposes, the Current and Future VSM charts are presented below, which highlight the expected changes in the business processes after the implementation of the ERP system.

   Implementing an Enterprise Resource Planning (ERP) system, the Future Value Stream Map (VSM) is a crucial tool used by researchers to highlight potential improvements in an organization's operations. the purpose of showing the Future VSM in research is to provide a comprehensive roadmap for improving operations through the implementation of an ERP system. By demonstrating the potential benefits and identifying areas for improvement, researchers can ensure a successful implementation and help the organization achieve its goals.The future Value Stream Mapping from Company X is described as follows:

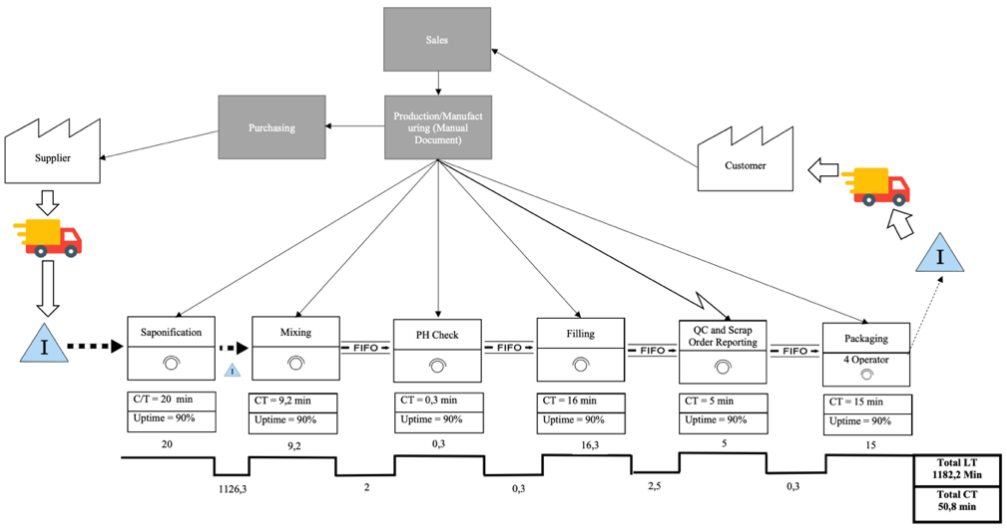


**Figure 3.** Future Value Stream Mapping (VSM) in Skincare's Company

**Challenges in Implementing ERP on Manufacturing Process**

The challenges of the manufacturing process using an ERP system are actually not that significant when compared to the benefit described previously, include:

1. Enterprise system is a new thing for the company, employees are accustomed to traditional work environment situations and work with separate and not integrated documents, causing employees to have to re-adapt to the new enterprise system. However, it can be stated that this situation is normal because every company that implements a new strategy or system needs to adapt.
2. Requires additional cost for implementation and devices such as computers and laptops. In implementing the ERP system as a strategy to assist the manufacturing process in company X, the company needs to spend a small amount of money to implement the system in server to unlock the cloud system and purchase equipment at each manufacturing post so that the manager or head of production can monitor the manufacturing process in real-time. This is as stated by Costello in his article on the Terillium page (Costello, 2022), that one of the obstacles to implementing an ERP system, especially in the manufacturing process is the problem of cost to implement and maintain the system.

The implementation of ERP as a strategy to increase productivity in the manufacturing process at company X is a good step, but it must be accompanied by the readiness of employees to adapt and the company's ability to accommodate this facility with maximum equipment. This of course can be a future solution for the weaknesses of implementing an ERP system in the company.

The strategy of implementing an ERP system in the manufacturing process at Company X is a good strategy to support the manufacturing process and increase productivity. However, nothing in this world is without gaps, as well as company X, in developing a better strategy, there are still many disadvantages, especially internal ones. The critical success factors (CSFs) for the successful implementation of an ERP system in the manufacturing process at Company X are identified by a two factors: employee training & sufficient cost and equipment.

First, company X can do the more intensive training carried out for employees in adapting to using the ERP system in the manufacturing process. Regardless, employees are a valuable asset for a company because it determines success in achieving company goals. Giving space for employees to get used to using this system and maintain their performance will make the production process continues to run effectively. This is in accordance with the hypothesis proposed by Lutfi et.al in his paper entitled *"Antecedents and Impacts of Enterprise Resource Planning System Adoption among Jordanian SMEs"* that training has a positive impact on ERP system adoption (Lutfi, 2022). Training also can eliminate employee confusion about ERP systems which are often only discussed theoretically, regardless of practical aspects. Second, ensuring that the existing cost and equipment is sufficient to cover all production processes, from manufacturing orders, operational processes, to finished goods. Because this process must be monitored properly and in real-time, because this is the most important point of ERP implementation, namely work effectiveness and efficiency. Therefore, ensuring the availability and sufficiency of implementation costs and devices to support the business flow is of paramount importance.

**CONCLUSION**

The application of an ERP system to the manufacturing process at least has several benefits on the company such as defining the manufacturing process more clearly and

measurably by providing output in the form of convenience in making the best decisions for the company in the future. In addition, time efficiency is an added value in system implementation in the manufacturing process. However, as an SMEs, Company X also cannot be separated from challenges due to limited resources. Nevertheless, it can be overcome by implementing employee training and budget adjustments when implementing the system. Thus, implementing an ERP system in the manufacturing process is becoming increasingly feasible to consider.

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