
Digital Transformation Design towards Logistics 4.0 in SME: A Case Study for PT XYZ

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Abstract

The rapid development of technology and information and communication has a direct impact on the business of the Indonesian people. SMEs are one of the pillars in the economic sector in Indonesia. However, logistics has always been an obstacle to business growth in the SME sector. In Indonesia, logistics costs are still high compared to GDP, which is the background of problems that can be solved by implementing logistics 4.0. This literature will provide input for SME entrepreneurs, who will carry out digital transformation in the logistics sector of their business. The inputs that will be given include the importance of digital transformation in the logistics sector and the benefits that will be provided as a result of digital transformation. By using the digital maturity model for logistics 4.0 concept as a research method, an SME will be able to find its current state and also be able to determine strategies that will help SMEs go to their intended future state. Various analyzes will be carried out to determine the state of the SME business, so that appropriate digital transformation can be carried out regarding the SME logistics current state.

Keywords: logistic, digital, technology, transformation, SME.

I. INTRODUCTION

The Indonesian government through the Ministry of Industry has created an initiative called Making Indonesia 4.0. The Ministry of Industry through the Making Indonesia 4.0 initiative has created a roadmap for each industry related to digital transformation caused by the digital industry 4.0 era. In a conventional business, managing logistic is a simple operation to track sales and stock flow in one or two locations. Technology-based sales present new challenges for business owners in the form of SMEs or companies because the sales made are online sales which consumers are expected to have speed and certainty about the products ordered. Management using an accurate and efficient logistics system is one thing that must be a priority

for every business owner. Along with the industrial revolution 4.0 in Indonesia, many SMEs are using E-Commerce as a business platform.

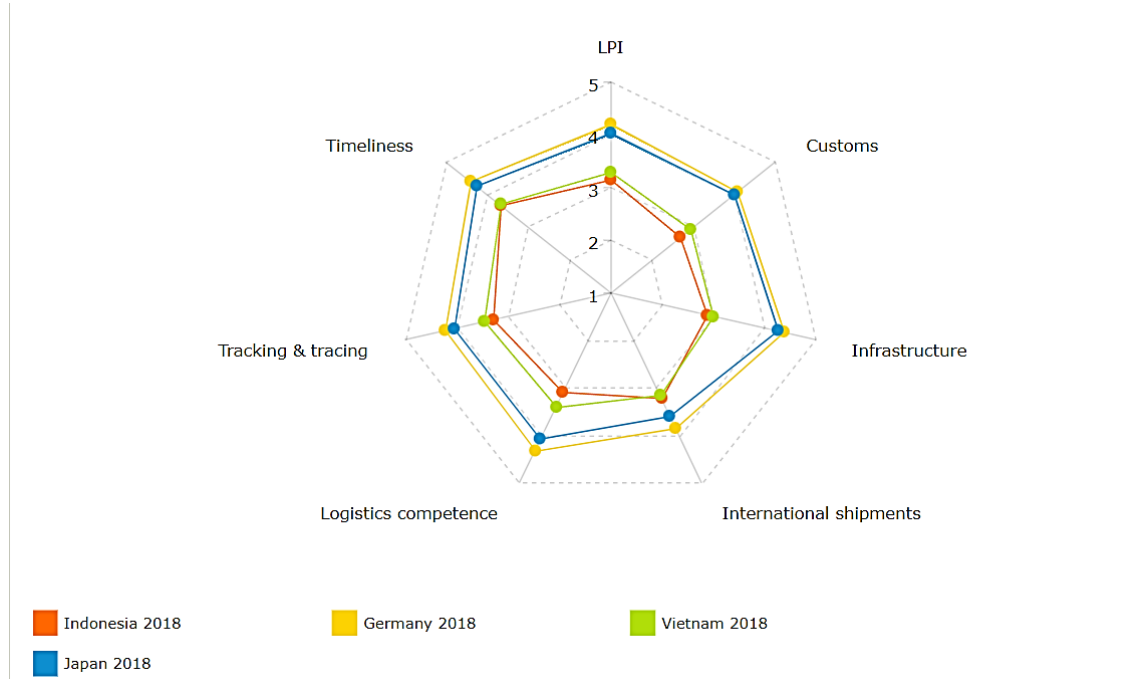
Since the growth of various E-commerce platforms such as Tokopedia, the E-commerce sector in Indonesia is growing very rapid. Based on data released by the *Badan Pusat Statistik* (BPS) in 2019, the industry engaged in the provision of food and beverages is one of the largest E-Commerce businesses after the automotive industry, which is 18.11 percent [1]. The use of E-commerce as a technology-based business platform will cause an increase in the level of demand for a business [2]. The availability of goods demanded by the public will be one of the main factors in running an E-commerce-based business. Poor logistics management will have an unfavorable impact on the company. Too much inventories will cause losses for the company, because unsold goods will become obsolete, and storage costs will be incurred, as well as costs for obsolete goods because they will become long outstanding item [3].

