Mitigating Pandemic Covid-19 in the Shoe Manufacturing Industry

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Abstract

During the Covid-19 Pandemic, shoe manufacturing industry in Tangerang, Banten, Indonesia experienced a decline in production, especially the production of branded shoes such as Adidas, Nike and New Balance. This product's launch ensures that the company will use layoffs for a larger quantity. The shoe industry is also required to implement health protocols and operating permits from the Indonesia government. In order to overcome decline in production, during Covid-19 pandemic, companies feel need to look for solutions, innovations, in order to survive and continue to operate. Some initial steps can be taken by making direct observations in the shoe manufacturing industry and conducting studies using a Lean Manufacturing approach. From the conditions that occur in the shoe manufacturing industry and studies using Lean Manufacturing methods, a new concept emerged, a solution innovation, which was named ELLYSAKL.

Keywords: covid-19 pandemic, shoe manufacturing industry, decline in production, lean manufacturing.

The Covid-19 pandemic featured merchandise and merchandise for a variety of branded brands, including Adidas, Nike, New Balance and others. Based on data from Bisnis.com, demand for domestic shoe production is at 0% or there is no domestic demand. During the pandemic, markets throughout the world become sluggish.(1)

Even though the condition of small-scale manufacturing in Indonesia remained relatively stable during the pandemic, there was a decline in production which contributed to layoffs. The number of workers in the apparel sector decreased by around 200 thousand in 2020 compared to the previous year. When the Covid-19 pandemic started in Wuhan, China, the main problem the industry faced was a shortage of raw materials. This leads to a lack of confidence in the initial supply from buyers.(3)

According to statistics from Bisnis.com, as of February 2020, certain manufacturers' output had decreased by up to 20 percent due to the lockout, and this situation persisted until the end of February. Then economic activity opened in China on February 17 and raw materials had not yet arrived at the factory. It was only about 2

weeks later that the raw materials produced before Covid-19 pandemic in China, only there were raw materials could not be produced and the delivery delay was up to one month, based on data from Business.com.

The condition of the domestic market during the pandemic is quite worrying because a number of retailers such as Ramayana, Matahari, Giant are closed, which means that sales in the domestic market are still very low at US$ 2.8 billion. If the Eid market is 35% then US$ 980 million will be lost, according to Kontan.co.id. The fairly high export activity is still supported by Indonesian industry. The export volume of sports shoes increased by around 40 thousand from 2019 to 2020 based on data Bisnis.com and Kadata.

Production for May-June 2020 in preparation for Eid, delivery was postponed until Covid-19 was over until it was cancelled, by the brand owner retailer, as a result the locally oriented industry inevitably reduced production by only 5-10% since mid-March, but still the export-oriented industry with a large capacity of around 793.8 million pairs was helped(4). It just that this doesn't last long because after Eid there is no certainty whether there will be orders from overseas buyers.

Background

2.1. Buyer Behavior Changes During Pandemic Covid-19

Buyer behavior in obtaining, purchasing, using, evaluating and disposing of products that they hope will satisfy their needs(5), as shown in Figure 1.

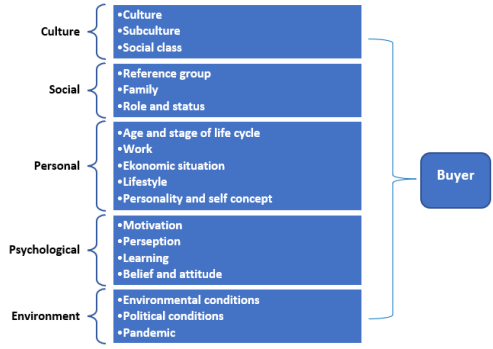

Fig.1. Buyer behavior

The behavior of shoe buyers during the Covid-19 pandemic has also changed(6), more buyers are looking for sports shoes in order to improve their fitness, so the focus of shoe sellers is producing sports shoes according to the buyers wishes. Nike shares will increase by 13% during the extended period on September 22, 2020. The Nike company reported an increase in online sales of 82%, reported by CNBC Indonesia.