The Covid-19 pandemic that affect Indonesia and all countries in the world was something that was beyond the expectations of business owner. Many industrial sectors experienced setbacks, but it did not significantly affect the food industry. Based on information from the Indonesian Food and Beverage Entrepreneurs Association (GAPMMI), until the third quarter of 2020, the food and beverage industry were still able to grow by 0.66%. It is hoped that in 2021, the food industry can experience even more growth, provided that all government programs including vaccinations can run smoothly. Based on data from the Ministry of Industry in 2016, 29 percent of Indonesia's Gross Domestic Product (GDP) was from the food and beverage industry. To create food and beverage 4.0, Indonesia has a strategy that will encourage productivity in the upstream sector by using technology, increase the growth of SMEs in the food and beverage sector by helping SMEs in adopting technology, increasing investment in food packaging, and increasing exports by utilizing access in the agricultural sector.

Although the food industry in Indonesia is experiencing rapid growth, SME entrepreneurs are also experiencing problems, especially in terms of logistics. Indonesia has the most expensive logistics costs in Asia, which is 24% of Gross Domestic Product (GDP). Other Asian countries that have high logistics costs are Vietnam, Thailand, and China. In a row, logistics costs from Vietnam reach 20% of GDP, Thailand 15% of GDP, and China 14% of GDP. Meanwhile, logistics costs in Malaysia, the Philippines, and India are 13% of GDP, Taiwan and South Korea are 9% of GDP, while Singapore and Japan are 8% of GDP [4].

There is also a gap in logistics performance in various aspects compared to countries such as Vietnam (Income Group), Japan (Regional), and Germany (World), especially in the logistic competence section [5].

Figure 1



Country	Year	LPI Rank	LPI Score	Customs	Customs	Infrastructure	Infrastructure	International shipments
Germany	2018	1	4.20	1	4.09	1	4.37	4
Japan	2018	5	4.03	3	3.99	2	4.25	14
Vietnam	2018	39	3.27	41	2.95	47	3.01	49
Indonesia	2018	46	3.15	62	2.67	54	2.89	42

Country	Year	International shipments	Logistics competence	Logistics competence	Tracking & tracing	Tracking & tracing	Timeliness	Timeliness
Germany	2018	3.86	1	4.31	2	4.24	3	4.39
Japan	2018	3.59	4	4.09	10	4.05	10	4.25
Vietnam	2018	3.16	33	3.40	34	3.45	40	3.67
Indonesia	2018	3.23	44	3.10	39	3.30	41	3.67

Logistics 4.0 represents a system that can overcome the constraints of a company or organization on consumer demand without significantly increasing costs. Logistics 4.0 changes the company's traditional logistics behavior into a company with digital technology that allows companies to control various functions needed by the company [6]. Building a logistics network with digital technology, will give a company new competitiveness and responsiveness in

responding to business competition in order to provide the fastest and most transparent service to consumers [7]. Excellent logistics management system will be very urgent for business people, including SMEs because of the fact that records of logistic activity are carried out manually [8].

In addition to challenges due to the digital transformation of an industry, there are challenges that arise from the food industry itself. The food industry as one of the most important industries in the economic sector has challenges in the form of increasing demand for food production, volume, process, manufacturing technology, consumer behavior and supplier behavior [9]. The food industry has changed from being focused on what producers offer to what consumers demand. In order to respond to this change, every element that owned by the company such as machines, goods storage systems and utilities must be able to move automatically and be able to share information with one another so that a fully integrated system will be created and can be relied on by management in taking business decisions. [9]

II. LITERATURE REVIEW

The understanding of logistics 4.0 is a logistics system that can increase customer satisfaction based on what consumers want, without being accompanied by an increase in costs [6]. Logistics 4.0 has the same foundation as industry 4.0 which is a logistics system that can increase flexibility, adapt to market changes and bring the company closer to customer needs. The digital transformation carried out by an entity or company will provide the ability for the company to provide what consumers want and need, face challenges in logistics from inventory management and increase efficiency from the company itself [10]. This will allow to improve customer service levels, optimize production and lower storage and production costs [11].

Logistics 4.0 is closely related to the use of Smart Services and Smart Products. We can also call Logistics 4.0 as Smart Logistics or Smart Logistics, which has the function of increasing flexibility, increasing the level of faster response to changes in the market, and providing information to companies about what consumers need. This paradigm of logistics 4.0 is caused by the increasing use of the Internet as a means of communication, which allows communication between humans and machines to occur [12].

The role of logistics 4.0 itself in SMEs are: (i) Logistics 4.0 will provide opportunities for SMEs to expand their market coverage, (ii) Logistics 4.0 will be expected to provide convenience for SME entrepreneurs who make deliveries using their own business/services. Based on data from the Central Statistics Agency in 2019, 55.96% of shipping businesses are carried out by their own business or services belonging to the business owner, (iii) Provide assistance for SME entrepreneurs themselves to survive during the pandemic, (iv) The distribution of goods will be faster, (v) Inventory data collection becomes more accurate.

III. PROBLEM STATEMENT

The company to be studied (PT XYZ) is an official distributor of a spice producer in Bandung for the Tangerang city area. Started operating since December 2019 and is still operating as a privately owned or individual business. The products marketed are various types of cooking spices and their spices.

To identify the problems that exist in PT XYZ, the author tries to make an analysis with several tools, such as; (i) SWOT Analysis, (ii) TOWS Analysis for internal purpose

II.1 SWOT Analysis

SWOT analysis (Strengths, Weaknesses, Opportunities and Threats) can show the current condition of the Company so that it can be useful for designing future strategies.

Table 1

Strengths	Weaknesses
<ol style="list-style-type: none"> 1. Has 30 variations of food seasoning 2. Easy cooking method and can be modified according to consumer wishes 3. Have more than 8,000 followers on Instagram 4. PT XYZ products do not use fillers so they are categorized as healthy ready-to-eat seasonings 	<ol style="list-style-type: none"> 1 The Company's brand is not yet known by the Indonesian people 2. Uncontrolled inventory 3. Lack of human resources for hospitalization 4. Lack of inventory outflow data 5. Packaging is not attractive 6. The absence of appropriate data as a source for ordering goods in the future
Opportunities	Threats
<ol style="list-style-type: none"> 1. There are many young people who want to cook for themselves 2. Many choices of flavors 3. Product prices tend to be cheap but high quality 	<ol style="list-style-type: none"> 1. Many big players play as rivals 2. Competitors have bigger marketing capital 3. Bigger distribution scale of competitors 4. Manufacturers also have an E-commerce store on Tokopedia

The source of the discrepancy between the actual and the record is because the ordering of goods made without a proper estimation, so in effects some goods have a significant amount, while the other goods that are more favorable in the market have a minimum amount of goods. Good inventory management can prevent a company from the risk of losing customers and losing sales [13].

II.2 TOWS Analysis

Based on the SWOT analysis, a TOWS Matrix can be made which can be seen in table 2 to design the company's strategy going forward.

Table 2

TOWS ANALYSIS	External Opportunities (O)	External Threats (T)
	1. Cooking trend is on the rise	1. Competitors have large capital 2. The distribution scale of competitors is wider
Internal Strengths (S)	SO	ST
1. Many Instagram followers 2. Products vary 3. Healthy products	1. Take advantage of cooking trends by holding healthy eating campaigns using Instagram 2. Collaborating with influencers in the culinary field	1. Using Instagram as an attraction to sell goods more aggressively on Tokopedia 2. Distribution of goods to grocery stores around area of distribution
Internal Weaknesses (W)	WO	WT
1. Brand awareness is lacking 2. Lack of Human Resources 3. Inaccurate inventory quantity 4. Packaging is not attractive	1. Using Instagram and changing packaging to be more attractive as a means to increase brand awareness 2. Using the Logistics 4.0 Guidelines as a means of digitizing the company	1. Changing the packaging from cooking spices so that it can attract the attention of big retailers. 2. Implementation of Logistic 4.0 in the form of company digitization

The strategy that will be supported by the inventory management application is the WO and WT strategy, which is to distribute goods to other retailers in Tangerang or Indonesia. With the inventory management application and the use of logistics 4.0 guidelines that will be implemented in the Company, it is expected to be able to maintain the existing stock of goods so that the actual number of existing goods can be known and can meet consumer desires, whether ordering through E-commerce or through direct contact with PT XYZ. It is also hoped that with the implementation of logistics 4.0 in SMEs, it can increase efficiency in storing goods, and goods stored in warehouses can contribute to high sales for PT XYZ.