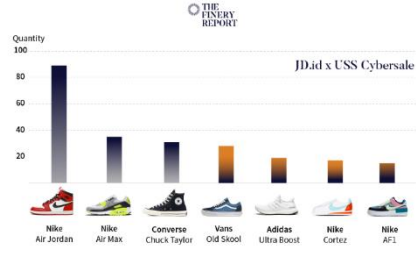

Fig.2. Types of sports shoes

Fig.3. Changes in buyer behavior based on research

2.2. Covid-19 Pandemic Conditions Affect Shoe Companies in Indonesia

Viral disease is a national disaster that negatively affects the stability of the economy and the productivity of the general public as employees and business owners. Therefore, it is

necessary to carry out the tax incentive sabotage process(7) in order to mitigate the impact of the Corona Virus Disease 2019 (8). As a result of the corona virus pandemic, several manufacturing businesses are affected.

Fig.4. Number of people exposed to Covid-19 in 2020

In order to fulfill the requirements of the Covid-19, the Indonesian government is attempting to improve the quality of social welfare (PSBB) (9). A more extensive social health care program is one that focuses on activities performed in the context of a patient's care in a particular community and is also known as Covid-19. PSBB took effect for the first time in DKI Jakarta starting April 10 2020 for two weeks and will continue according to conditions. Then PSBB began to continue in several regions in Indonesia.(10)

The minimum PSBB is defined as the amount of time spent in school and the classroom, the amount of time spent on homework, the amount of time spent on homework in the workplace or at home, and the amount of time spent on homework that doesn't hinder learning, productivity, and morale among students as well as the general population(11). The PSBB will launch with PP No. 21 in 2020.(12)

The implementation of PSBB(13) is carried out by the governor, regent, mayor, or mentor who selects the government's affairs in the health sector. The PSBB was activated by the health in order to combat the Coronavirus's persistence in the blood. This version of the Task Force for the Acceleration of Handling Covid-19 is intended to serve as a guide for individuals who have a public record for the purpose of preparing for PSBB at this time. In the event that the Minister of Health identifies the use of the Corona virus as a risk factor for heart disease, one of the individuals in that region will be responsible for addressing PSBB.

Government has repeatedly changed the name of policy for handling Covid-19, from PSBB to emergency PPKM levels 3 to 4(14). PPKM is an abbreviation for implementation of restrictions on community activities. PPKM was implemented to reduce the risk of higher spread in a number of areas and was implemented for the first time in DKI Jakarta.(15)

Table 1. Policies for handling pandemic Covid-19

Policy	Step	Start	Finish	Basis	Region
PPKM	I	11 January 21	25 January 21	Minister of Home Affairs Instructions No.1 of 2021	7 provinces
	II	26 January 21	8 February 21	Minister of Home Affairs Instructions No.2 of 2021	7 provinces
PPKM Micro	I	9 February 21	22 February 21	Minister of Home Affairs Instructions No.3 of 2021	7 provinces
	II	23 February 21	8 March 21	Minister of Home Affairs Instructions No.4 of 2021	7 provinces
	III	9 March 21	22 March 21	Minister of Home Affairs Instructions No.5 of 2021	10 provinces
	IV	23 March 21	5 April 21	Minister of Home Affairs Instructions No.6 of 2021	15 provinces
	V	6 April 21	19 April 21	Minister of Home Affairs Instructions No.7 of 2021	20 provinces
	VI	20 April 21	3 May 21	Minister of Home Affairs Instructions No.9 of 2021	25 provinces
	VII	4 May 21	17 May 21	Minister of Home Affairs Instructions No.10 of 2021	30 provinces
	VIII	18 May 21	31 May 21	Minister of Home Affairs Instructions No.11 of 2021	30 provinces
	IX	1 June 21	14 June 21	Minister of Home Affairs Instructions No.12 of 2021	National
	X	15 June 21	28 June 21	Minister of Home Affairs Instructions No.13 of 2021	National
	XI	22 June 21	5 July 21	Minister of Home Affairs Instructions No.14 of 2021	National
	XII	6 July 21	20 July 21	Minister of Home Affairs Instructions No.17 and No.20 of 2021	National
		21 July 21	25 July 21	Minister of Home Affairs Instructions No.23 of 2021	National
PPKM Emergency		3 July 21	20 July 21	Minister of Home Affairs Instructions No.15, No.16, No.18 and No.19 of 2021	Java and Bali Islands
		12 July 21	20 July 21		15 regions outside Java and Bali
PPKM Level 1-4		21 July 21	25 July 21	Minister of Home Affairs Instructions No.22 and No.23 of 2021	A Number of provinces
		26 July 21	2 August 21		A Number of provinces