This paper tries to initiate a digital transformation project on the logistics process which is later expected to provide several benefits for PT XYZ as follows: (i) Have a basis for ordering goods that will later meet consumer demand, (ii) Increase effectiveness and efficiency in carrying

out daily operations of PT XYZ by transforming the way inventory counts using the application, (iii) Provide an increase in revenue at PT XYZ by increasing the accuracy of the amount of inventory that will minimize the risk of losing consumers, (iv) Help create more accurate financial reports because by using the application, PT XYZ can find out how much inventory value it has, (v) Assist business owners in making decisions, (vi) Increase the speed of response to consumer inquiries regarding the availability of goods.

IV. RESEARCH METHOD

The research conducted is using the Digital Maturity Model. Digital Maturity Model is a model used by an entity or organization to measure, compare, and describe or determine the direction of digital transformation. The Digital Maturity Model describes a direction or evolutionary path that describes the improvement of a process, from an immature level to a mature level. Maturity models can capture or describe the state of a company both qualitatively and quantitatively. So that further decisions can be made regarding where the digital transformation will be carried out and what elements will be improved [6].

Below is a summary of the dimensions, subdimensions and items measured in the digital logistics transformation project. 4.0 [6].

Table 3

No	Dimensi	Sub-Dimensi	Indicator/Questions	Skala	Referensi
1	Manajemen	Knowledge Strategy and Leaders Employees	Adoption Perception, Development Dynamics, Competitive Position	Likert Interval 1-4	Logistic 4.0 Maturity Model
2	Flow of Material and Information	IT Systems Smart Products Smartwarehouses Technologies	Impacts, Obstacles, Adoption, Devices, Storage Facilities, Warehouse Equipment, Impacts Obstacles, Knowledge, Technolgy Relevance, Adopting Position, Investments	Likert Interval 1-4	Logistic 4.0 Maturity Model

The research will be conducted by measuring the current state/level and future state of PT XYZ. Measurements will be made by filling out a questionnaire, which the owner of PT XYZ will fill in the questionnaire. Answers from the questionnaire will then be measured using a Likert scale from a scale of 1 which describes the "not important" situation to a scale of 4 which describes the "very important" situation. The results of the questionnaire will produce a numerical interval that will determine the level of maturity of PT XYZ and will be displayed on a radar chart. The criteria for these levels are:

Table 4

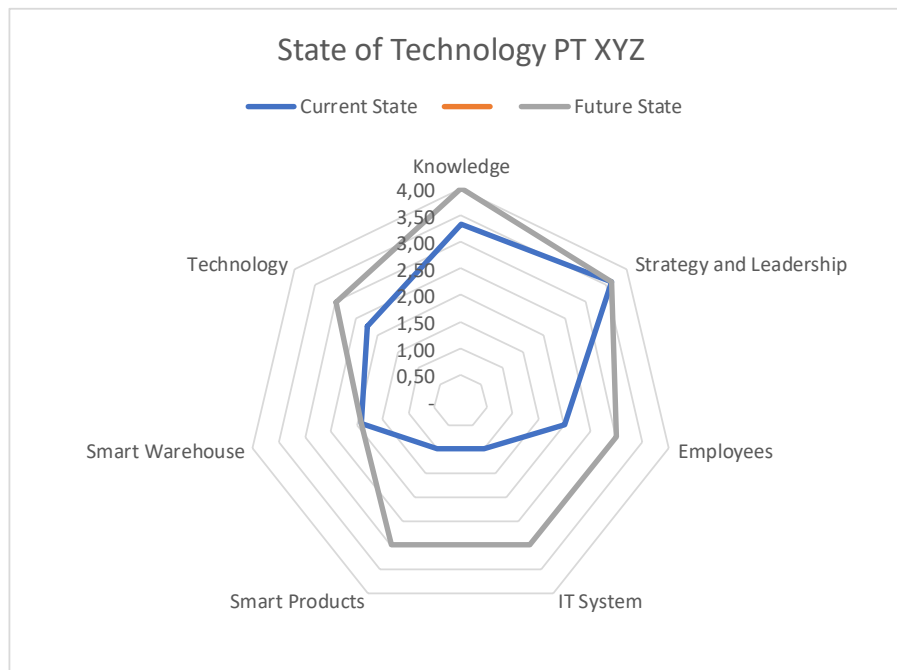
No.	Levels	Scales
1	Ignoring	1

2	Defining	1-2
3	Adopting	2-3
4	Managing	3-4
5	Integrated	4

V. FINDING AND RESULTS

The results of the assessment of the current state and future state of PT XYZ can be seen from the figure below. Digital transformation will try to focus on Knowledge, Employees, Smart Products, IT System and Technology.

Figure 2



V.1 Knowledge

At this time PT XYZ, as a form of business engaged in the distribution sector, PT XYZ is still operating in a manual operating system. Adoption of a logistics system based on 4.0 is very important for companies if they do not want to lose in competition with other companies. PT XYZ's position compared to other larger distributor companies is still relatively low in technology adoption. This is because although the company's management is aware of the importance of adopting this 4.0 technology in business, its operations are still constrained by several things, but the biggest one is the capital or investment that must be made if you want to transform PT XYZ's operations from manual to digital-based systems.

V.2 Employees

The arrangement of human resources is an important thing that management needs to pay attention to, to maintain and develop the organization in the industrial era 4.0. The existence of industry 4.0 indirectly encourage or force organizations to prioritize human resource management (Human Resource Management) so that they can last a long time and develop more advanced [14].

In terms of human resources, the management of PT XYZ is still not fluent in using digital operational instruments. However, the foundation for conducting digital operations already exists, one of which is the use of social media as a marketing tool, as well as conducting education in technology related to the 4.0 revolution.

V.3 Smart Products

Smart Products is one of the key aspects of the logistic 4.0 paradigm, which represents some potential for an organization or company. Computing, data storage, communication and interaction without human intervention with their environment are the main features of Smart Products. The current competitive market conditions and new industry paradigms are leading to the development of smart products with new capabilities, which represent several opportunities related to profitability and growth, increasing the competitiveness of organizations [15].

For its products, PT XYZ does not have identification on its products. Existing products are still in the warehouse, and are maintained using a manual system. This will be a priority in the digital transformation that will be carried out by PT XYZ, with the hope of improving the quality of existing inventory management and increasing the accuracy of the quantity of existing goods and providing better service to consumers.

V.4 IT Systems

In the industrial revolution 4.0, the use of digital technology in the operations of a company has become essential in its operations. Synergy between existing operational systems and operational machines will be required. With PT XYZ's digital transformations, there will be interactions between barcode technology and the Warehouse Management System, so PT XYZ can have reliable inventory data.

V.5 Technology

The intention to improve and use software and hardware will affect the level of technology application at PT XYZ. PT XYZ will become a technology-based SME in its daily operations. It is hoped that in the future the company's operations will be supported by the Warehouse System (WMS), as well as the use of hardware, which will be integrated, and is expected to support PT XYZ in achieving its business goals. Investment in technology will always be supported by

management so that operations can run smoothly and provide efficiency in terms of both financial and time

V. CONCLUSION

In this paper, the author addressed some challenges regarding the implementation of Logistic 4.0 in SME business. Logistic 4.0 can be summarized as the optimization of logistic system, which must be supported by Internet and Technology, that will be embedded whether in software or hardware, which will be shared through Internet. As a result, digital maturity model can be used by to measure, compare, and describe or determine the direction of digital transformation. The Digital Maturity Model describes as a direction or evolutionary path that describes the improvement of a process, from an immature level to a mature level. Maturity models can capture or describe the state of a company both qualitatively and quantitatively. So that further decisions can be made regarding where the digital transformation will be carried out and what improvements will be made to the elements.

The various benefits provided by digital transformation using Logistic 4.0 are: (i) The approach using Logistics 4.0 can increase the speed of service to consumers and suppliers. (ii) Having more accuracy on the goods stored in the warehouse. (iii) Various costs related to storage and replenishment of goods that have been used up in the warehouse can be reduced.

Several issues will rise, related to the logistics' digital transformation, where PT XYZ, which has the status of an SME, the problems are: (i) The system for ordering goods for goods that are used as inventory is based on assumptions only, (ii) The logistics system owned by PT XYZ is only based on a manual system so that it lacks the capability to respond to the 4.0 era business environment, and also giving a negative impact on customer service, (iii) Inventory system for incoming and outgoing goods that occur offline for which data is not available, (iv) Investments that must be made by SME owners related to digital transformation.

Regarding this digital transformation for Logistic 4.0 model, the company will also meet with several challenges regarding with SME, namely (i) the nominal investment that must be reinvested in the company, (ii) suitable technology to accommodate the company's logistics operations (iii) the ability of human resources that will operate the technology for logistic operations. The investment made into the company is not small, for a business of a scale like SME, this will be a difficult problem. Various feasibility analyzes must be carried out carefully, so that the investment for this digital transformation project is right on target. Investments will be made for the technology that will be used and also for the employees who will operate this logistics technology. Investment can come from two sources, from income received from current business activities, and additional capital by PT XYZ's owners.

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