The impact of the PSBB and PPKM made by the Indonesian government(16) has an impact on the mobility of raw goods and finished goods as well as employees of the shoe manufacturing industry, in this case also in operating permits following the ruler for operational permits and industrial activity mobility (IOMKI) during the Covid-19 pandemic. The basis is SE minister of industry No.8 of 2020 which was later updated with SE minister of industry No.2 of 2021(17). Operational Permit consists of a prototype for a health that should be implemented by the 6M

industry, including hands, distance, crowd, mobility, and together. As well as strengthening the 3Ts, namely early examination (testing), tracking (following) and treatment (treatment) as well as accelerating expositions of Coronavirus vaccination.

In order for the system to function, including the implementation of the Covid-19 handling task force on the creation of the sector in Indonesia, the system changes (18) must be implemented. Following the Covid-19 pandemic, the manufacturing sector negatively impacted other industries as the government continued to stand still. This resulted in a decrease in the number of Indonesian companies that could not be reached and a rise in the number of PHK and United States companies. Adidas PT Shyang Yao Fung (SYF) will produce 2,500 pairs of shoes in Kota Tangerang by the year 2020. On May 23, 2020, the Nike and PT Victory Chingluh Indonesia products that are being sold in Pasar Kemis, Tangerang Regency, will sell 4,985 pairs. According to finance.detik.com, up until August 2020, Aprisindo will account for 18 percent of all factories and continue to use Covid-19 to dampen production. Of the 120 products that were purchased from Aprisindo, there were either 18 percent or 20 percent of the total.

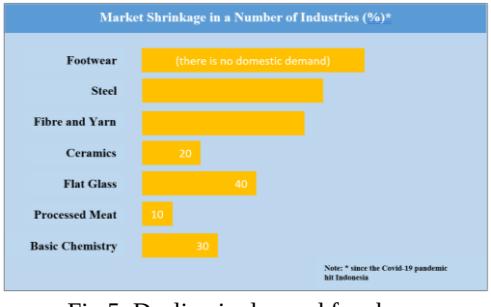

Fig.5. Decline in demand for shoes

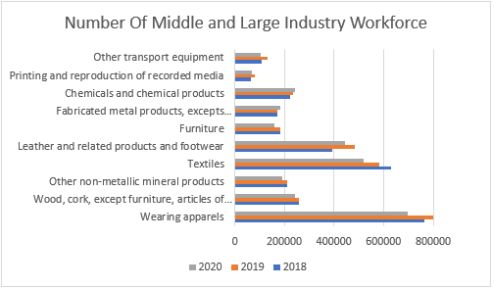

Fig.6. Graph of labor decline

2.3. Lean Manufacturing Approach to Overcome Production Declines

Lean in the APICS dictionary(19) is a philosophy based on the principle of minimizing daily activities, including but not limited to employee activities, as well as pursuing excellence and perfection cantered on the identification and implementation of activities that do not meet needs. in use. When it comes to design, production or operations, joint supply management by all parties is a key factor.

The main objective of implementing lean manufacturing is to reduce operating costs and improve other manufacturing performance through: eliminating waste(20); make work easier to understand, to do and to organize; eliminate, reduce, simplify or combine activities that do not add value. The above is very suitable for shoe manufacturing conditions during the Covid-19 pandemic.

So Lean Manufacturing is a production system that always strives to reduce waste by involving all employees in the company(21). The following is an example of a situation that does not provide any added value. A lean manufacturing system is one that maximizes day-to-day efficiency.(22) Resources here are materials, people, equipment, money and places to achieve reduced production costs while still prioritizing quality and consumer demands.(23)

Fig.7. 8 wastes in Lean Manufacturing

By implementing Lean Manufacturing, production system will be created that is able to adapt quickly to changing customer needs, but at the same time the production system is lean, meaning low inventory(24). There are various techniques that can be used to help identify waste and implement lean in an effort to reduce waste and produce products appropriately with the quality required. These techniques include the pull system, Kanban(25), work cell, 5S, and TPM. In applying techniques, they are adjusted to the company's conditions.

Method

The event will take place in February 2020 through January 2022 and will focus on the industry's performance during the Covid-19 crisis.(26) The second industry is the manufacturing industry, which includes Adidas, Nike, and New Balance, all of which are based in Tangerang, Banten, Indonesia (27). Observation data is carried out using a method called "interview" on the hands of the people who work in the textile and apparel industry (Indonesian Shoe Association). Data from the BPS (Central Statistics Agency), Ministry of Industry, Ministry of Health, Ministry of Home Affairs, and Journals were used in the literature study.

The observational data consists of the environmental condition on the Covid-19(28), mass, which is the Indonesian population's average, and the manufacturing industry's average for the mass of Covid-19. In the wake of the Covid-19 disaster, a significant amount of damage was done to an industrial plant in Tangerang, Banten, Indonesia. As a result of jumbo demand, jumbo layoffs in production, and jumbo changes to the manufacturing system in the Covid-19 and the government.

From several quite diverse problems, the main problem will be taken, then the causal factors will be looked for, finally several alternative solutions will be looked for to handle the problem. The problem-solving process uses a Lean Manufacturing approach to produce the ELLYSAKL formulation. After finding alternative solutions to the problem, the right solution will be chosen to deal with pandemic Covid-19 in the shoe manufacturing industry. Then conclusions and suggestions are drawn for the solutions that have been chosen.

Result and Discussion

Covid-19 pandemic caused 1,800 workers at one of the largest shoe factories in Tangerang to be laid off.(29) This has reduced demand in the country shoe industry. The main problem of shoe manufacturing conditions in Tangerang, Banten, Indonesia can be broken down into stages of conditions which then give rise to several alternatives based on literature studies and data obtained in the field. The main problem lies in the large number of product cancellations and the decline in customer demand. Alternative results gave rise to collaboration with the system called ELLYSAKL.

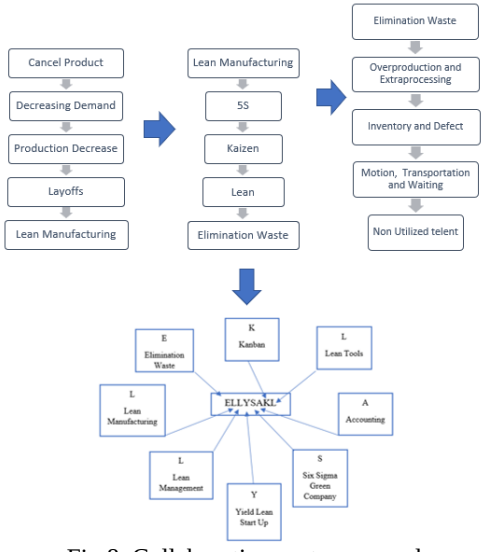

Fig.8. Collaboration system named ELLYSAKL

ELLYSAKL is a collaborative concept that can be described as follows, which is a solution innovation during and after the Covid-19 pandemic.

E-Elimination of Waste is one of the most effective ways to increase profits in any business and waste is one of the original ideas of Lean Manufacturing.

L-Lean Manufacturing is a way of thinking, philosophy, method and company management strategy, to increase efficiency in the production lines. In the concept, there are 8 wastes or what we call "downtime" for short, namely: overproduction defects, non-utilized talent, waiting, transportation, inventory, motion, and extra processing.

L-Lean Management focuses on eliminating waste and reducing unnecessary processes. Lean Management eliminates 3 wastes, namely: work that is unable to add value; excessive loading; and inequality. This is reflected in the Muda-Muri-Mura concept, where Muda is a waste that leads to resources that are unable to provide more beneficial value for the company. Muri occurs when employees use tools or equipment excessively. Meanwhile, Mura is an operation that is not carried out evenly and has the potential to reduce production in the long term.

Y-Yield Lean Start Up is a method for developing products and businesses in a short time. Lean Start Up focuses on customer feedback and only makes things that suit customer needs and desires. The stages start for building, measuring and learning. Build simple products according to customer needs, measure that results of customer feedback on the product, and analyze the measurement results to improve the product or develop it.

S-Six Sigma Green Company (Lean Sigma Green Company) is a management system approach for systematic improvement or improvements to achieve the vision of world-class companies. A part from this, it is also to eliminate waste of E-DOWNTIME. Where E is defined as Environmental, Health, and Safety (EHS) while DOWNTIME is defect, overproduction, waiting, non-utilized-talent, transportation, inventory, motion and extra processing.

Lean accounting—also known as A-Accounting or A-Lean Accounting—is a method used to improve employee productivity in the Lean Manufacturing process. Lean consulting employs Value Stream Costing. The Value Stream Method can be used to track the bar from the upstream to the downstream that is used by several functional departments. One flow can include sales and marketing costs, production, design, up to cash a collection from customers. Lean Accounting tends to be more "real time". Because with Lean Accounting, the reports produced don't have to wait at the end of the week or the end of the month. Reports can be generated at the end of each day. This will make the evaluation process more effective.

K-Kanban is defined as "Visual record or signal". Which is a concept that is closely related to Lean Manufacturing and JIT. The Just in Time production system uses information flow in the form of Kanban in the form of cards or other equipment such as flags, lights, barcodes, RFID,

etc. The Kanban system is an information system that tightly controls "production of the required product in the required quantity at the required time" in one manufacturing process and also among employees. Using a JIT production system, kanban is used to control material inventory by using a card to keep track of how much material or components are used and how they are used.

L-Lean Tools are used in a wide range of industries, including manufacturing, technology, and finance. The organization seems to operate similarly to the Six Sigma method. Lean tools are designed to eliminate unnecessary expositions, whereas Six-Sigma focuses on reducing process variations so that when used together, they can reduce and manage various types of waste in an organization. Types of Lean tools such as(30): Bottleneck Analysis, Without a moment to spare (JIT), Value Stream Mapping, Overall Equipment Effectiveness (OEE), Plan-Do-Check-Act (PDCA), Error Checking, Root Cause Analysis (RCA).

Conclusion

According to observations made on a company in Tangerang, Banten, Indonesia, during the Covid-19 disaster, the company observed a significant increase in productivity and employee retention, both of which contributed to the rise in productivity and layoffs. The researcher then carried out an analysis using the Lean Collecting concept because it is considered an appropriate concept to use in solving problems or obtaining maintenance solutions in the manufacturing industry after the Crown infection pandemic, where the lean concept focuses on satisfying customer needs by reducing waste. what happens in the exposition? During the Coronavirus pandemic, the manufacturing industry experienced limitations in terms of time, number of workers, goodbye to work locations and also the implementation of health protocols in line with the lean assembly concept in resolving 8 wastes. Waste Elimination, Lean Manufacturing, Lean Management, Yield Lean Startup, Six Sigma Green Company, Accounting, Kanban, and Lean Tools are all components of the Lean Manufacturing framework, which is referred to as ELLYSAKL. In addition, researchers pointed out that the K-Kanban's ELLYSA system can be used with information technology such as RFID or barcodes for more accurate data collection. To compete in the industry of the future, shoe companies must implement a Computerized Economy.

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